

Right-of-Way Reevaluation, State Route 54 (US Highway 641), From State Route 69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear), Henry County, Tennessee, PIN 101886.00, Federal Project No. NH-54(26), State Project No. 40003-1213-14

Date: 05/19/2022

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Environmental Commitments

☒ Commitments are involved on the project.

List of Environmental Commitments

Environmental Commitments Only Applicable to Design Segment 1 (PIN 101886.01) of the Selected Alternative as Presented in the Revised Construction Reevaluation approved on 06/14/2021:

1. Vegetation clearing for the project will be limited to the minimum area required for construction of the project and disturbed areas will be revegetated with native species. Fill slopes will be constructed and stabilized during the growing season with the establishment of non-invasive vegetation.
2. Disturbed areas will be revegetated in a timely manner to hold soil movement to a minimum.
3. To minimize the risk to construction workers, TDOT is committed to the removal of Asbestos-Containing Materials (ACM) from bridges that are being demolished, rehabilitated or repaired. Bridges No. 40SR0540021, SR-54 over Jones Bend Creek, LM 11.78 (40-54-11.78), has ACM in the black expansion material under the diaphragms at the abutments. All material of this nature should be treated as asbestos-containing. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities. State of Tennessee asbestos accreditation requirements (TCA 1200-01-20) mandate that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors.
4. To protect the two historic properties eligible or listed on the National Register of Historic Places in Paris (i.e., Paris Gymnasium and Auditorium and North Poplar Street Historic District) TDOT will hold the edge of pavement on the eastern side of State Route 54 and only widen the road on the western side opposite the historic properties.

5. In order to fulfill conditions under Section 4(f), any work completed on Tract 4 (Paris Gymnasium and Auditorium) will have the following construction conditions met:

- The duration of the occupancy will be less than the time needed for construction of the project and there will be no change in ownership.
- The scope of the work will be minor resulting in minimal changes to the property.
- No significant features of the property will be adversely affected.
- The occupied segments of the property will be returned to their as-found conditions or better.

If any of the above conditions cannot be met, the TDOT Environmental Division is to be notified immediately in writing.

Environmental Commitments Only Applicable to Design Segment 2 (PIN 101886.02) of the Selected Alternative (Focus of this Reevaluation):

1. EDHZ001. Asbestos Containing Material (ACM) surveys were completed on the following bridges and asbestos was detected.
 - Bridge No. 40SR0540023, State Route (SR) 54 over North Fork Obion River [Log Mile] LM 16.47 (40-SR054-16.47). The bridge has asbestos (3% chrysotile) in 150 square feet of bearing pad material between the girders and bents.
 - Bridge No. 40SR0540025, SR-54 over Rowe Creek LM 17.13 (40-SR054-17.13). The bridge has asbestos (3% chrysotile) in 150 square feet of bearing pad material between the girders and bents.
2. EDHZ002. The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2015) Sections 107.08 D and 202.03).
3. TDOT has committed to sweep the perennial streams located within the North Fork Obion Drainages for both the State Threatened crescent crayfish (*Orconectes taylori*) (2007) and the State-Deemed-in-need of Management species firebelly darter (*Etheostoma pyrrhogaster*) (1994) immediately prior to any instream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.
4. TDOT has committed to minimize impacts on Wetland (WTL) 9, WTL-10, and WTL-11 due to the presence of the state listed threatened halberd-leaf tearthumb (*Polygonum arifolium*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternative areas of appropriate habitat.

5. TDOT has committed to minimize impacts to Wetland (WTL) 36, WTL-41, and WTL-42 due to the presence of the state listed threatened water purslane (*Didiplis diandra*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOSEPH GALBATO, III
INTERIM COMMISSIONER

BILL LEE
GOVERNOR

May 19, 2022

Mr. Gary Fottrell
Environmental Program Engineer
Federal Highway Administration
404 BNA Drive, Suite 508
Nashville, TN 37217

Subject: Right-of-Way Reevaluation for State Route 54 (US Highway 641), From State Route 69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear), Henry County, Tennessee, PIN 101886.00, Federal Project No. NH-54(26), State Project No. 40003-1213-14

Dear Mr. Fottrell,

This Right-of-Way Reevaluation of environmental, social and economic effects is being conducted in accordance with Title 23 of the Code of Federal Regulations (CFR), Section 771.129. While the entire State Route (SR) 54 (US-641) project, from SR-69 (Wood Street) in Paris to Crossland Road/Brannon Lane (north of Puryear), as presented in the approved 2011 Finding of No Significant Impact (FONSI) is being re-evaluated, the Selected Alternative has been divided into the following two design segments¹/PINs for construction purposes, with the focus of this Reevaluation being on Design Segment 2 (PIN 101886.02), SR-54 (US-641) from near Smith Road to North of Howard Road Crossland Road/Brannon Lane (North of Puryear):

1. Design Segment 1 (PIN 101886.01): SR-54 (US-641), From near Rison Street to near Smith Road. Design Segment 1 (PIN 101886.01) was let to construction in August 2017.
2. Design Segment 2 (PIN 101886.02): SR-54 (US-641), From near Smith Road to North of Howard Road (North of Puryear)² – Focus of this Right-of-Way Reevaluation. This design segment is not currently programmed in TDOT's Fiscal Years 2021-2023 Comprehensive Multimodal Program; however, it is included as an Improving Manufacturing, Public Roads, and Opportunities for a Vibrant Economy (IMPROVE) Act project.

The total project length for the Selected Alternative (Design Segments 1 and 2) is approximately 11.8 miles. The project length for Design Segment 2 (PIN 101886.02) of the Selected Alternative, which is the focus of this Reevaluation, is approximately 8.22 miles.

¹ Please note that the nomenclature of "Design Segment" is used throughout this Reevaluation and is used to reference a specific PIN. For example, PIN 101886.02 is referenced as Design Segment 2 throughout this Reevaluation.

² The northern terminus of Design Segment 2 (PIN 101886.02) has changed from Crossland Road/Brannon Lane (as presented in the 2010 EA/2011 FONSI) to near Howard Road in order to tie into a separate SR-54 improvement project that extends along SR-54 from the Kentucky State Line to near Howard Road (PIN 101886.05).

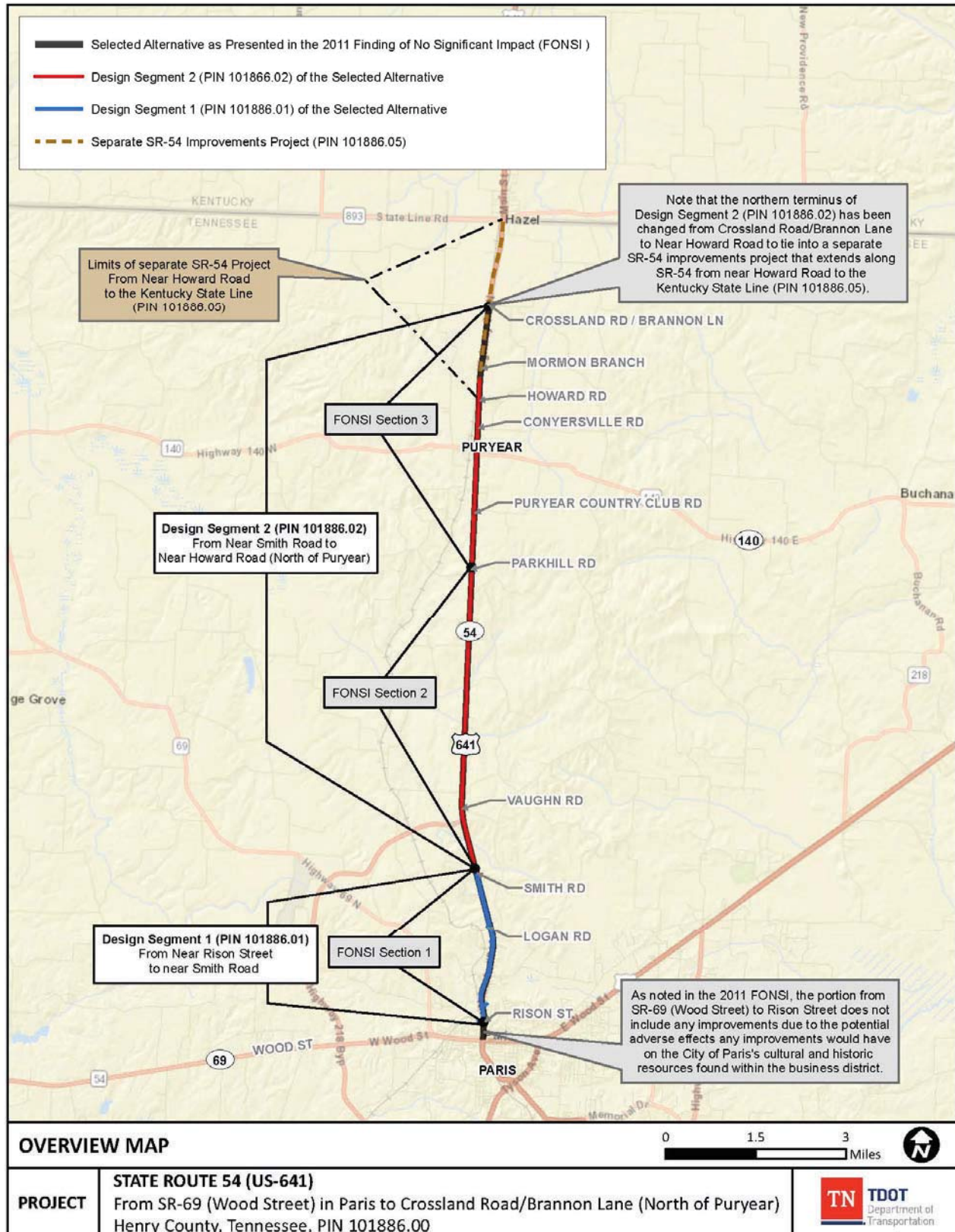
Refer to Figure 1 for an overview map of the Selected Alternative (Design Segment 1 and 2). Refer to Figure 2 for a project location map of Design Segment 2 (PIN 101886.02) of the Selected Alternative, which is the focus of this Reevaluation. Project mapping is also included in Appendix B of this Reevaluation.

The proposed project is listed in the *State Transportation Improvement Program (STIP) for Fiscal Years 2020-2023* as STIP Number 20402054784. Refer to Appendix A of this Reevaluation for a copy of the STIP page.

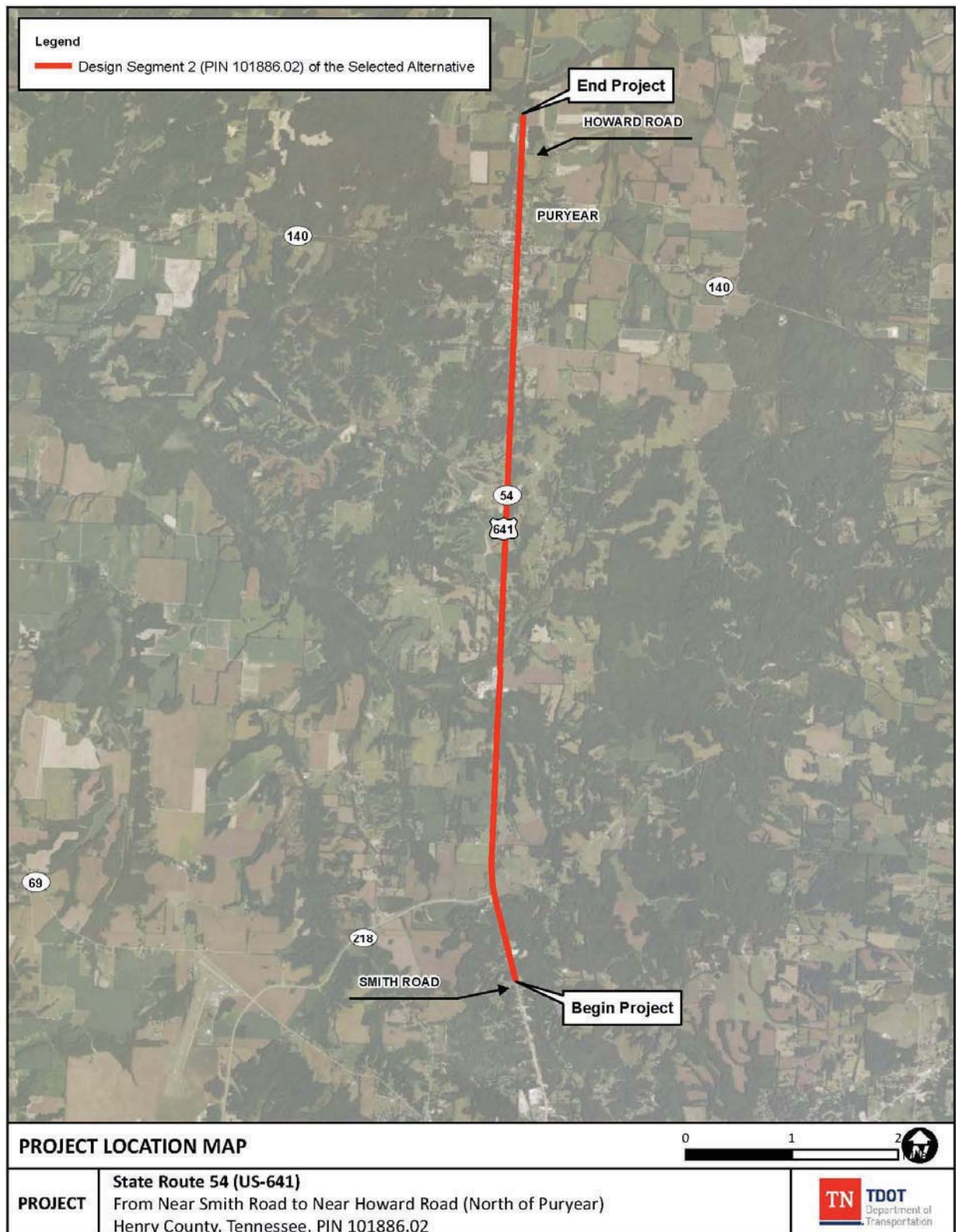
Federal and State project numbers for Design Segment 2 (PIN 101886.02) for various stages of project development are listed in Table 1 below.

Table 1: Project Phases and Corresponding Project Numbers for Design Segment 2 (PIN 101886.02) of the Selected Alternative		
Phase	Federal Aid	State Project Number
Preliminary Engineering	PE-N: NH-54(43) PE-D: NH-54(43)	PE-N: 40003-0222-14 PE-N: 40003-0224-04 PE-D: 40003-1222-14
Right-of-Way	N/A	N/A
Construction	N/A	N/A

Figure 1: Overview Map of the Selected Alternative



**Figure 2: Project Location Map of Design Segment 2 (PIN 101886.02)
of the Selected Alternative**



Project History

An Environmental Assessment (EA) was approved by the Federal Highway Administration (FHWA) on 10/21/2010 for the Selected Alternative (Design Segments 1 and 2). Subsequently, the FONSI was approved by the FHWA on 06/15/2011.

Since approval of the 2010 EA/2011 FONSI, the Selected Alternative (Design Segments 1 and 2) has been divided into two design segments/PINs as listed in the introduction of this Right-of-Way Reevaluation. Table 2 below provides a status update on the NEPA Reevaluations completed since approval of the 2011 FONSI. Refer to Appendix C of this Reevaluation for all previous environmental documentation.

Table 2: Status of NEPA Reevaluations Completed Since Approval of the 2011 FONSI		
Design Segment/PIN	Right-of-Way Reevaluation Approval Date	Construction Reevaluation Approval Date
Design Segment 1 (PIN 101886.01)	Not Applicable	07/03/2017, 06/06/2018
Design Segment 2 (PIN 101886.02)	Focus of this Reevaluation	Not Applicable

Purpose and Need

The purpose of the project is to improve the roadway operation and correct existing safety and geometric deficiencies. The existing route has narrow lanes, minimum shoulders, limited turn lanes, numerous driveways and local road connections, and it is frequently used by farm machinery, which leads to congestion and safety concerns.

For the purpose of this Reevaluation, the Technical Report (dated 04/02/2020), prepared by TDOT's Strategic Transportation Investments Division (STID), which serves as the focus of this Reevaluation, were reviewed and the purpose and need continues to remain valid

Traffic and Safety

Traffic Capacity Analysis

For the purpose of this Reevaluation, TDOT's STID completed a Technical Report on 04/02/2020 for Design Segment 2 (PIN 101886.02) of the Selected Alternative. The 2020 Technical Report evaluated the capacity of existing SR-54 (US-641) for the Base Year (2023) and Design Year (2043) under the No-Build (without the project) and Build³ (with the project) Alternatives.

The Base Year (2023) annual average daily traffic (AADT) is 5,630 vehicles per day. The Design Year (2043) AADT is projected to be 6,760 vehicles per day. The level of service (LOS) for the No-Build and Build Alternatives are shown in Table 3 3.

³ Please note that the "Build Alternative" referenced in the traffic and safety section of this Reevaluation is also Design Segment 2 (PIN 101886.02) of the Selected Alternative.

A LOS analysis was conducted for both the No-Build and Build Alternative for Design Segment 2 (PIN 101886.02) of the Selected Alternative. The operational characteristics of a highway facility are described in terms of a “level of service” which takes into account three critical variables: travel speed, density, and flow rate. There are six levels used to describe LOS ranging from “A” to “F” with “F” being the worst operational condition, meaning that there are breakdowns in traffic and the number of vehicles entering the highway section exceed the capacity or the ability of the highway to accommodate that number of vehicles.

Table 3: Level of Service Analysis						
Segment*		Segment Length (Miles)	Base Year (2023)		Design Year (2043)	
			No-Build LOS	Build LOS	No-Build LOS	Build LOS
1	5-Lane from Near Smith Rd to Paris Bypass (Log Mile (LM) 14.02 to LM 14.87)	0.85	B	A	C	A
2	3-Lane from Paris Bypass to Puryear (LM 14.87 to LM 20.00)	5.13	B	B	C	B
3	3-Lane from Puryear to Near Howard Rd (LM 20.00 to LM 22.24)	2.24	C	C	C	C
<i>*Please note that the three segments described above comprise the entire length of Design Segment 2 (PIN 101886.02) of the Selected Alternative.</i> <i>Source: Technical Report for Design Segment 2 (PIN 101886.02) of the Selected Alternative, April 2020.</i>						

The 2020 Technical Report also noted that previous research (Maryland State Highway Administration and Alabama Department of Transportation) involving comparisons with the daily service volumes in relation to the LOS consistently shows that the daily traffic throughput efficiency would be improved by approximately 20 percent with the addition of a two way left turn lane (TWLTL) on a rural arterial. It should be noted that, per the Highway Capacity Manual (HCM), the addition of a TWLTL is expected to result in an approximate 15 second reduction in delay per left-turning vehicle under the future design year conditions.

Crash Analysis

Utilizing the Enhanced Tennessee Roadway Information Management System (E-TRIMS) database from 07/01/2015 to 06/30/2018, and calculated vehicle miles traveled, a crash rate (crashes per one million vehicle miles) was calculated. Table 4 below shows the crash rates for Design Segment 2 (PIN 101886.02) of the Selected Alternative, from LM 14.02 to LM 22.24.

Table 4: Crash Rates								
Location	Total Crash Rate (A)	> or <	Statewide Average Total	Severe Crash Rate	> or <	Statewide Average Severe	Critical Crash Rate (C)	A/C Ratio
SR-54 (US-641) (Log Mile (LM) 14.02 to LM 22.24)	0.663	<	1.596	0.095	<	0.137	2.01	0.33
<i>Source: Technical Report for Design Segment 2 (PIN 101886.02) of the Selected Alternative, April 2020.</i>								

The existing crash rates for Design Segment 2 (PIN 101886.02) of the Selected Alternative was compared to statewide average crash rates. The calculated 3-year crash rate was 0.663 which was lower than the statewide average of 1.596, and the 3-year severe crash rate was 0.095 which was also lower than the statewide average of 0.137. The Actual-to-Critical (A/C) crash ratio is 0.33. During the study period, 35 crashes were identified for Design Segment 2 (PIN 101886.02) of the Selected Alternative. The majority of the crashes that occurred were rear-end and lane departures. Furthermore, a large percentage of crashes occurred when weather conditions were clear. The narrow roadway typical (i.e., inadequate shoulder widths) of this segment of SR-54 (US-641) may contribute to the number of lane departure crashes and crashes that occur in daylight and clear weather conditions. Contributing roadway factors could be rolling terrain, narrow shoulder widths, and obstructions in the clear zone. The segment under study does not demonstrate a deficiency in the network. All of the crash rates were lower than the statewide averages. There were no fatalities along this section of roadway; however, there were five incapacitating injury crashes.

Future Safety Evaluation

As part of the 2020 Technical Report, a preliminary investigation of the number of crashes and severity distribution was investigated for rural two-lane, two-way roadways to better understand the safety implications of Design Segment 2 (PIN 101886.02) of the Selected Alternative. According to the Crash Modification Factors Clearinghouse, there are six Crash Reduction Factors (CRFs) applicable to Design Segment 2 (PIN 101886.02) of the Selected Alternative. Table 5 below identifies the CRFs and identifies the expected reduction in crashes by CRF type.

Refer to Appendix D of this Reevaluation for a copy of the 2020 Technical Report.

Table 5: Crash Reduction Factors							
Location	Treatment	Crash Type	Crash Severity	Area Type	Crash Modification Factor (CMF)	Crash Reduction Factor (CRF)	Standard Error
Widen paved shoulder from 3 feet (ft) to 10 ft Log Mile (LM) 14.02 to LM 14.87	Widen paved shoulder from 3 ft to 6 ft	All	All	Not Specified	0.820	18.0%	N/A
Widen Paved Shoulder from 3 ft to 10 ft LM 14.87 to LM 20.00	Widen shoulder (shoulder width of 8ft or more)	All	All	Rural	0.771	22.9%	N/A
Widen Paved Shoulder from 3 ft to 4 ft LM 20.00 to LM 22.24	Widen paved shoulder from 3 ft to 4 ft	All	All	Not Specified	0.940	6.0%	N/A
Passing Lanes LM 27.24 to LM 28.43	Install periodic passing lanes on rural two-lane highways	All	All	Rural	0.580	42.0%	0.09
Install two-way left turn lane (TWLTL) LM14.02 to LM 17.87 and LM 19.83 to LM 22.24)	Install TWLTL on rural two-lane roads	All	All	Rural	0.640	36.0%	0.09
Right-turn lane (LM 28.43)	Install right-turn lane	Rear end	All	All	0.700	30.0%	N/A
*CMF is an index of how much crash experience is expected to change following a modification in design or traffic control. CMF's can be found on the CMF Clearinghouse website (www.cmfclearinghouse.org). Source: Technical Report for Design Segment 2 (PIN 101886.02) of the Selected Alternative, April 2020.							

Public Involvement

TDOT held a public hearing for the entire SR-54 (US-641) project from SR-69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear) (PIN 101886.00) on 01/25/2011. Refer to the 2011 FONSI included in Appendix C of this Reevaluation for additional information regarding the 2011 Public Hearing.

Subsequently, for the purpose of this Reevaluation, a public notice for Design Segment 2 (PIN 101886.02) of the Selected Alternative was published in the *Post-Intelligencer* on 02/18/2022 with the comment period ending on 03/11/2022. No comments were received. A copy of the 2022 Public Notice is included in Appendix E of this Reevaluation.

Project Description

Existing Conditions

The existing SR-54 (US-641) is functionally classified as a rural other principal arterial, and the typical section consists primarily of two 12-foot travel lanes in each direction, three-foot paved outside shoulders within 60 feet of existing Right-of-Way. There are eight structures along the project route, including bridges and culverts. The speed limit along the existing roadway in Henry County is posted at 55 miles per hour (mph) from LM 14.02 to LM 20.00 and 40 mph throughout the City of Puryear from LM 20.00 to LM 22.24. Overall, the existing route is in rolling terrain. The existing route has narrow shoulders, limited turn lanes, and numerous driveway and local road connections.

Selected Alternative Description as Presented in the 2011 FONSI

As documented in the 2010 EA/2011 FONSI, the entire SR-54 (US-641) project, from SR-69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear) (PIN 101886.00), consisted of three Sections as depicted in Figure 1 and as described below:

“The beginning of Section I would tie into the existing two-lane roadway at Rison Street. Widening of this route farther south would have serious negative impacts on Paris’s cultural and historic resources in the business district. The typical section from near Rison Street to approximately 0.2 mile north of Rison Street would upgrade the existing two-lane sections of the roadway to a five-lane cross section consisting of two 12-foot inside traffic lanes (one in each direction), two 14-foot outside traffic lanes (one in each direction to accommodate bicycle traffic), one 12-foot center turn lane, and a nonmountable curb and gutter within a variable-width ROW [right-of-way]. Five-foot sidewalks on both sides of the roadway are proposed from the beginning of the project to near Logan Road.

From approximately 0.2 mile north of Rison Street to the old Seaboard Railroad Bridge, which will be removed during construction, nearly the same typical cross section is proposed as the one previously discussed; however, to avoid impacts to the Paris Historic District, a retaining wall and a handrail are proposed on the east side of State Route 54; ROW also varies in this section.

From near the old Seaboard Railroad Bridge to Logan Road, the roadway would consist of four 12-foot traffic lanes, one 12-foot center turn lane, a four-foot bike lane, a five-foot sidewalk on both sides, and a nonmountable curb and gutter within a 96-foot ROW. Sidewalks and bike lanes terminate at Logan Road. Most of the project area is rural and not routinely used by pedestrians; therefore, sidewalks are not being proposed along the entire project.

From Logan Road to Smith Road, the roadway would be a five-lane cross section consisting of four 12-foot traffic lanes, one 12-foot center turn lane, 10-foot shoulders, and a nonmountable curb and gutter within a 104-foot ROW. The old Seaboard Railroad Bridge would be removed as part of the project, and the existing bridge over Jones Bend Creek would be widened.

Design speed for Section I is proposed to be 40 miles per hour (mph) from the beginning of the project to Logan Road and 50 mph from Logan Road to Smith Road.

Section II continues from the end of Section I and ends just north of Park Hill Road. This section would consist of four 12-foot traffic lanes with a 48-foot median and shoulders and ditches, as required, within a 250-foot ROW. From the beginning of Section II to near Vaughn Road, the proposed alignment would be constructed on the east side of the existing route. From Vaughn Road to the end of Section II, the proposed alignment would be constructed on the west side of the existing route. Bridges over the North Fork Obion River and Rowe Creek would be required. A design speed of 60 mph is proposed for this section.

Section III follows the existing route through the city of Puryear, continuing from the end of Section II to Crossland Road/Brannon Lane. From Puryear Country Club Road to Conyersville Road, five-foot sidewalks will be added to each side of the roadway within a 96-foot ROW. The portion from Conyersville Road to just north of Mormon Branch would consist of two 12-foot inside traffic lanes, two 14-foot outside traffic lanes, one 12-foot center turn lane, and a nonmountable curb and gutter within an 88-foot ROW. From north of Mormon Branch to Crossland Road/Brannon Lane, the project would be within a 250-foot ROW. A 40-mph design speed is proposed for Section III.”

It is important to note that Design Segment 2 (PIN 101886.02) of the Selected Alternative, which is the focus of this Reevaluation, falls within the limits of Sections 2 and 3 as described in the 2010 EA/2011 FONSI. Additionally, please note that the nomenclature of “Sections” utilized in the 2010 EA/2011 FONSI is not the same as the nomenclature of “Design Segments” utilized throughout this Reevaluation. Refer to Figure 1 for a Project Overview Map of the Selected Alternative (Design Segments 1 and 2) showing the 2010 EA/2011 FONSI Sections and current Design Segments.

Changes That Have Occurred Since Approval of the 2010 EA/2011 FONSI

Following the 2011 FONSI, TDOT STID prepared a Technical Report on 04/02/2020 for Design Segment 2 (PIN 101886.02) hereinafter referred to as the “current plans” which modified the typical section from a four or five-lane roadway to a three or five-lane roadway in some locations⁴.

A more detailed description of the design features for Design Segment 2 (PIN 101886.02) based on the current plans is outlined below:

- Near Smith Road to SR-218– Widen existing SR-54 (US-641) to an improved rural five lane typical section consisting of four 12-foot travel lanes, a 12-foot two-way left-turn lane, and six-foot paved shoulders using a design speed of 50 mph. Curb and gutter are to be constructed on both sides of the roadway.
- From SR-218 to South of Puryear– Widen existing SR-54 (US-641) to an improved rural three lane typical section consisting of two 12-foot travel lanes, a 12-foot two-way left-turn lane, and ten-foot paved shoulders using a design speed of 60 mph. The bridge over North Fork Obion River at Log Mile 16.47 and the bridge over Rowe Creek at Log Mile 17.13 are proposed to be widened.
- From South of Puryear to North of Puryear– Widen existing SR-54 (US-641) throughout the City of Puryear to an improved rural three lane typical section consisting of two 12-foot travel lanes, a 12-foot two-way left-turn lane, and four-foot paved shoulders utilizing a design speed of 45 mph.
- Passing Lanes – Passing lanes in either direction is proposed in order to provide adequate distance for vehicles, particularly heavy vehicles, to pass slower-moving vehicles.
 - Southbound Passing Lane- Proposed from south of Parkhill Road to north of Wyninger Road.
 - Northbound Passing Lane- Proposed from south of Parkhill Road to south of Puryear Country Club Road.

Refer to Appendix D for a copy of the current plans.

⁴ Please note that within the 2018 Construction Reevaluation prepared for Design Segment 1 (PIN 101886.01) portions of the Selected Alternative will include both four and five lane typical section from near Rison Street to near Smith Road.

Reevaluation of the Environmental Effects

The reevaluation of the environmental effects for Design Segment 2 (PIN 101886.02) of the Selected Alternative included the review of the current plans which are included in Appendix D of this Reevaluation. This document has been updated to include areas not addressed in the 2010 EA/2011 FONSI and/or for which policy or regulations have resulted in the need for updated information or studies.

Of particular interest to this Right-of-Way Reevaluation are the following topics:

Relocation and Right-of-Way Impacts

Right-of-Way Impacts

The 2010 EA inadvertently did not discuss impacts related to specific right-of-way and easement needs for the construction of the Selected Alternative (Design Segments 1 and 2). However, for the purpose of this Reevaluation, preliminary proposed right-of-way amounts were available as part of the current plans, and it was determined that approximately 87.73⁵ acres of right-of-way would be necessary for the construction of Design Segment 2 (PIN 101886.02) of the Selected Alternative.

It is important to note that exact amounts of right-of-way as well as permanent and temporary easements required for construction of Design Segment 2 (PIN 101886.02) of the Selected Alternative are unknown at this time as they would be heavily influenced by the final horizontal alignment which would be determined at a future date and as the project moves forward closer to construction. Refer to Appendix D for a copy of the current plans.

Relocations and Displacements

As documented in the 2010 EA, a conceptual stage relocation plan (CSRP) was prepared for the Selected Alternative (Design Segments 1 and 2). The CSRP indicated that 51 single-family residences, three mobile homes, one church, 14 businesses, and one non-profit organization would be displaced by the construction of the Selected Alternative (Design Segments 1 and 2). Additionally, the CSRP indicated that no farming operations would be displaced by the Selected Alternative (Design Segments 1 and 2).

For the purpose of this Reevaluation, an updated CSRP was prepared for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 07/31/2020. As a result of the 2020 CSRP, it was determined that 13 single family homes, two mobile homes, three multi-family homes, five businesses, and one non-profit are anticipated to be displaced by Design Segment 2 (PIN 101886.02) of the Selected Alternative. No farming operations would be displaced by Design Segment 2 (PIN 101886.02) of the Selected Alternative as currently proposed. Additionally, the 2020 CSRP indicated that there is a limited availability for replacement residential housing and an inadequate supply of available commercial property within the immediate area of Design Segment 2 (PIN 101886.02) of the Selected Alternative.

⁵ This right-of-way estimate was determined by subtracting the existing edge of travel from the proposed permanent right-of-way as presented in the current plans. The proposed right-of-way amount of 87.73 acre includes both old and proposed new right-of-way and is approximate in nature.

However, there is a sufficient supply of replacement housing further south towards Paris, TN and available vacant sites for commercial developments. TDOT will make relocation assistance available to all eligible persons impacted by the Design Segment 2 (PIN 101886.02) of the Selected Alternative.

Refer to Appendix F of this Reevaluation for a copy of the 07/31/2020 CSRP.

Hazardous Materials

As documented in the 2010 EA, six underground storage tank (UST) sites, four large-quantity generators of hazardous waste, and one Superfund site (TN3640006752) were located within the limits of the Selected Alternative (Design Segments 1 and 2). Furthermore, it was determined that only two USTs and two large-quantity generators of hazardous waste would be impacted by the Selected Alternative (Design Segments 1 and 2). No impacts were anticipated for the remaining four USTs, two large-quantity generators of hazardous waste and Superfund site.

For the purpose of this Reevaluation, two asbestos survey reports were completed on 07/16/2019 for Bridge Numbers 40SR0540023 and 40SR0540025. As part of the 2019 Asbestos Survey Report for Bridge Number 40SR0540023, a total of 36 samples were taken. As a result, three of the samples were found to contain asbestos containing materials (ACMs). As part of the 2019 Asbestos Survey Report for Bridge Number 40SR0540025, a total of 39 samples were taken. As a result, three of the samples were found to contain ACMs. Due to the presence of ACMs on both of the subject bridges, environmental commitments have been added to the green sheet of this Reevaluation.

Subsequently, the TDOT Hazardous Materials Section reviewed the current plans for Design Segment 2 (PIN 1018816.02) of the Selected Alternative on 06/24/2020 and provided the following response:

“Based on the Environmental Technical Study Area figures in the Technical Report dated 2 April 2020, several known hazardous materials sites exist along this corridor as listed below. No hazardous material studies are recommended at this time, avoidance or minimization are recommended.

- *Fred’s Mini Mart #33, TDEC UST Facility #7400127, 9200 Highway 641 North, Puryear, TN 38251*
- *Puryear Amoco, TDEC UST Facility #7400028, Highway 641 and 140, Puryear, TN 38251*
- *Jim’s Amoco, TDEC UST Facility #7400113, Highway 641 and 140, Puryear, TN 38251*

Asbestos bridge surveys have been completed on bridges 40SR0540023 and 40SR0540025 (the two indicated to be widened), asbestos was detected, and project commitments EDHZ001 and EDHZ002 have been submitted in PPRM.

Databases reviewed include Google Earth imagery, EPA National Priorities List, EPA EnviroMapper, TDEC Registered Underground Storage Tanks Data and Reports, TDEC Division of Water Resources Public Data Viewer and Oil and Gas Wells database, TDEC Division of Remediation Sites Public Data Viewer, TDOT Integrated Bridge Information System, and others, as necessary.”

Refer to Appendix G of this Reevaluation for a copy of the 2019 Asbestos Survey Reports for Bridge Numbers 40SR0540023 and 40SR0540025, and the TDOT Hazardous Materials Section’s Environmental Studies Request (ESR) response dated 06/24/2020.

Ecology

As part of the 2010 EA, ecology studies were completed for the Selected Alternative (Design Segments 1 and 2). For the purpose of this Reevaluation, an Environmental Boundaries Report (EBR) was prepared for Design Segment 2 (101886.02) of the Selected Alternative on 11/17/2021. The results of the prior ecology studies included in the 2010 EA and the 2021 EBR, as applicable, are summarized below. Refer to Appendix C of this Reevaluation for a copy of the 2010 EA, which includes the previous ecology studies. A copy of the 2021 EBR is included in Appendix H of this Reevaluation.

1. Threatened and Endangered Species

Threatened and endangered species coordination has been conducted with the U.S. Fish and Wildlife Service (USFWS), the Tennessee Wildlife Resources Agency (TWRA) and the Tennessee Department of Environment and Conservation (TDEC) Rare Species Dataviewer and TDEC Division of Natural Heritage (DNH). Results of these coordination efforts are documented below for this Reevaluation as well as previous coordination efforts completed as part of the 2010 EA.

Tennessee Department of Environment and Conservation Rare Species Dataviewer

As documented in the 2010 EA, the TDEC DNH database was reviewed for both federal and state listed threatened and/or endangered species. As a result, it was determined that nine threatened and/or endangered species had potentially suitable habitat within the limits of the Selected Alternative (Design Segments 1 and 2). Refer to the 2010 EA located in Appendix C of this Reevaluation for more details.

As part of the 2021 EBR, a review of the TDEC Rare Species Dataviewer was performed on 10/28/2020 for Design Segment 2 (PIN 101886.02) of the Selected Alternative. As a result, six species were identified within a one-mile radius and three species were identified within a one to four-mile radius of the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative. Refer Table 6 below for details.

U.S. Fish and Wildlife Service Coordination

As documented in the 2010 EA, coordination with the USFWS was originally completed on 06/03/2003 for the Selected Alternative (Design Segments 1 and 2). At the time, the USFWS indicated that they had no record of federally-listed or proposed endangered or threatened species occurring within the impact area of the Selected Alternative (Design Segments 1 and 2) as presented in the 2010 EA and that the requirements of Section 7 of the Endangered Species Act of 1973 had been fulfilled. Refer to the 2010 EA located in Appendix C of this Reevaluation for more details.

As part of the 2021 EBR, coordination with the USFWS was completed on 09/16/2020 for Design Segment 2 (PIN 101886.02) of the Selected Alternative and the following response was received:

“A review of our database does not indicate that any federally listed or proposed species would be impacted by the project. Therefore, based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.”

Refer to Appendix H of this Reevaluation for record of coordination with the USFWS dated 09/16/2020.

Tennessee Wildlife Resources Agency Coordination

The 2010 EA inadvertently did not discuss coordination with the TWRA. However, as a part of this Reevaluation, coordination with the TWRA was initially completed for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 09/29/2020, and the following response was received:

*“I have reviewed the information that you provided regarding the proposed widening of SR-54 from Paris, Puryear and to the state line in Kentucky. Instream work is expected, therefore I am requiring fish and crayfish sweeps to the streams along the project, immediately prior to instream construction to relocate the State Threatened Crescent crayfish - *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter - *Etheostoma pyrrhogaster* (1994) upstream of a barrier to allow for instream work. Thank you for the opportunity to review and comment, please contact me if you need further assistance.”*

Subsequently, TDOT re-coordinated with the TWRA as part of the 2021 EBR. In an email dated 10/13/2021, TDOT proposed the following sweeps in regard to the state-listed crescent crayfish (*Faxonius taylori*) and firebelly darter (*Etheostoma pyrrhogaster*):

“A literature review indicates that the Crescent Crayfish is confined to the North Fork Obion Drainages (Schuster 2008) and the Firebelly Darter is confined to the Obion and Forked Deer Systems (Etnier & Starnes, 1993). The majority of our project is within the North Fork Obion Drainage, but there is a portion in the Upper Clark River Drainage. TDOT proposes to sweep the perennial streams located within the North Fork Obion Drainages for both the Crescent Crayfish and the Firebelly Darter immediately prior to any in-stream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.

This proposal does not include sweeps on the intermittent streams due to lack of suitable habitat or the streams within the Upper Clark Drainage due to those streams being outside the known range of the species. This would result in sweeps on 13 streams along the project corridor if instream work is needed. I have included photographs of the intermittent streams (STR-3, STR-4, STR-5, STR-10, and STR-15) that we do not propose sweeps on. Because of the page numbering, STR-2 is included in the photos that I am forwarding, however, we do propose to sweep this stream.”

Subsequently, the TWRA provided the following email response, dated 11/10/2021, in regard to TDOT's proposal for sweeps related to the state-listed crescent crayfish and firebelly:

"I have reviewed the proposal and agree with your evaluation of not sampling intermittent streams or streams within the Upper Clark drainage. We look forward to assisting TDOT on the proposed sweeps for the listed species (Crescent Crayfish and the Firebelly Darter) on the perennial streams located within the North Fork Obion Drainages."

Refer to Appendix H of this Reevaluation for email coordination with the TWRA dated 09/29/2020, 10/13/2021, and 11/10/2021, respectively.

Table 6: Threatened and Endangered Species Within a One- to Four-Mile Radius of the Limits of the Selected Alternative						
Species	Status		Species Likely Present in Proposed ROW? (Y/N)	Biological Determination/ Accommodations	One-Mile Radius	One-to-Four Mile Radius
	Federal	State				
Shortleaf Rush (<i>Juncus brachyphyllus</i>)	-	S	Yes, Habitat is Present	Best Management Practices (BMPs) are sufficient to protect species.	X	-
Cutleaf Water-Milfoil (<i>Myriophyllum pinnatum</i>)	-	E	Yes, Habitat is Present	BMPs are sufficient to protect species.	X	-
Halberd-Leaf Tearthumb (<i>Polygonum arifolium</i>)	-	T	Yes, Observed During Site Visit	Individuals will be impacted.	X	-
Blue Sage (<i>Salvia azurea</i> var. <i>grandiflora</i>)	-	S	No, Present Habitat is Unsuitable	BMPs are sufficient to protect species.	X	-
Compass Plant (<i>Silphium laciniatum</i>)	-	T	No, Present Habitat is Unsuitable	BMPs are sufficient to protect species.	X	-
Firebelly Darter (<i>Etheostoma pyrrhogaster</i>)	-	D	Yes, Habitat is Present	BMPs are sufficient to protect species.	X	-
Waterpurslane (<i>Didiplis diandra</i>)	-	T	Yes, Observed During Site Visit	Individuals will be impacted.	--	X
Blood River Crayfish (<i>Faxonius burri</i>)	-	E	No, Present Habitat is Unsuitable	BMPs are sufficient to protect species.	--	X
Crescent Crayfish (<i>Faxonius taylori</i>)	-	T	Yes, Habitat is Present	BMPs are sufficient to protect species.	--	X
Acronyms: S = Special Concern; E = Endangered; T = Threatened; D = Deemed in Need of Management Source: Environmental Boundaries Report for Design Segment 2 (PIN 101886.02) of the Selected Alternative, TDOT, 2021.						

2. Aquatic Resources

As documented in the 2010 EA, 15 intermittent/perennial streams (STR), 13 wet-weather conveyances (WWC), and 14 wetlands (WTL) were identified within the limits of the Selected Alternative (Design Segments 1 and 2). Refer to the 2010 EA located in Appendix C of this Reevaluation for more details.

According to the 2021 EBR for Design Segment 2 (PIN 101886.02) of the Selected Alternative, there are 16 perennial STR and six intermittent STR, including two streams, STR-7 (North Fork Obion River) and STR-12 (Rowe Creek) which are classified as High Quality by TDEC. In addition, there are 64 WWCs/ephemeral streams (EPH), 44 WTL, and three ponds (PND) within the project area of Design Segment 2 (PIN 101886.02) of the Selected Alternative. No other water features were identified within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative. Refer to Tables 7 and 8 below for more details.

Table 7: Wetland and Water Resource Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative						
Feature	Type*	Function	Quality	Estimated Impacts** (Acres)		
				Permanent	Temporary	Total
Wetland (WTL)-1	Scrub-Shrub/Forested	Filtration/wildlife habitat	Moderate	0.06	0.0	0.06
WTL-2	Emergent	Filtration/particulate retention	Moderate	0.16	0.0	0.16
WTL-3	Emergent/Forested	Filtration/wildlife habitat	Moderate	1.0	0.0	1.0
WTL-4	Emergent	Filtration of stormwater runoff	Moderate	0.05	0.0	0.05
WTL-5	Forested	Filtration/wildlife habitat	High	0.22	0.0	0.22
WTL-6	Forested	Filtration/wildlife habitat	High	0.32	0.0	0.32
WTL-7	Emergent	Filtration of stormwater runoff	Low	0.03	0.0	0.03
WTL-8	Forested	Filtration/wildlife habitat	High	0.21	0.0	0.21
WTL-9	Scrub-Shrub/Forested	Filtration/wildlife habitat	Moderate	0.39	0.0	0.39
WTL-10	Forested	Filtration/wildlife habitat	High	1.40	0.0	1.40
WTL-11	Forested	Particulate retention/wildlife habitat	High	1.16	0.0	1.16
WTL-12	Emergent	Filtration of stormwater runoff	Low	0.01	0.0	0.01
WTL-13	Forested	Particulate retention/wildlife habitat	High	0.62	0.0	0.62
WTL-14	Scrub-Shrub/Forested	Particulate retention/wildlife habitat	Moderate	2.88	0.0	2.88
WTL-15	Scrub-Shrub	Filtration of stormwater runoff	Moderate	1.01	0.0	1.01
WTL-16	Emergent	Filtration of stormwater runoff	Moderate	0.85	0.0	0.85
WTL-17	Emergent	Filtration of stormwater runoff	Undetermined	0.01	0.0	0.01
WTL-18	Emergent	Filtration of stormwater runoff	Moderate	0.22	0.0	0.22
WTL-19	Emergent	Filtration of stormwater runoff	Moderate	0.11	0.0	0.11

Table 7: Wetland and Water Resource Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative					
Feature	Type*	Function	Quality	Estimated Impacts** (Acres)	
				Permanent	Temporary
WTL-20	Forested	Filtration/wildlife habitat	High	0.08	0.0
WTL-21	Emergent	Filtration of stormwater runoff	Moderate	0.01	0.0
WTL-22	Emergent	Filtration of stormwater runoff	Low	0.03	0.0
WTL-23	Emergent	Filtration of stormwater runoff	Low	0.01	0.0
WTL-24	Forested	Filtration/wildlife habitat	Moderate	0.12	0.0
WTL-25	Emergent	Filtration of stormwater runoff	Moderate	0.02	0.0
WTL-26	Forested	Particulate retention/wildlife habitat	Moderate	0.04	0.0
WTL-27	Emergent	Filtration of stormwater runoff	Moderate	0.47	0.0
WTL-28	Emergent	Filtration of stormwater runoff	Moderate	0.42	0.0
WTL-29	Drained Open Water	Filtration of stormwater runoff	Undetermined	0.07	0.0
WTL-30	Emergent	Filtration of stormwater runoff	Undetermined	0.18	0.0
WTL-31	Emergent	Filtration of stormwater runoff	Low	0.03	0.0
WTL-32	Emergent	Filtration of stormwater runoff	Undetermined	0.05	0.0
WTL-33	Emergent	Filtration of stormwater runoff	Undetermined	0.01	0.0
WTL-34	Emergent	Filtration of stormwater runoff	Undetermined	0.03	0.0
WTL-35	Emergent	Filtration of stormwater runoff	Low	0.01	0.0
WTL-36	Emergent	Filtration of stormwater runoff	Low	0.04	0.0
WTL-37	Emergent/Forested	Filtration/wildlife habitat	Moderate	0.33	0.0
WTL-38	Forested	Filtration/wildlife habitat	High	0.02	0.0

Table 7: Wetland and Water Resource Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative						
Feature	Type*	Function	Quality	Estimated Impacts** (Acres)		
				Permanent	Temporary	Total
WTL-39	Emergent/Forested	Filtration/wildlife habitat	High	0.52	0.0	0.52
WTL-40	Emergent	Filtration of stormwater runoff	Low	0.05.	0.0	0.05
WTL-41	Emergent	Filtration of stormwater runoff	Low	0.08	0.0	0.08
WTL-42	Emergent	Filtration of stormwater runoff	Low	0.04	0.0	0.04
WTL-43	Scrub-Shrub	Filtration of stormwater runoff	Moderate	0.07	0.0	0.07
WTL-44	Emergent	Filtration of stormwater runoff	Low	0.01	0.0	0.01
Pond (PND) - 1	Open Water	Filtration of stormwater runoff	Undetermined	0.76	0.0	0.76
PND-2	Open Water	Filtration of stormwater runoff	Undetermined	0.18	0.0	0.18
PND-3	Open Water	Filtration of stormwater runoff	Undetermined	0.02	0.0	0.02
Total Permanent Wetland Impact (Acre)				13.44		
Total Temporary Wetland Impact (Acre)				0.00		
Total Pond Impact Permanent (Acre)				0.96		
Total Pond Impact Temporary (Acre)				0.00		
*Identification of features has not been reviewed by regulatory agencies and determinations of wetland type could possibly be changed.						
**Estimated impacts are considered "preliminary" and will not be accurate until the time of permit application.						
Source: <i>Environmental Boundaries Report for Design Segment 2 (PIN 101886.02) of the Selected Alternative, TDOT, 2021.</i>						

Table 8: Stream Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative				
Feature	Type*	Quality	Estimated Impacts** (Linear Feet)	
			Permanent	Total
Stream (STR)-1	Perennial	Not Supporting	122	122
STR-2 (Three-mile Branch)	Perennial	Not Supporting	353	353
STR-3	Intermittent	Undetermined at this time	20	20
STR-4	Intermittent	Undetermined at this time	52	52
STR-5	Intermittent	Not Assessed	651	651
STR-6	Perennial	Not Assessed	63	63
STR-7 (North Fork Obion River)	Perennial	Not Assessed	299	299
STR-8	Perennial	Not Assessed	150	150
STR-9	Perennial	Not Assessed	325	325
STR-10	Intermittent	Not Assessed	70	70
STR-11	Perennial	Not Assessed	146	146
STR-12 (Rowe Creek)	Perennial	Not Assessed	326	326
STR-13	Perennial	Not Assessed	217	217
STR-14	Perennial	Not Assessed	100	100
STR-15	Intermittent	Not Assessed	350	350
STR-16	Perennial	Not Assessed	336	336
STR-17	Perennial	Not Assessed	44	44
STR-18	Perennial	Not Assessed	62	62
STR-19	Perennial	Not Assessed	207	207
STR-20	Perennial	Not Assessed	405	405
STR-21	Intermittent	Not Assessed	465	465
STR-22	Perennial	Not Assessed	195	195

Table 8: Stream Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative				
Feature	Type*	Quality	Estimated Impacts** (Linear Feet)	
			Permanent	Total
Wet Weather Conveyances (WWC)-01/ Ephemeral (EPH)-01	Ephemeral	Undetermined at this time	659	659
WWC-02/EPH-02	Ephemeral	Undetermined at this time	140	140
WWC-03/EPH-03	Ephemeral	Undetermined at this time	240	240
WWC-04/EPH-04	Ephemeral	Undetermined at this time	255	255
WWC-05/EPH-05	Ephemeral	Undetermined at this time	489	489
WWC-06/EPH-06	Ephemeral	Undetermined at this time	197	197
WWC-07/EPH-07	Ephemeral	Undetermined at this time	76	76
WWC-08/EPH-08	Ephemeral	Undetermined at this time	71	71
WWC-09/EPH-09	Ephemeral	Undetermined at this time	167	167
WWC-10/EPH-10	Ephemeral	Undetermined at this time	42	42
WWC-11/EPH-11	Ephemeral	Undetermined at this time	43	43
WWC-12/EPH-12	Ephemeral	Undetermined at this time	125	125
WWC-13/EPH-13	Ephemeral	Undetermined at this time	111	111
WWC-14/EPH-14	Ephemeral	Undetermined at this time	69	69
WWC-15/EPH-15	Ephemeral	Undetermined at this time	117	117
WWC-16/EPH-16	Ephemeral	Undetermined at this time	226	226
WWC-17/EPH-17	Ephemeral	Undetermined at this time	177	177
WWC-18/EPH-18	Ephemeral	Undetermined at this time	75	75
WWC-19/EPH-19	Ephemeral	Undetermined at this time	13	13
WWC-20/EPH-20	Ephemeral	Undetermined at this time	31	31
WWC-21/EPH-21	Ephemeral	Undetermined at this time	65	65
WWC-22/EPH-22	Ephemeral	Undetermined at this time	183	183
WWC-23/EPH-23	Ephemeral	Undetermined at this time	16	16

Table 8: Stream Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative				
Feature	Type*	Quality	Estimated Impacts** (Linear Feet)	
			Permanent	Total
WWC-24/EPH-24	Ephemeral	Undetermined at this time	109	109
WWC-25/EPH-25	Ephemeral	Undetermined at this time	275	275
WWC-26/EPH-26	Ephemeral	Undetermined at this time	243	243
WWC-27/EPH-27	Ephemeral	Undetermined at this time	168	168
WWC-28/EPH-28	Ephemeral	Undetermined at this time	51	51
WWC-29/EPH-29	Ephemeral	Undetermined at this time	221	221
WWC-30/EPH-30	Ephemeral	Undetermined at this time	231	231
WWC-31/EPH-31	Ephemeral	Undetermined at this time	443	443
WWC-32/EPH-32	Ephemeral	Undetermined at this time	67	67
WWC-33/EPH-33	Ephemeral	Undetermined at this time	48	48
WWC-34/EPH-34	Ephemeral	Undetermined at this time	56	56
WWC-35/EPH-35	Ephemeral	Undetermined at this time	138	138
WWC-36/EPH-36	Ephemeral	Undetermined at this time	138	138
WWC-37/EPH-37	Ephemeral	Undetermined at this time	182	182
WWC-38/EPH-38	Ephemeral	Undetermined at this time	60	60
WWC-39/EPH-39	Ephemeral	Undetermined at this time	369	369
WWC-40/EPH-40	Ephemeral	Undetermined at this time	400	400
WWC-41/EPH-41	Ephemeral	Undetermined at this time	262	262
WWC-42/EPH-42	Ephemeral	Undetermined at this time	282	282
WWC-43/EPH-43	Ephemeral	Undetermined at this time	63	63
WWC-44/EPH-44	Ephemeral	Undetermined at this time	48	48
WWC-45/EPH-45	Ephemeral	Undetermined at this time	120	120
WWC-46/EPH-46	Ephemeral	Undetermined at this time	212	212
WWC-47/EPH-47	Ephemeral	Undetermined at this time	286	286

Table 8: Stream Impacts for Design Segment 2 (PIN 101886.02) of the Selected Alternative				
Feature	Type*	Quality	Estimated Impacts** (Linear Feet)	
			Permanent	Total
WWC-48/EPH-48	Ephemeral	Undetermined at this time	109	109
WWC-49/EPH-49	Ephemeral	Undetermined at this time	79	79
WWC-50/EPH-50	Ephemeral	Undetermined at this time	53	53
WWC-51/EPH-51	Ephemeral	Undetermined at this time	36	36
WWC-52/EPH-52	Ephemeral	Undetermined at this time	170	170
WWC-53/EPH-53	Ephemeral	Undetermined at this time	173	173
WWC-54/EPH-54	Ephemeral	Undetermined at this time	341	341
WWC-55/EPH-55	Ephemeral	Undetermined at this time	86	86
WWC-56/EPH-56	Ephemeral	Undetermined at this time	87	87
WWC-57/EPH-57	Ephemeral	Undetermined at this time	24	24
WWC-58/EPH-58	Ephemeral	Undetermined at this time	251	251
WWC-59/EPH-59	Ephemeral	Undetermined at this time	513	513
WWC-60/EPH-60	Ephemeral	Undetermined at this time	49	49
WWC-61/EPH-61	Ephemeral	Undetermined at this time	65	65
WWC-62/EPH-62	Ephemeral	Undetermined at this time	245	245
WWC-63/EPH-63	Ephemeral	Undetermined at this time	163	163
WWC-64/EPH-64	Ephemeral	Undetermined at this time	66	66
Total Stream Impact Permanent (Linear Feet)			4,958	
Total Stream Impact Temporary (Linear Feet)			0	
Total Wet Weather Conveyance/Ephemeral Stream Impact Permanent (Linear Feet)			10,569	
Total Wet Weather Conveyance/Ephemeral Stream Impact Temporary (Linear Feet)			0	

*Identification of features has not been reviewed by regulatory agencies and determinations of wetland type could possibly be changed.

**Estimated impacts are considered "preliminary" and will not be accurate until the time of permit application.

Source: *Environmental Boundaries Report for Design Segment 2 (PIN 101886.02) of the Selected Alternative, TDOT, 2021.*

Throughout the design process, TDOT will endeavor to mitigate impacts to streams, wetlands, or any other jurisdictional water features through avoidance and minimization. Where impacts cannot be avoided or sufficiently minimized, compensatory mitigation for permanent stream impacts would be accomplished either through permittee-responsible mitigation, mitigation banking, or In-Lieu Fee mitigation to satisfy statutory requirements.

3. TDOT Ecology Section Coordination

For the purpose of this Reevaluation, the TDOT Ecology Section reviewed the current plans for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 11/17/2021 and provided the following response:

“An Environmental Boundaries Report covering the project location was produced on November 17, 2021 and is available on Filenet. Coordination with TWRA, TDEC, and the USFWS is included in the EBR.”

Refer to Appendix H of this Reevaluation for a copy of the 2021 EBR and the TDOT Ecology Section’s ESR response dated 11/17/2021.

Floodplain Management

As documented in the 2010 EA, the Selected Alternative (Design Segments 1 and 2) does cross several blue line streams and their floodplains where beneficial floodplain values for aquatic and/or terrestrial wildlife can be found. The 2010 EA further concluded that the Selected Alternative (Design Segment 1 and 2) would have no major encroachment of floodplains and it was not anticipated that the beneficial floodplain values would be adversely impacted.

For the purpose of this Reevaluation, the current plans were reviewed, and it was determined that portions of Design Segment 2 (PIN 101886.02) of the Selected Alternative are located in or near a Federal Emergency Management Agency (FEMA) defined floodplain; however, there is no detailed study. The design of the roadway system will be consistent with the Memorandum of Understanding (MOU) between FHWA and FEMA and with the floodplain management criteria set forth in the National Flood Insurance Regulations (NFIR) of Title 44 of the CFR. It will be consistent with the requirements of floodplain management guidelines for implementing Executive Order 11988 and FHWA guidelines 23 CFR 650A. Design Segment 2 (PIN 101866.02) of the Selected Alternative is located on Flood Insurance Rate Map (FIRM) in Henry County, Panel 200 of 500 on Map Number 47079C0200E and Panel 305 of 500 on Map Number 47079C0305E. Refer to Appendix I of this Reevaluation for the FEMA FIRMs.

Air Quality

As documented in the 2010 EA, TDOT evaluated carbon monoxide levels of comparable projects with similar meteorological conditions and determined that the Selected Alternative (Design Segments 1 and 2) would likely fall below the National Ambient Air Quality Standard (NAAQS). Additionally, the Selected Alternative (Design Segments 1 and 2) was evaluated for Mobile Source Air Toxics (MSATs) and determined that local levels of MSATs may increase during construction; however, these impacts would likely be reduced overtime due to the benefits provided by the Selected Alternative (Design Segments 1 and 2). Refer to the 2010 EA located in Appendix C of this Reevaluation for additional details.

For the purpose of this Reevaluation, the TDOT Air and Noise Section reviewed the current plans for Design Segment 2 (PIN 101866.02) of the Selected Alternative on 04/08/2022 and provided the following response:

“TDOT Conducted an air quality evaluation for the larger SR-54 project from State Route 69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear), Henry County in the Environmental Assessment (EA) that was approved on October 21, 2010. TDOT is now conducting a reevaluation for the section of the project Near Smith Road to Near Howard Road (North of Puryear) in Henry County.

The air quality statements in the EA were reviewed to determine if they remain valid for the current plans. The results for transportation conformity and Mobile Source Air Toxics (MSATs) are summarized below.

Transportation Conformity

Henry County remains in attainment for all regulated criteria pollutants. Therefore, the project is not subject to transportation conformity.

Mobile Source Air Toxics (MSATs)

The MSATs evaluation was updated per FHWA’s ‘Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents’ dated October 2016 and is attached⁶. The project remains a “Project with Low Potential Mobile Source Air Toxic (MSAT) Effects” and is not predicted to create adverse MSAT effects.

Greenhouse Gas Emissions (Climate Change)

The potential change in GHG [greenhouse gas] emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those impacts would not have been meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. The project is not predicted to have adverse climate change effects.

Construction Activity

Construction activities will generate intermittent and temporary construction-related pollutant emissions and dust. TDOT’s construction specifications (TDOT, 2021) apply to this project, construction procedures will be governed by the Standard Specifications for Road and Bridge Construction as issued by TDOT and as amended by the most recent applicable supplements. All construction equipment shall be maintained, repaired, and adjusted to keep it in full satisfactory condition.

Indirect and Cumulative Effects

The forecasted traffic volumes for most projects typically account for any redistribution of traffic that would occur as a result of the project. Therefore, the air quality analysis addresses any indirect traffic-related air quality effects that might occur. Additionally, the forecast traffic volumes include expected traffic growth and other planned and programmed projects in the area. As a result, the air quality analysis addresses the traffic-related cumulative air quality effects of the project.”

⁶ Refer to Appendix J for a copy of the Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents dated October 2016.

Refer to Appendix J of this Reevaluation for a copy of the TDOT Air and Noise Section's ESR response dated 04/08/2022.

Noise

As documented in the 2010 EA, TDOT originally conducted a noise evaluation for the Selected Alternative (Design Segments 1 and 2). The noise evaluation analyzed noise impacts to sensitive receptors throughout the limits of the Selected Alternative (Design Segments 1 and 2), based on the 23 CFR Part 772 and the *Tennessee Policy on Highway Traffic Noise Abatement*.

As a result of the evaluation, it was determined that although noise would likely increase throughout the limits of the Selected Alternative (Design Segments 1 and 2); however, the impacts would be less than five decibels (dBA) and minor in nature. In addition, noise abatement was evaluated and found to be neither reasonable or feasible for the Selected Alternative (Design Segments 1 and 2).

For the purpose of this Reevaluation, a Noise Technical Report was completed for Design Segment 2 (PIN 101886.02) of the Selected Alternative in December 2020. Subsequently, the TDOT Air and Noise Section reviewed the current plans for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 04/08/2022 and provided the following statement:

"The State Route 54 (SR-54) project from near Smith Road to Near Howard Road (north of Puryear) is a Type I project in accordance with the Federal Highway Administration (FHWA) noise regulation, Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772. The project requires a noise study to identify noise impacts and to evaluate noise abatement for those impacts. The noise study was conducted in accordance with the Tennessee Department of Transportation's Policy on Highway Traffic Noise Abatement (TDOT's noise policy) and Section 5.3.4 (Noise) of the Tennessee Environmental Procedures Manual.

The study determined that the project would create traffic noise impacts. The impacted land uses include 23 residences and a daycare center playground. Noise abatement was evaluated to mitigate the predicted noise impacts in accordance with TDOT's noise policy. For noise barriers to be included in a project, they must be determined to be both feasible and reasonable. SR-54 is not a limited access facility. The impacted residences and daycare playground will have direct access to SR-54 via a private driveway or local road intersection. Noise barriers are not feasible to mitigate impacts at these properties because a noise barrier would limit access from the impacted properties and adjacent properties. Therefore, noise abatement is not proposed for this project.

Statement of Likelihood

Abatement is not proposed for this project.

Construction Activities

Construction activities may generate intermittent and temporary noise above existing noise levels. The noise levels resulting from construction activities will depend on types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by TDOT's noise policy. The procedures in TDOT's Standard Specifications for Road and Bridge Construction will help minimize construction noise effects.

Information for Local Officials

Some tracts of undeveloped land exist in the project area. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers, to practice noise compatibility planning to avoid future noise impacts. The “Information of Local Officials” section of this report provides additional information on noise levels for undeveloped lands, noise compatibility planning.”

Refer to Appendix J of this Reevaluation for a copy of the 2020 Noise Technical Report and for a copy of the TDOT Air and Noise Section’s ESR response dated 04/08/2022.

Farmland

As documented in the 2010 EA, a farmland analysis was completed for the Selected Alternative (Design Segments 1 and 2) in October 2009. The analysis and correspondence with the Natural Resources Conservation Service (NRCS) concluded that the approximately 81 acres of prime and unique farmland proposed to be converted to a transportation use as a result of the Selected Alternative (Design Segments 1 and 2). As a result of the analysis the Selected Alternative (Design Segments 1 and 2) would receive minimal consideration for protection, and no additional sites needed to be evaluated.

For the purpose of this Reevaluation, an updated site assessment was prepared for Design Segment 2 (PIN 101886.02) of the Selected Alternative in February 2022. As part of the site assessment, coordination with the NRCS was completed on 02/11/2022 and it was determined that Design Segment 2 (PIN 101668.02) of the Selected Alternative would impact approximately 11.6 acres of prime and unique farmland. Based on this information, Design Segment 2 (PIN 101886.02) received a Farmland Conversion Impact Rating of 119 points.

Sites receiving a Farmland Conversion Impact Rating of less than 160 are not given further consideration for protection and no additional sites need to be evaluated. This finding is consistent with the 2010 EA.

Refer to Appendix K of this Reevaluation for record of coordination with the NRCS and for the completed Farmland Conversion Impact Rating Form (CPA-106).

Section 4(f)

As documented in the 2010 EA, two National Register of Historic Places (NRHP) eligible or listed properties (North Poplar Street Historic District and the Paris Gymnasium and Auditorium) were identified within the limits of the Selected Alternative (Design Segments 1 and 2). However, the Tennessee State Historic Office (TN-SHPO) subsequently determined that the Selected Alternative (Design Segments 1 and 2) would not adversely affect the North Poplar Street Historic

District and the Paris Gymnasium and Auditorium. Therefore, the Selected Alternative (Design Segments 1 and 2) would not be subject to the provisions of Section 4(f) of the Department of Transportation Act of 1966.

For the purpose of this Reevaluation, the current plans were reviewed, and it was determined that North Poplar Street Historic District and the Paris Gymnasium and Auditorium are both located within the limits of Design Segment 1 (PIN 101886.01) of the Selected Alternative, which is not the focus of this Reevaluation. Therefore, Design Segment 2 (PIN 101886.02) of the Selected

Alternative would not require the use of any properties protected under the Department of Transportation Act's Section 4(f) provisions.

Section 6(f)

The 2010 EA inadvertently did not include language regarding the Department of Interior's Land and Water Conservation Fund (LWCF) Section 6(f) provisions.

For the purpose of this Reevaluation, the current plans were reviewed, and it was determined that Design Segment 2 (PIN 101886.02) of the Selected Alternative would not require the acquisition or use of any properties protected under the Department of Interior's LWCF Section 6(f) provisions.

Cultural Resources/Section 106 Coordination

Historical/Architectural Resources

As documented in the 2010 EA, two NRHP eligible or listed properties (North Poplar Street Historic District and the Paris Gymnasium and Auditorium) were identified within the limits of the Selected Alternative (Design Segments 1 and 2). In order to minimize the impacts to the two aforementioned properties, TDOT proposes to hold the edge of pavement consistent with existing SR-54 (US-641) on the eastern side, where the subject properties are located, and widen the road entirely to the western side.

Subsequently, the TN-SHPO concurred with TDOT's design proposal and determined that the Selected Alternative (Design Segments 1 and 2) would not adversely affect the North Poplar Street Historic District and the Paris Gymnasium and Auditorium in a letter dated 11/26/2003. It is important to note that the NRHP eligible or listed North Poplar Street Historic District and Paris Gymnasium and Auditorium are both located within the limits of Design Segment 1 (PIN 101886.01) of the Selected Alternative, which is not the focus of this Reevaluation. Refer to the 2010 EA included in Appendix C of this Reevaluation for more details.

For the purpose of this Reevaluation, a Historical and Architectural Survey was completed for Design Segment 2 (PIN 101886.02) of the Selected Alternative in June 2021. As part of the 2021 Historical and Architectural Survey, historians inventoried properties within the area of potential effect (APE) for Design Segment 2 (PIN 101886.02) of the Selected Alternative. The 2021 Historical and Architectural Survey identified eight properties which met the TN-SHPO's criteria of a historic property. Subsequently, it was determined that none of the properties within the APE are currently listed on the NRHP. However, the Puryear Commercial Historic District, was identified as an eligible historic district but is located two blocks west of SR-54 (US-641) and due to the limited scope of widening through Puryear, the property would likely not be impacted by Design Segment 2 (PIN 101886.02) of the Selected Alternative.

The TN-SHPO reviewed the 2021 Historical and Architectural Survey on 09/29/2021 and provided the following statement:

"Based on the information provided, we are unable to make an eligibility determination for the Puryear Commercial Historic District. However, even if the Puryear Commercial Historic District were to be eligible for listing in the National Register of Historic Places, the proposed project would have no adverse effect to the district.

This office has no objection to the implementation of this project as currently planned."

Subsequently, the TDOT Cultural Resources Section reviewed the current plans for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 11/15/2021 and provided the following statement:

“In a letter dated 09/29/2021, the TN-SHPO concurred that there are no architectural resources eligible for listing in the National Register of Historic Places that would be affected by the proposed project.”

Refer to Appendix L of this Reevaluation for a copy of the 2021 Historical and Architectural Survey, TN-SHPO letter dated 09/29/2021, and the TDOT Cultural Resources (Historic Preservation) Section’s ESR response dated 11/15/2021.

Archaeological Resources

As documented in the 2010 EA, a Phase I Archaeological Assessment was completed for the Selected Alternative (Design Segments 1 and 2) in 2003. As a result of the 2003 Phase I Archaeological Assessment, 28 archaeological locations were recorded and investigated. Subsequently, 24 of the aforementioned archaeological locations were recommended not eligible for listing in the NRHP because they lacked the potential to yield important information. One of the sites⁷, a historic cemetery, is recommended for avoidance.

The remaining three sites (Sites 40HY150, 40HY152, and 40HY153) were recommended as potentially eligible for listing in the NRHP under Criterion D⁸ based on the likelihood of small Mississippian farmsteads being present. After further review of the site data, the evaluation of Site 40HY152 was changed from potentially eligible to ineligible for the NRHP. Phase II testing at Site 40HY150 and 40HY153 was conducted in 2007, and further recommended the aforementioned sites be found not eligible for NRHP nomination. Refer to the 2010 EA included in Appendix C of this Reevaluation for more details.

Subsequently, the TN-SHPO provided the following statement in a letter dated 02/25/2008:

“Based on the information provided, we find that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places. Archaeological sites 40HY150, 40HY152, and 40HY153 do not warrant additional archaeological investigation.”

For the purpose of this Reevaluation, TDOT Cultural Resources Section reviewed the current plans for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 07/06/2020 and confirmed that the TN-SHPO letter dated 02/25/2008 remains valid.

Refer to Appendix L of this Reevaluation for a copy of the TN-SHPO letter dated 02/25/2008 and the TDOT Cultural Resources (Archaeology) Section’s ESR response dated 07/06/2020.

Native American Consultation

As documented in the 2010 EA, Native American Consultation (NAC) was completed and project information and an invitation to participate was sent to all applicable tribes with interests in the vicinity of the Selected Alternative (Design Segments 1 and 2). As a result, no responses were received. Refer to the 2010 EA included in Appendix C of this Reevaluation for more details.

⁷ It is important to note that the 2010 EA inadvertently did not include the name or identifying number for the referenced historic cemetery.

⁸ Criterion D refers to sites that have yielded or may be likely to yield, information important in history or prehistory.

For the purpose of this Reevaluation, NAC for Design Segment 2 (PIN 101886.02) of the Selected Alternative was initiated on 07/07/2020. Project information and an invitation to participate in the Section 106 process as a consulting party was distributed to the following tribes:

- Absentee-Shawnee Tribe of Indians in Oklahoma
- Cherokee Nation
- The Chickasaw Nation
- Eastern Shawnee Tribe of Oklahoma
- Shawnee Tribe
- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee Indians in Oklahoma

The Chickasaw Nation provided the following response on 07/09/2020:

"We accept the invitation to consult under Section 106 of the National Historic Preservation Act. The Chickasaw Nation is in support of the proposed undertaking and is not presently aware of any specific historic properties, including those of traditional religious and cultural significance, that will be impacted by these projects."

In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA [American Rescue Plan Act], AIRFA [American Indian Religious Freedom Act], NEPA [National Environmental Policy Act], NAGPRA [Native American Graves Protection and Repatriation Act], NHPA [National Historic Preservation Act], and Professional Standards."

Subsequently, cultural resources reports were sent to the Chickasaw Nation on 11/09/2020. As of 11/09/2020, no other responses were received.

Furthermore, the TDOT Cultural Resources Section reviewed the current plans for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 11/09/2021 and provided the following response:

"An invitation to participate in the Section 106 process was sent on July 7, 2020 to all federally recognized Native American tribes with interests in the subject county."

The Chickasaw Nation responded and accepted the invitation to be a consulting part on July 9, 2020. Reports were sent to this consulting party on November 9, 2021."

TDOT will re-initiate consultation if additional cultural resources studies are required or if archaeological materials or human remains are discovered during construction."

(Following guidance issued on April 8, 2020 by the Advisory Council on Historic Preservation (ACHP) in response to the COVID-19 outbreak, federal agencies are to remain flexible regarding federally recognized Native American tribes' Section 106 review responsibilities. The ACHP's guidance furthermore indicates that federal agencies may not foreclose on the statutory rights afforded to federally recognized Native American tribes under the National Historic Preservation Act and regulations implementing Section 106 of the Act. As several federally recognized Native American tribes with interests in Tennessee have indicated that their ability to carry out their Section 106 review responsibilities is diminished or otherwise limited, it should be expected that tribal responses for the subject project may be received subsequent to the date of this ESR and that any such response may require additional information, fieldwork, or coordination with any or all tribes and, perhaps, the SHPO and/or ACHP. An updated ESR will be provided in the event

that any additional responses are received, along with updated Section 106 documentation, if any.)”

Subsequent to the conclusion of the Section 106 process the Chickasaw Nation provided the following response on 11/12/2021:

“Thank you for the Archaeological Assessments, Historic/Architectural Assessments, and SHPO letters regarding the proposed projects in Tennessee listed below. This letter is a continuation of consultation under Section 106 of the National Historic Preservation Act. We concur with the findings of no adverse effects to historic or cultural properties.”

Refer to Appendix L of this Reevaluation for a copy of the Chickasaw Nation’s Letters dated 07/09/2020 and 11/12/2021, the 2020 Section 106 Initial Coordination Package, and a copy of the TDOT Cultural Resources (NAC) Section’s ESR response dated 11/09/2020.

Environmental Justice

As documented in the 2010 EA, and Environmental Justice (EJ) evaluation was previously completed for the Selected Alternative (Design Segments 1 and 2). The EJ evaluation identified one low-income EJ population and determined that the project would not have a disproportionately high and adverse effect on the EJ population as compared to other populations within the limits of the Selected Alternative (Design Segments 1 and 2).

For the purpose of this Reevaluation, an EJ Analysis was completed for Design Segment 2 (PIN 101886.02) of the Selected Alternative utilizing recent (2015-2019) ACS 5-Year Estimates data. The analysis was completed to identify the census tracts (CT) and block groups (BG) within the limits of Design Segment 2 (PIN 101886.02) and determine whether the minority and/or low-income populations present within the BGs are considered EJ populations.

This analysis identified the following CTs and BGs within the limits of Design Segment 2 (PIN 101886.02) in Henry County:

- CT 9691, BG 1, BG 2, BG 3; and
- CT 9696, BG 1.

Minority populations include Black or African American, Hispanic, Asian American, American Indian or Alaskan Native, and Native Hawaiian or Pacific Islander. Low-income populations include those with household income at or below the poverty guidelines published yearly by the U.S. Department of Health and Human Services.

During analysis of the populations present within each BG, two threshold indicators were used to identify and report EJ populations: [1] the minority and/or low-income population percentage for a given BG exceeds the county average by 10 percentage points or more and/or [2] the minority and/or low-income population percentage exceeds 50 percent or more of the overall BG population.

Minority Populations

As shown in Table 9, the 2015-2019 ACS 5-Year Estimates data shows that the minority population percentage for Henry County is 12.7 percent. For BGs within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative, minority populations range from 2.7 percent (CT 9691, BG 1) to 18.8 percent (CT 9696, BG 1).

Based on this EJ analysis, none of minority populations within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative exceed the county average by more than 10 percentage points and no minority populations comprise more than 50 percent of the total population within the identified block groups. Therefore, based on the threshold indicators described above, none of the BGs are considered to have minority EJ populations.

Low-Income Populations

As shown in Table 9, the 2015-2019 ACS 5-Year Estimates data shows that the low-income population percentage for Henry County is 20.1 percent. Within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative, low-income populations range from 8.8 percent (CT 9691, BG 1) to 27.1 percent (CT 9691, BG 3).

Based on this EJ analysis, none of the low-income populations within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative exceed the county average by more than 10 percentage points and no low-income populations comprise more than 50 percent of the total population within the identified block groups. Therefore, none of the BGs are considered to have low-income EJ populations.

Conclusion

Based on the updated EJ analysis conducted, it was determined that impacts resulting from construction of Design Segment 2 (PIN 101886.02) of the Selected Alternative would not result in disproportionately high and adverse impacts to any EJ populations with respect to human health and the environment. TDOT acknowledges that minority and low-income populations are present within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative. While there would be some adverse impacts from the project, including impacts from construction and other minor environmental impacts, there is not a disproportionately high and adverse effect to EJ populations when compared to the impacts borne by all populations in and around of Design Segment 2 (PIN 101886.02) of the Selected Alternative.

TDOT has made every effort to minimize impacts to the surrounding community, including minority and low-income communities within the limits of Design Segment 2 (PIN 101886.02) of the Selected Alternative. It is intended that all individuals regardless of race, ethnicity, or economic status, would share equally in the benefits of Design Segment 2 (PIN 101886.02) of the Selected Alternative, including improved roadway operations and correcting existing safety and geometric deficiencies.

Refer to Appendix M of this Reevaluation for a copy of the 2015-2019 ACS 5-Year Estimates Data.

Table 9: Minority and Low-Income Population Percentages and EJ Determination for Design Segment 2 (PIN 101886.02) of the Selected Alternative					
Minority Populations					
Census Tract (CT)/Block Group (BG)	CT 9691 BG 1	CT 9691 BG 2	CT 9691 BG 3	CT 9696 BG 1	Henry County
Total Population	1,005	872	1,133	1,423	32,284
% Minority/Non-White	2.7%	10.2%	5.4%	18.8%	12.7%
Exceeds County Average by 10% or More	No	No	No	No	N/A
Is BG Population Average >50%?	No	No	No	No	N/A
Meet EJ Criteria?	No	No	No	No	N/A
Low-Income Populations					
Census Tract (CT)/Block Group (BG)	CT 9691 BG 1	CT 9691 BG 2	CT 9691 BG 3	CT 9696 BG 1	Henry County
Total Population	1,005	840	1,118	1,423	31,720
% Low-Income/Below Poverty Line	8.8%	22.6%	27.1%	17.2%	20.1%
Exceeds County Average by 10% or More	No	No	No	No	N/A
Is BG Population Average >50%?	No	No	No	No	N/A
Meet EJ Criteria?	No	No	No	No	N/A
N/A = Not Applicable U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates.					

Bicycle and Pedestrian

As documented in the 2010 EA, the Selected Alternative (Design Segment 1 and 2) would not be specifically marked for pedestrian and bicycle traffic but would include paved shoulders and/or 14-foot outside lines which would accommodate bicycles.

For the purpose of this Reevaluation, the TDOT Multimodal Transportation Resources Division reviewed the current plans for Design Segment 2 (PIN 101886.02) of the Selected Alternative on 08/24/2020 and provided the following response:

“The majority of this project is in a rural area where this is a lack of need and prudence in providing multimodal accommodations. The section passing through Puryear provides 4’ shoulders, which is appropriate for occasional cyclist and pedestrian traffic, and is appropriate for the land use, travel speeds, and AADT in the area.”

Refer to Appendix N of this Reevaluation for a copy of the TDOT Multimodal Transportation Resources Division’s ESR response dated 08/24/2020.

Environmental Commitments

Nine environmental commitments (8 project specific) were included in the 2011 FONSI. The following five environmental commitments are requested to be vacated from since the commitments qualify as TDOT Standard Practice:

1. The project will be developed in accordance with TDOT's Standard Specifications for Road and Bridge Construction, which addresses sediment and erosion control and siltation; channelization; floodplains; construction impacts; utility relocation; and traffic maintenance and detours. Best Management Practices will be stringently implemented throughout the construction period.
2. Dumping of chemicals, fuels, lubricants, bitumen's, raw sewage, or other harmful waste into or alongside of streams or impoundments, or into natural or manmade channels leading thereto, will be prohibited.
3. If previously undiscovered archaeological material is found during construction, all construction will cease in that area and the Tennessee Division of Archaeology and the recognized Native American Tribes will be contacted so a representative can have the opportunity to examine and evaluate the material.
4. TDOT will develop a wetland mitigation plan that will be coordinated with the appropriate permit and resource agencies. The final decision in consultation with permit agencies will be made before application is made for a USACE Section 404 Permit.
5. TDOT will conduct further hydrological and geomorphologic surveys during the design and permitting phases of the project to ensure that any floodplain impacts are minimized to the fullest extent possible.

The following environmental commitment was included in the 2011 FONSI and is also requested to be vacated since the historic cemetery referenced is located on Alternative B from the approved EA, which was not the Selected Alternative identified in the 2011 FONSI.

6. The historic cemetery located within the proposed project corridor will be avoided.

The following environmental commitment was included in the 2011 FONSI and is relevant to only Design Segment 1 (PIN 101886.01) of the Selected Alternative, which is not the focus of this Reevaluation.

7. To protect the two historic properties eligible or listed on the National Register of Historic Places in Paris (i.e., Paris Gymnasium and Auditorium and North Poplar Street Historic District) TDOT will hold the edge of pavement on the eastern side of SR-54 (US-641) and only widen the road on the western side opposite the historic properties.

The following environmental commitments were included in the 2011 FONSI and are requested to be vacated from Design Segment 2 (PIN 101886.02) of the Selected Alternative per coordination with the TDOT Ecology Section dated 04/06/2022, which can be found in Appendix H of this Reevaluation.

8. Vegetation clearing for the project will be limited to the minimum area required for construction of the project and disturbed areas will be revegetated with native species. Fill slopes will be constructed and stabilized during the growing season with the establishment of non-invasive vegetation.
9. Disturbed areas will be revegetated in a timely manner to hold soil movement to a minimum.

The following environmental commitments are newly identified and will be included on the Green Sheet of this Reevaluation and are applicable to Design Segment 2 (PIN 101886.02) of the Selected Alternative only:

1. EDHZ001. Asbestos Containing Material (ACM) surveys were completed on the following bridges and asbestos was detected.
 - Bridge No. 40SR0540023, SR-54 over North Fork Obion River [Log Mile] LM 16.47 (40-SR054-16.47). The bridge has asbestos (3% chrysotile) in 150 square feet of bearing pad material between the girders and bents.
 - Bridge No. 40SR0540025, SR-54 over Rowe Creek LM 17.13 (40-SR054-17.13). The bridge has asbestos (3% chrysotile) in 150 square feet of bearing pad material between the girders and bents.
2. EDHZ002. The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2015) Sections 107.08 D and 202.03).
3. TDOT has committed to sweep the perennial streams located within the North Fork Obion Drainages for both the State Threatened crescent crayfish (*Orconectes taylori*) (2007) and the State-Deemed-in-need of Management species firebelly darter (*Etheostoma pyrrhogaster*) (1994) immediately prior to any instream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.
4. TDOT has committed to minimize impacts on Wetland (WTL) 9, WTL-10, and WTL-11 due to the presence of the state listed threatened halberd-leaf tearthumb (*Polygonum arifolium*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.
5. TDOT has committed to minimize impacts on Wetland (WTL) 36, WTL-41, and WTL-42 due to the presence of the state listed threatened water purslane (*Didiplis diandra*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.

Conclusion

Based on the findings of this Right-of-Way Reevaluation, the basic setting of the affected and existing environment has not been altered and the project is of essentially the same character as previously studied, with no substantial modifications of land use or new development.

The anticipated impacts have not substantially changed and the examination of the 2020 Technical Report (which provides an ETSA) for Design Segment 2 (PIN 101886.02) of the Selected Alternative indicated that there have been no new environmental consequences or effects not presented and/or discussed in the 2011 FONSI that would invalidate earlier approvals or significantly affect the quality of the environment.

In regard to these conclusions, TDOT believes the 2011 FONSI remains valid for the requested Administrative action. A space below is provided for your concurrence.

Sincerely Yours,

Sam Patterson Digitally signed by Sam Patterson
Date: 2022.05.19 09:25:45 -05'00'

Samuel Patterson
Environmental Supervisor, TDOT Environmental Division

Concurrence:

GILBERTO DE LEON Digitally signed by GILBERTO DE LEON
Date: 2022.05.26 14:41:09 -05'00'

Gilberto De León P.E.
Acting Deputy Division Administrator
Federal Highway Administration, TN Division

cc: Tammy Sellers
John Kahle
Gary Scruggs
Seth Henderson

Enclosures: Appendices

List of Appendices

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Appendix B – Project Mapping

Appendix C – Previous Environmental Documentation

Appendix D – Technical Report (dated 04/02/2020)

Appendix E – Public Involvement

Appendix F – Conceptual Stage Relocation Plan

Appendix G – Hazardous Materials

Appendix H – Ecology

Appendix I – Floodplains

Appendix J – Air Quality and Noise

Appendix K – Farmland

Appendix L – Cultural Resources and Section 106 Coordination

Appendix M – Environmental Justice

Appendix N – Multimodal

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix A
PIN 101886.02
STIP Page

PNO:	2040020	ESTIP	20402054784	LEAD AGENCY	TDOT
PIN:	101886.02	TIP #:		TOTAL PROJECT COST	\$103,300,000
ROUTE	SR-54	COUNTY	HENRY		

TERMINI	LENGTH (mi.)	8.22
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FROM NEAR SMITH ROAD TO NEAR HOWARD ROAD (NORTH OF PURYEAR) (IA)

PROJECT DESCRIPTION

CONSTRUCT 3-LANES, INCLUDING ONE SEGMENT OF PASSING LANES, ON 5-LANE ROW

REMARK	
---------------	--

FY	PNO	PHASE	FDCODE	TOTDOLLARS	FED\$	STA\$	LOC\$
2020	2040020	PE-N	NHPP	200,000	160,000	40,000	
2020	2040020	PE-D	NHPP	2,400,000	1,920,000	480,000	



Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix B

PIN 101886.02

Project Mapping

- Selected Alternative as Presented in the 2011 Finding of No Significant Impact (FONSI)
- Design Segment 2 (PIN 101886.02) of the Selected Alternative
- Design Segment 1 (PIN 101886.01) of the Selected Alternative
- Separate SR-54 Improvements Project (PIN 101886.05)

Limits of separate SR-54 Project
From Near Howard Road
to the Kentucky State Line
(PIN 101886.05)

Note that the northern terminus of
Design Segment 2 (PIN 101886.02) has been
changed from Crossland Road/Brannon Lane
to Near Howard Road to tie into a separate
SR-54 improvements project that extends along
SR-54 from near Howard Road to the
Kentucky State Line (PIN 101886.05).

Design Segment 2 (PIN 101886.02)
From Near Smith Road to
Near Howard Road (North of Puryear)

Design Segment 1 (PIN 101886.01)
From Near Rison Street
to near Smith Road

As noted in the 2011 FONSI, the portion from
SR-69 (Wood Street) to Rison Street does not
include any improvements due to the potential
adverse effects any improvements would have
on the City of Paris's cultural and historic
resources found within the business district.

OVERVIEW MAP

0 1.5 3
Miles



PROJECT

STATE ROUTE 54 (US-641)

From SR-69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee, PIN 101886.00



Legend

Design Segment 2 (PIN 101886.02) of the Selected Alternative

End Project

HOWARD ROAD

PURYEAR

140

140

54

641

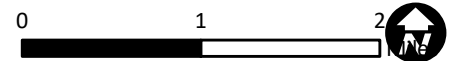
69

218

SMITH ROAD

Begin Project

PROJECT LOCATION MAP



PROJECT

State Route 54 (US-641)

From Near Smith Road to Near Howard Road (North of Puryear)
Henry County, Tennessee, PIN 101886.02

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix C
PIN 101886.02
Previous Environmental Documentation

FINDING OF NO SIGNIFICANT IMPACT

State Route 54 (U.S. Highway 641)

**From State Route 69/Wood Street in Paris
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee**

**PIN 101886.01
PE No. 40003-1213-14**



June 2011

Finding of No Significant Impact

State Route 54 (U.S. Highway 641)
from State Route 69/Wood Street in Paris
to
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

Submitted pursuant to 42 U.S.C. 4332(2) (C)

by the

US Department of Transportation
Federal Highway Administration

and

the Tennessee Department of Transportation.
Environmental Division

Cooperating Agencies:
Tennessee Valley Authority
U.S. Army Corps of Engineers

Finding of No Significant Impact

State Route 54 (U.S. Highway 641)
from State Route 69/Wood Street in Paris
to
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

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The FHWA has determined that the preferred build alternative will not have any significant impact on the human environment. This Finding of No Significant Impact is based on the approved Environmental Assessment, which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the needs, environmental issues and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The FHWA takes full responsibility for the accuracy, scope and content of the EA approved on October 21, 2010. This FONSI should not be reviewed independent of the approved EA.

6/15/2011
Date of Approval


Federal Highway Administration

The following persons may be contacted for additional information concerning this document:

Charles J. O'Neill
Planning and Program Management
Federal Highway Administration
404 BNA Drive, Suite 508
Nashville, TN 37217
(615) 781-5770

Mrs. Ann Andrews
Transportation Manager II
Environmental Division
Tennessee Department of Transportation
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, TN 37243-0334
(615) 741-5373

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Executive Summary

General Project Description

The Tennessee Department of Transportation (TDOT) proposes to improve the overall safety and operation of an 11.8-mile-long portion of existing State Route 54 (U.S. 641) from State Route 69/Wood Street in Paris to Crossland Road/Brannon Lane (north of Puryear) in Henry County, Tennessee. The southern terminus is located at State Route 69/Wood Street; however, proposed construction begins at Rison Street due to expected adverse impacts on cultural and historic resources in the Paris business district if construction were to begin at Wood Street. The northern terminus is located north of Puryear at Crossland Road/Brannon Lane. During project development, the northern terminus was changed from near the Kentucky/Tennessee state line to its current location to accommodate future project decisions as State Route 54 (U.S. 641) approaches Hazel, Kentucky. This will allow the state of Kentucky to develop their portion of US 641 and not restrict their decision on where to develop and locate their alignments. Once the state of Kentucky develops their section of US 641, Tennessee could at a later time extend SR-54/US 641 to the north.

The purpose of the project is to improve the roadway operation and correct existing safety and geometric deficiencies. The existing route has narrow lanes, minimum shoulders, limited turn lanes, numerous driveway and local road connections, and it is frequently used by farm machinery, which leads to congestion and safety concerns. The roadway would be widened from two to four traffic lanes and a center turn lane. TDOT has received no notification of any major proposed actions in the project area by other federal agencies, and there are no physical constraints, such as topography or environmental impacts, that prevent the route from being improved.

A section of the project is listed in the *Tennessee State Transportation Improvement Program* (STIP), Fiscal Years 2011 through 2014.

SAFETEA-LU Statute of Limitations

“A Federal Agency may publish a notice in the Federal Register, pursuant to 23 USC 139(1), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within a shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.”

ENVIRONMENTAL MITIGATION COMMITMENTS

The project will be developed in accordance with TDOT's *Standard Specifications for Road and Bridge Construction*, which addresses sediment and erosion control and siltation; channelization; flood plains; construction impacts; utility relocation; and traffic maintenance and detours. Best Management Practices will be stringently implemented throughout the construction period.

Project-specific environmental commitments are outlined below:

- Vegetation clearing for the project will be limited to the minimum area required for construction of the project and disturbed areas will be revegetated with native species. Fill slopes will be constructed and stabilized during the growing season with the establishment of non-invasive vegetation.
- Disturbed areas will be revegetated in a timely manner to hold soil movement to a minimum.
- Dumping of chemicals, fuels, lubricants, bitumens, raw sewage, or other harmful waste into or alongside of streams or impoundments, or into natural or manmade channels leading thereto, will be prohibited.
- To protect the two historic properties eligible or listed on the National Register of Historic Places in Paris (i.e., Paris Gymnasium and Auditorium and North Poplar Street Historic District) TDOT will hold the edge of pavement on the eastern side of State Route 54 and only widen the road on the western side opposite the historic properties.
- The historic cemetery located within the proposed project corridor will be avoided.
- If previously undiscovered archaeological material is found during construction, all construction will cease in that area and the Tennessee Division of Archaeology and the recognized Native American Tribes will be constructed so a representative can have the opportunity to examine and evaluate the material.
- TDOT will develop a wetland mitigation plan that will be coordinated with the appropriate permit and resource agencies. The final decision in consultation with permit agencies will be made before application is made for a USACE Section 404 Permit.
- TDOT will conduct further hydrological and geomorphologic surveys during the design and permitting phases of the project to ensure that any floodplain impacts are minimized to the fullest extent practicable.

Summary of Alternatives

The alternatives that were under consideration in the Environmental Assessment (EA) included the No-Build Alternative and two Build Alternatives, designated as Alternatives A and B.

TDOT proposes to improve an 11.8-mile segment of existing SR 54. The proposed segment under study begins at the intersection with Rison Street in Paris and extends to just north of Puryear in Henry County. The project corridor is divided into three study sections. Alternative A is approximately 11.8 miles in length, and Alternative B is approximately 12.3 miles in length. From the beginning of the project, Alternatives A and B are on the same location for 7.8 miles. From that point, Alternative A is 4.0 miles to the end of the project, while Alternative B is 4.5 miles to the end of the project. Sections I, part of II, and most of III-A would follow the present route. Section III-B provides a bypass alternative around the east side of the town of Puryear.

With the exceptions of Sections I, part of II, and most of III-A within the city limits of Puryear, the proposed alignment would be constructed on or either east or west of the existing route. The shift from one side to another would minimize impacts and reduce the number of residences acquired for right-of-way (ROW). It would also allow traffic to be maintained during construction. The existing roadway is in poor condition and would not be salvaged in areas where the existing alignment is not followed. Widening of Sections I and III-A within the city limits of Puryear is nearly symmetrical along the existing alignment, but will avoid certain areas as much as feasible.

The beginning of Section I would tie into the existing two-lane roadway at Rison Street. Widening of this route farther south would have serious negative impacts on Paris's cultural and historic resources in the business district. The typical section from near Rison Street to approximately 0.2 mile north of Rison Street would upgrade the existing two-lane sections of the roadway to a five-lane cross section consisting of two 12-foot inside traffic lanes (one in each direction), two 14-foot outside traffic lanes (one in each direction to accommodate bicycle traffic), one 12-foot center turn lane, and a nonmountable curb and gutter within an variable-width ROW (Figure 2). Five-foot sidewalks on both sides of the roadway are proposed from the beginning of the project to near Logan Road.

From approximately 0.2 mile north of Rison Street to the old Seaboard Railroad Bridge, which will be removed during construction, nearly the same typical cross section is proposed as the one previously discussed; however, to avoid impacts to the Paris Historic District, a retaining wall and a handrail are proposed on the east side of State Route 54; ROW also varies in this section.

From near the old Seaboard Railroad Bridge to Logan Road, the roadway would consist of four 12-foot traffic lanes, one 12-foot center turn lane, a four-foot bike lane, a five-foot sidewalk on both sides, and a nonmountable curb and gutter within a 96-foot ROW (Figure 3). Sidewalks and bike lanes terminate at Logan Road. Most of the project area is rural and not routinely used by pedestrians; therefore, sidewalks are not being proposed along the entire project.

From Logan Road to Smith Road, the roadway would be a five-lane cross section consisting of four 12-foot traffic lanes, one 12-foot center turn lane, 10-foot shoulders, and a nonmountable curb and gutter within a 104-foot ROW (Figure 4). The old Seaboard Railroad Bridge would be removed as part of the project, and the existing bridge over Jones Bend Creek would be widened.

Design speed for Section I is proposed to be 40 miles per hour (mph) from the beginning of the project to Logan Road and 50 mph from Logan Road to Smith Road.

Section II continues from the end of Section I and ends just north of Park Hill Road. This section would consist of four 12-foot traffic lanes with a 48-foot median and shoulders and ditches, as required, within a 250-foot ROW (Figure 5). From the beginning of Section II to near Vaughn Road, the proposed alignment would be constructed on the east side of the existing route. From Vaughn Road to the end of Section II, the proposed alignment would be constructed on the west side of the existing route. Bridges over the North Fork Obion River and Rowe Creek would be required. A design speed of 60 mph is proposed for this section.

Section III-A follows the existing route through the city of Puryear, continuing from the end of Section II to Crossland Road/Brannon Lane. From Puryear Country Club Road to Conyersville Road, five-foot sidewalks will be added to each side of the roadway within a 96-foot ROW. The portion from Conyersville Road to just north of Mormon Branch would consist of two 12-foot inside traffic lanes, two 14-foot outside traffic lanes, one 12-foot center turn lane, and a nonmountable curb and gutter within an 88-foot ROW. From north of Mormon Branch to Crossland Road/Brannon Lane, the project would be within a 250-foot ROW as described below in Section III-B. A 40-mph design speed is proposed for Section III-A.

Like Section III-A, Section III-B continues from the northern terminus of Section II and also ends at Crossland Road/Brannon Lane. However, this alternative provides an alignment on a new location that bypasses Puryear to the east. The typical section around Puryear would consist of four 12-foot traffic lanes, a 48-foot median, and shoulders and ditches, as required, within a 250-foot ROW. A 60-mph design speed is proposed for this area. The crossing at Mormon Branch would require a bridge or major drainage structure.

Preferred Build Alternative –Alternative A

TDOT has selected Alternative A for the following reasons:

1. Public Input and Support from Local Officials: Feedback received from the public and local officials supported Build Alternative A (see Appendix A of this document);
2. Fewer Impacts: Build Alternative A has fewer farmland, wetland, and floodplain impacts; and
3. Cost: Build Alternative A is shorter, requires less ROW, and costs less than Build Alternative B.

ENVIRONMENTAL ASSESMENT
WIDENING/RECONSTRUCTION OF
STATE ROUTE 54 (U.S. 641)

Figure 1
Preferred Build Alternative
Alternative A

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

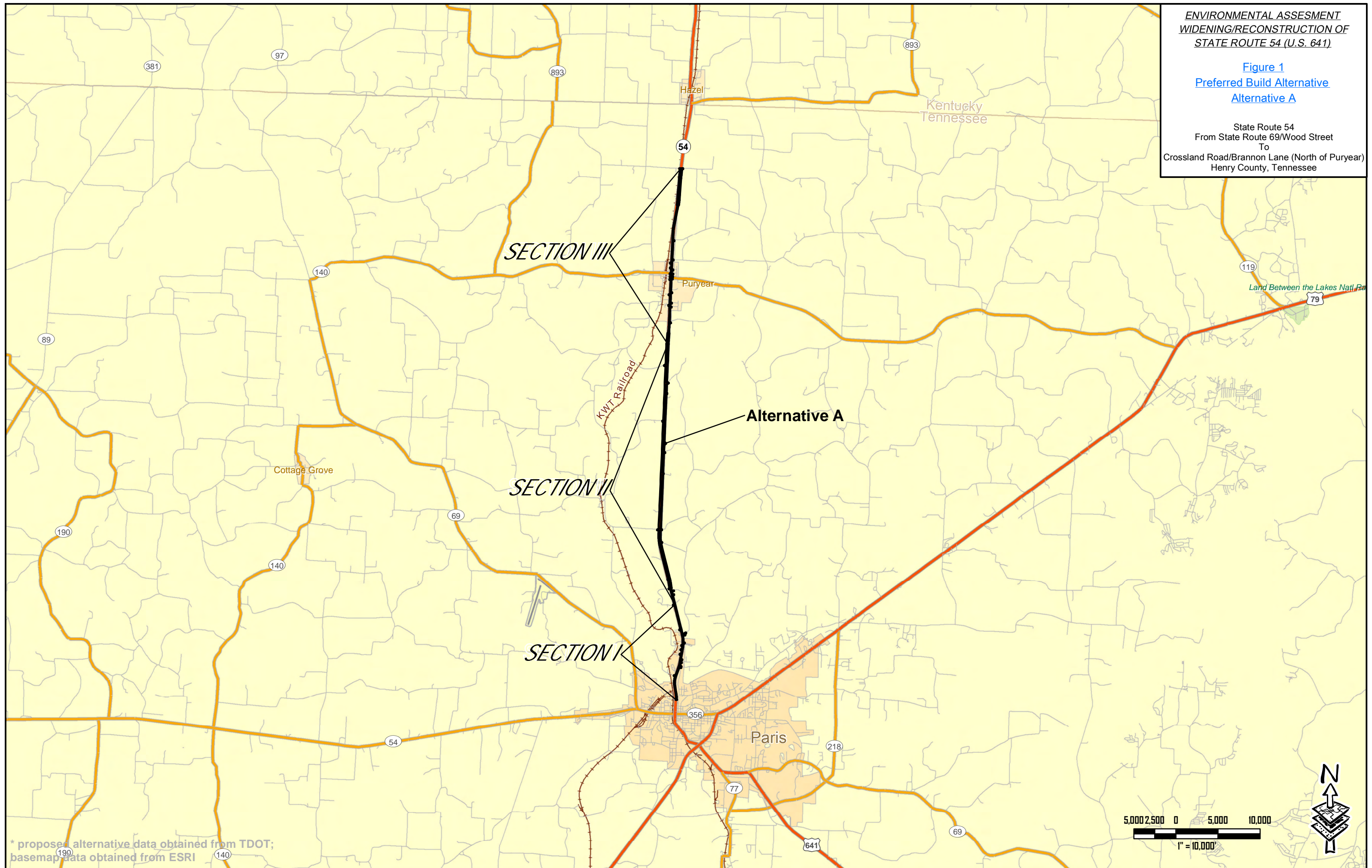


Figure 2
State Route 54 (U.S. 641)

Alternatives A & B:
From Rison Street to
Old Railroad Bridge in Historic District
(Handrail from 0.2 mile north of Rison Street to Old Railroad Bridge)

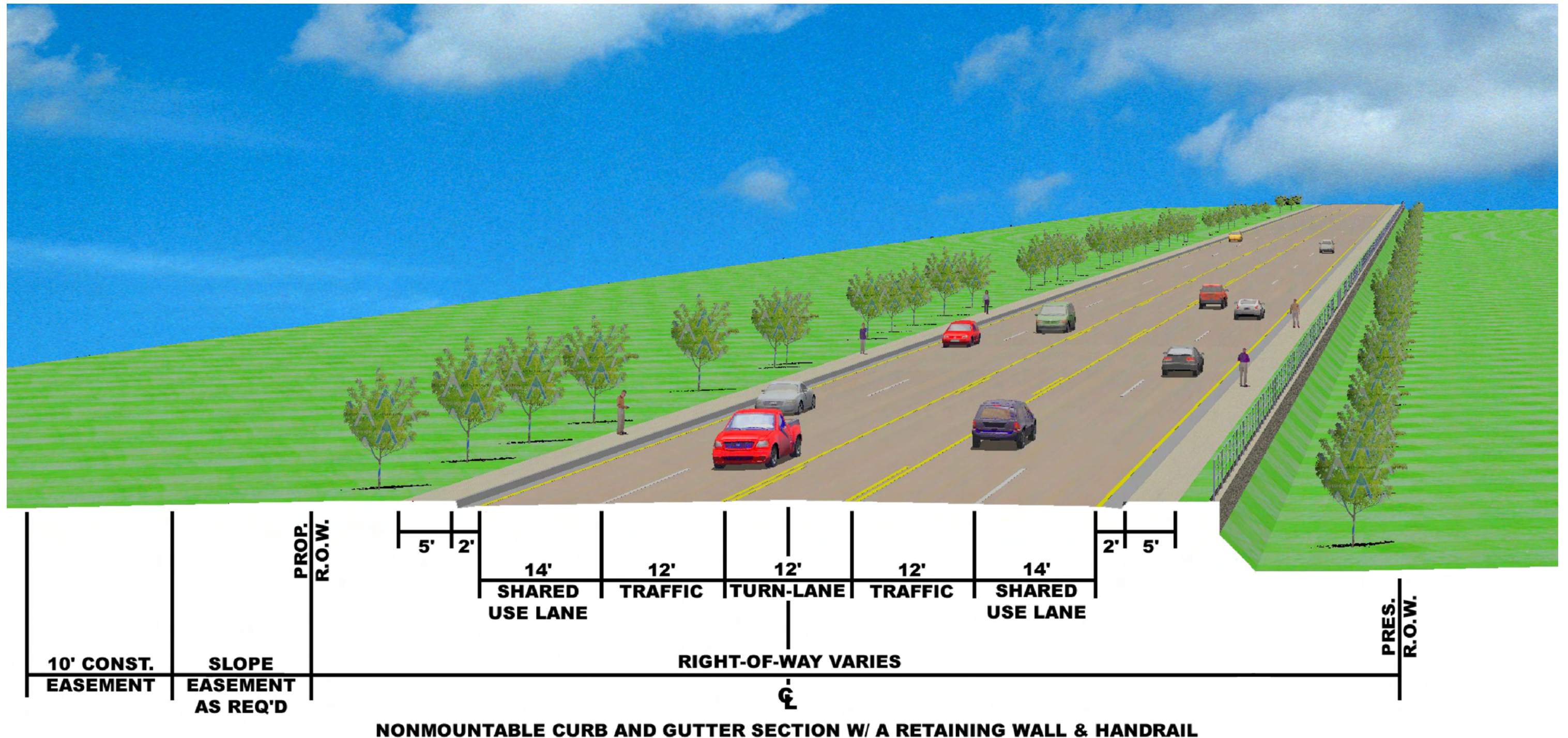


Figure 3
State Route 54 (U.S. 641)

Alternatives A & B:
From Old Railroad Bridge to Logan Road

Alternative A:
Puryear Country Club Road to Conyersville Road

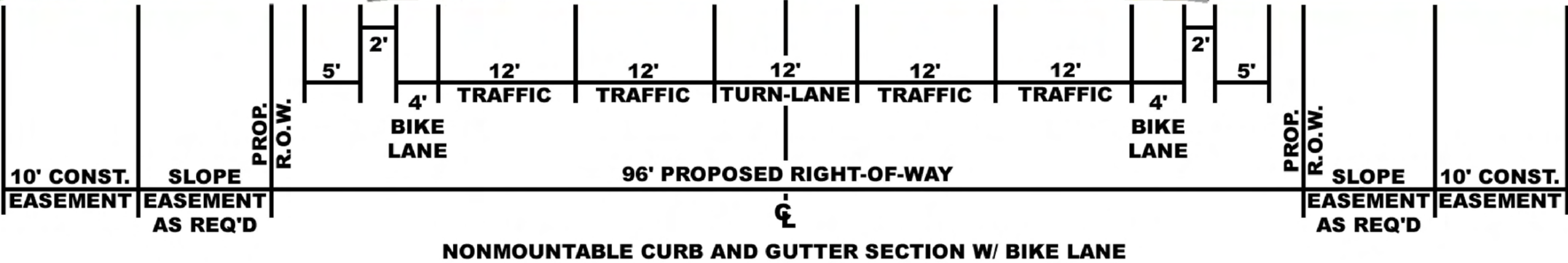
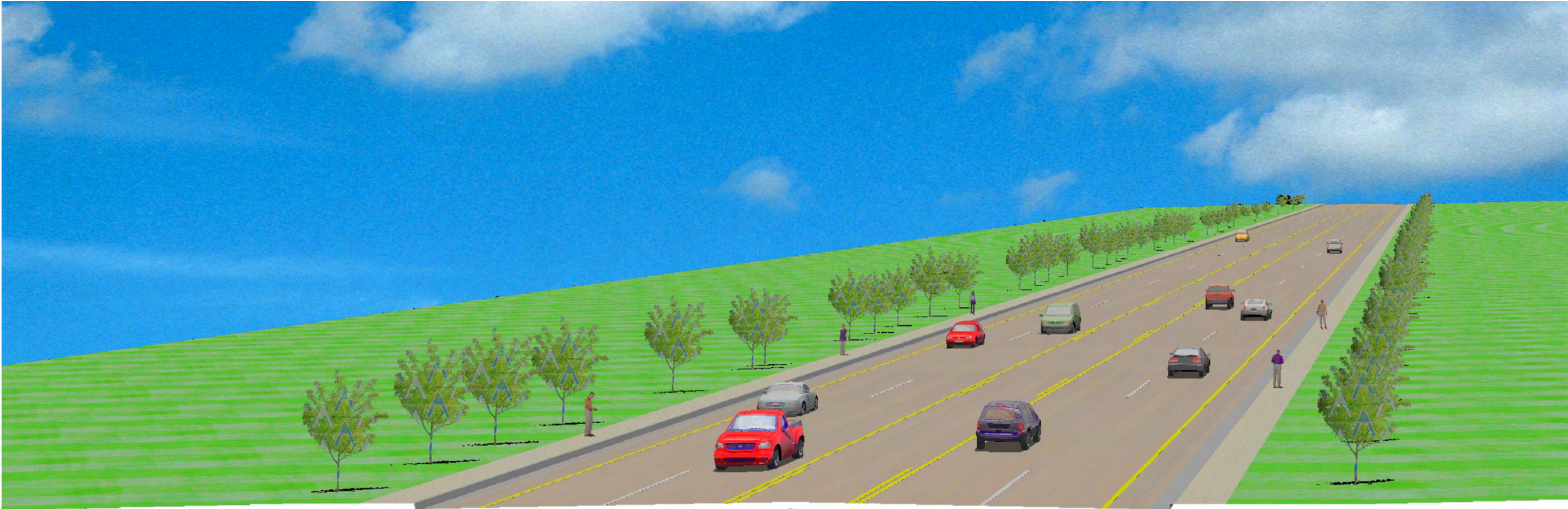
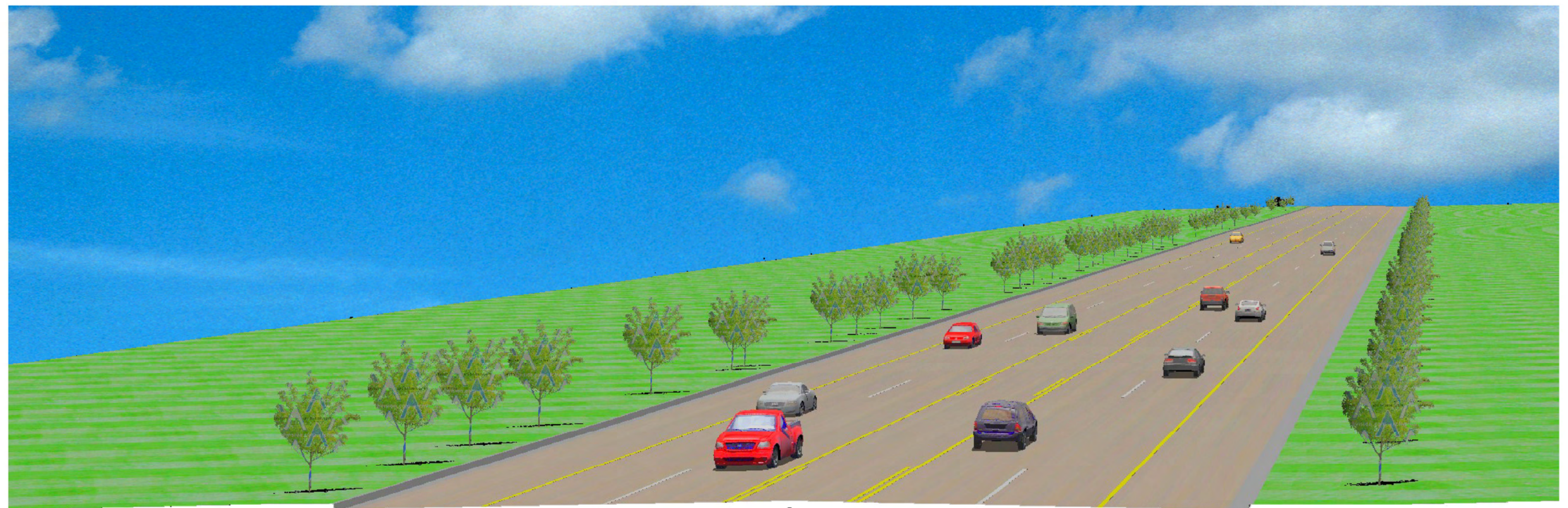


Figure 4 State Route 54 (U.S. 641)

Alternatives A & B:
From Logan Road to Smith Road



10' CONST. EASEMENT	SLOPE EASEMENT AS REQ'D	PROP. R.O.W.	6'	2'	10'	12'	12'	12'	12'	12'	12'	10'	2'	6'	PROP. R.O.W.	SLOPE EASEMENT AS REQ'D	10' CONST. EASEMENT		
			104' PROPOSED RIGHT-OF-WAY																
						SHOULDER TRAFFIC TRAFFIC TURN-LANE TRAFFIC TRAFFIC SHOULDER													
NONMOUNTABLE CURB AND GUTTER SECTION W/ 10' SHOULDER																			

Figure 5
State Route 54 (U.S. 641)

Alternative A:
From Smith Road To South of Puryear Country Club Road and
From North of Morman Branch to Crossland Road/Brannon Lane

Alternative B:
From Smith Road
To Crossland Road/Brannon Lane

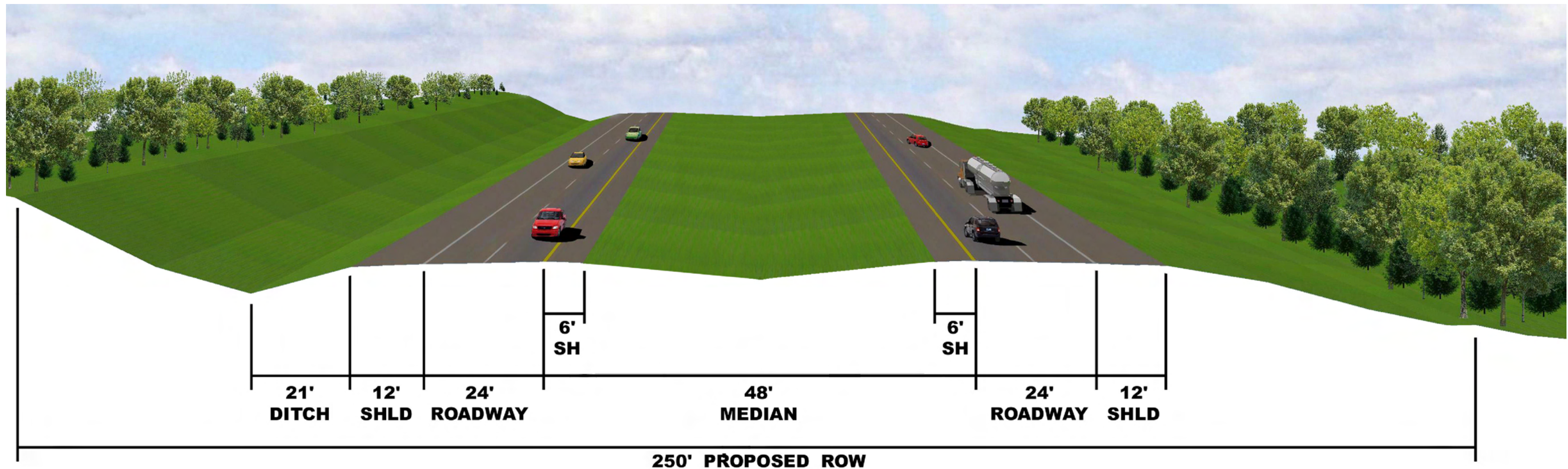
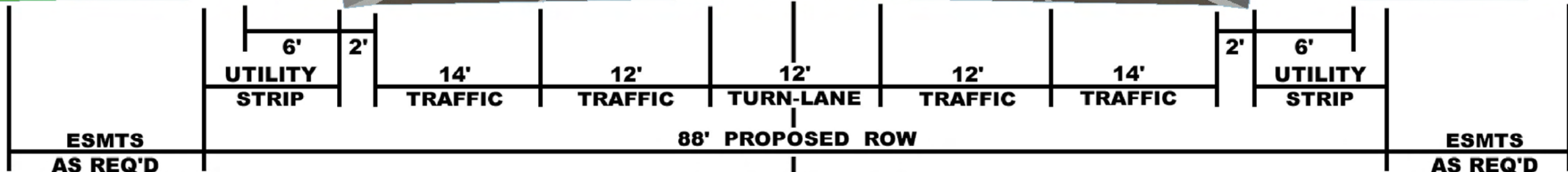
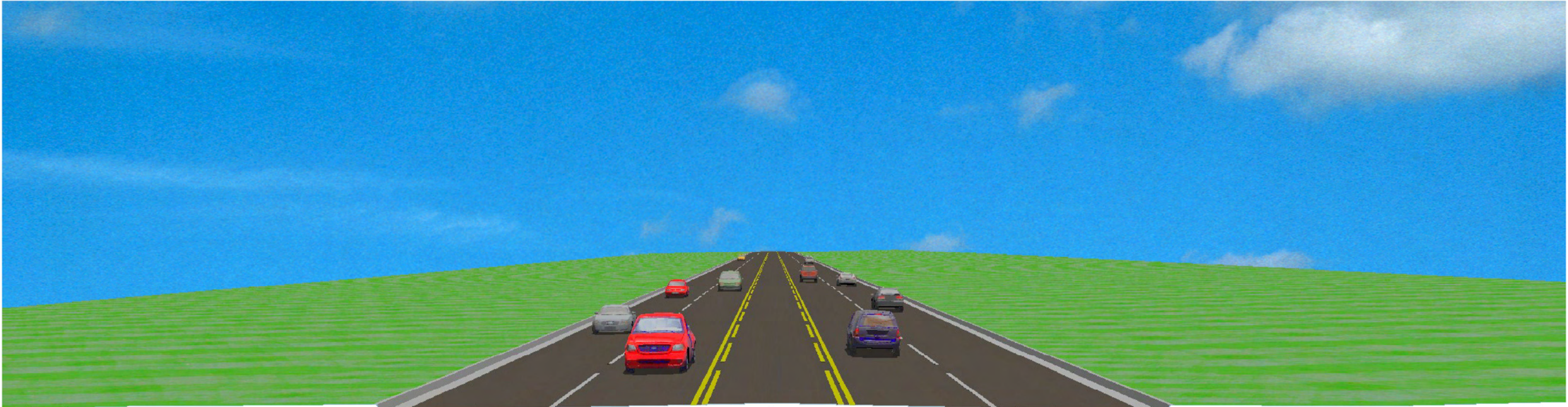


Figure 6
State Route 54 (U.S. 641)

Alternative A:
Conyersville Road to North of Mormon Branch



CL
NON-MOUNTABLE CURB AND GUTTER SECTION

Summary of Environmental Impacts

The primary beneficial effects of the proposed project include:

- 1) Improved local and regional accessibility that could promote economic growth for the area;
- 2) Improved safety and operating conditions; and
- 3) Improved traffic service, reducing the potential for future traffic problems.

The primary adverse effects of the proposed project include:

- 1) Temporary construction impacts (e.g., fugitive dust, siltation, and equipment noise) during the construction period;
- 2) Loss of land for new highway ROW (270 acres);
- 3) Displacement of families and businesses (54 residences, 14 businesses, and 1 church);
- 4) Loss of prime farmland (81 acres); and
- 5) Loss of wetlands (13.98 acres) and open water habitat (15 stream crossings).

SAFETEA-LU Statute of Limitations on Filing Claims

A Federal Agency may publish a notice in the *Federal Register*, pursuant to 23 USC 139 (1), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

Public Hearing Summary

TDOT held a public hearing for the proposed project on January 25, 2011, from 5:00 p.m. to 7:00 p.m. at Grove Junior High School, 214 Grove Boulevard in Paris, Tennessee. There were approximately 89 public attendees at the public hearing.

A PowerPoint presentation was given, which explained changes in the project since the last public meeting, the findings of the NEPA study, and the next steps in project development. A question and answer session followed the formal presentation. A comment card was distributed to each attendee for submittal at the hearing or within 21 days following the hearing. A court reporter was present to record the hearing discussion and to take comments from individuals desiring to verbally comment directly to the court reporter.

The official record had a total of 28 comments. Six comments were received through statements during the question-and-answer period, and five comments were made to the court reporter. Additionally, 17 comment cards were completed, and one package of information was received. The most commonly discussed issues are outlined and addressed in Table 1.

Table 1. Summary of Public Hearing Comments and Comment Cards

Comment	Disposition
Finish State Route 218 bypass around Paris before reconstructing State Route 54	Two comments were made regarding the completion of the State Route 218 bypass before improvements to State Route 54 (this project). State Route 54 is a separate project from the State Route 218 bypass; the completion of each project is dependent upon various factors, particularly funding, scheduling, right-of-way process, and environmental stages. Once completed, State Route 218 bypass will be the preferred route of tractor trailers. Until completion of the bypass, Section I of State Route 54 will be better equipped to handle traffic through Paris.
Coordinate with Kentucky for improvements near state line	The Tennessee Department of Transportation feels that in order to come to a consensus about the location of State Route 54 near the Kentucky/Tennessee state line, Tennessee will coordinate improvements to State Route 54 with the Kentucky Transportation Cabinet when both agencies are prepared to design and construct State Route 54.
Flooding of project area from existing State Route 54; concerns about flooding from proposed project	Four comments were made regarding flooding to individual properties. These comments will be forwarded to TDOT Design Division to evaluate particular areas of concern on a case-by-case basis.
Property owner asking that the levee be tapered at the railroad bridge to be removed	One comment was made regarding the railroad bridge to be removed over State Route 54 south of Jones Bend Creek. This comment will be forwarded to TDOT Design Division to evaluate the request.
Business impacts	Two business owners made comments regarding potential impacts to their businesses and property: Paris Building Supply (1180 North Poplar Street, Paris) and Middleton Lumber Company (5755 State Route 54). Middleton Lumber Company is located in Section II of the proposed project, which is not funded or scheduled at this time; during final design, avoidance of impacts to this business may be possible. Paris Building Supply has requested to speak to someone concerning business impacts; this information will be forwarded to TDOT Design Division to further evaluate impacts to this business.

Finding of No Significant Impact

APPENDIX A

PUBLIC HEARING INFORMATION

Henry County Public Meeting

Paris, Tennessee

January 25, 2011

SR 54 (U.S. 641) from State Route 69/Wood Street
in Paris to Crossland Road/Brannon Lane
(North of Puryear)
Henry County, Tennessee

Reported by: Linda A. Wells, TLCR, CCR

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3 MAYOR SAM THORPE: Okay. Can I have

4 your attention, please?
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5 If you would all please find your seats.
6 We're going to start on time and begin our
7 presentation.

8 If you could, please find your places to
9 relax and sit down, so we can begin what we've come
10 here for this evening.

11 We do have a presentation to present, so we
12 do want to get started at this time.

13 If I can have your attention just for a few
14 minutes. We're going to introduce some people so
15 everybody will know who's here and who's present here
16 for this evening.

17 To begin with, we have Mayor Greer. He is
18 the Mayor of the County of Henry.

19 Mayor, would you please hold your hand up
20 just to be recognized?

21 MAYOR GREER: (Complies.)

22 MAYOR SAM THORPE: Also, we have Carl
23 Holder who's the Interim City Manager for the City of
24 Paris.

25

1 We always have Jennifer Morris who is our
2 Planner for the City of Paris.

3 And with TDOT, we have Alan Waddell, who's
4 a Project Manager and also Nichole Laurence, who is
5 the Community Relations Officer. And I do see

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6 newly-elected representative of the (inaudible)
7 District, Tim (inaudible).

8 Tim, please raise your hand.

9 At this time at this hearing, this is for
10 you guys to speak up and at least voice your opinion
11 or your feelings. This is going to be very, very
12 important to you. It's going to be very important for
13 our community. So, please, feel free to ask questions
14 out of your concerns.

15 And, now, I'm going to ask Ms. Nichole
16 Laurence to come forward and introduce our presenter
17 for this evening.

18 NICHOLE LAURENCE: Good evening,
19 everyone.

20 As Mayor Thorpe had said, I'm Nichole
21 Laurence with the Community Relations Division in our
22 headquarters in Nashville, and on behalf of Governor
23 Haslam and Commissioner Shore (ph), we would like to
24 welcome you here to our Public Meeting for State
25 Route 54.

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1 I'm going to go over a brief overview of
2 what we're going to do tonight. Mr. Terry York, with
3 Palmer Engineering, is going to go through the slide
4 show and give you an update on the sections of the
5 different alternates in Sections I, II, and III.

6 Once he come completes that, we're going to
7 go to Mr. Alan Waddell, the Project Manager.

8 The things that we're going to go through
9 tonight, you have a few different ways to make your
10 comments: You have your comment cards that you picked
11 up at the front. We have a court reporter here that
12 you can talk to privately, or you can talk to through
13 during our question and answer session.

14 I would like to stress to everyone here,
15 please sign in. That's how we know, and we'll get a
16 record that you're here. Pick up your comment cards.

17 I would like to also stress that we're
18 watching the weather as it comes in tonight. We'll
19 try to be as brief and thorough as we are allowed for
20 the evening, but if we are going to be cut short, we
21 do apologize. We will try to get to everyone's
22 questions and try to get them answered.

23 And, now, I will turn it over to Terry
24 York.

25

1 TERRY YORK: Thank you, Nichole.

2 As she said, I want to thank you all for
3 coming out tonight. I know it's not the greatest of
4 weather and, hopefully, as we get done, we'll make a
5 brief presentation here. The most important thing is
6 to give you guys a chance to look at the maps, and
7 talk to some of us, and to find out exactly how --
8 what's impacting you and how it's impacting you.

9 We have representatives from our firm that
10 is here tonight and TDOT, as well, that can help you
11 and answer environmental questions that you have.

12 We have the design firm for Section I. If
13 you look at the maps, you can probably get a little
14 bit oriented on what Section I is. We'll get into
15 that as we go through it. But the design firm's here.
16 They can help you and assist you with questions on
17 that.

18 We've got folks from TDOT right-of-way
19 here, should you have any right-of-way questions at
20 this point. And I think we've kind of got a lot to
21 cover tonight and, hopefully, we can answer your
22 questions as we go through it.

23 As we said, this is a dual-purpose meeting,
24 what we have tonight. We have to address
25 environmental assessment document, and we are wanting

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1 to get your comment and your feedback on that before
2 we present -- before we move forward and completing
3 the final environmental assessment.

4 And, also, there's going to be a -- it's
5 for design and public meeting. It's for the folks
6 with the design plans, for them to come out to show
7 you what the right-of-way plans are beginning to look
8 like here, for you to ask questions. There may be
9 things that they've not -- that's not been identified
10 in the surveys as it's gone through. So it gives you

11 the opportunity to look it over, see some of these
12 things, and start talking to them, and see where --
13 making sure everybody's on the same path there.

14 So as we said, we want to discuss the
15 environmental impacts that we have tonight, present
16 the right-of-way plans for Section I. We'll discuss
17 about the changes to the plans to the end of the
18 project as it's being -- going through the
19 environmental assessment phase. And we'll discuss
20 that a little bit as we go further. And to talk about
21 the impacts for Alternatives A and B, and we'll show
22 you what those are as we move forward, and it gives
23 you a little bit of a milestone update on the
24 schedule.

25

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1 This is, as you can see, it's -- you can't
2 see very well, I'm sure -- but this is the map of
3 entire corridor from Paris through Section I on into
4 Section II. And then there's Section III that starts
5 just south of the Puryear Country Club Road and goes
6 through North Puryear.

7 This slide talks a little bit about the
8 purpose and need. One thing we are doing with this
9 draft, this environmental document that's being done,
10 we're following the NEPA Act. We're following the
11 process, National Environmental Policy Act.

12 And, like I say, it's a process. It's to
13 make sure we don't miss the steps as we go through it
14 with TDOT, and to be sure that the environmental
15 impacts that are out there, that we've identified
16 them, and we find out if there's a way we can avoid
17 them. If we can minimize the impacts to them. If we
18 can react to them and mitigate them. And, obviously,
19 we want to enhance the project as we go through it.

20 Purpose and need here is: Number one, TDOT
21 is always to improve the overall public and safety to
22 the motoring public, especially here on State
23 Route 54. It will help relieve the traffic congestion
24 in downtown Paris, accommodate future traffic. It
25 will be going through. And should, and when, the

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7

1 bypass going back to Paris comes in, then we'll
2 connect in there as well.

3 So it will help with the overall system
4 connectivity, and it will provide you with an improved
5 corridor north and south.

6 Environmental summary: Residential and
7 business relocations that have been identified for
8 Alternative A, there are 54 residences, 14 businesses.
9 Alternative B would be 45 residences, 9 businesses.
10 Both of them would require one relocation of the
11 church, Lakeside Christian Fellowship and Ministry.

12 Now, when I say Alternative A and B, these
13 are for the entire corridor from Risen Street in Paris

14 all the way to the end of Section III. There has been
15 no impacts identified to the historic district or the
16 archaeology sites there.

17 There are four hazardous material sites
18 that have been identified. Both Alternatives have
19 15 stream (ph) crossings, and the right-of-way impacts
20 for that entire Alternative A would be approximately
21 270, plus or minus, acres; Alternative B, 330.

22 Changes to the project: As you'll hear
23 about it a little bit, there's been a change at
24 Section I. It's been shifted to avoid environmental
25 impacts to the historic district. And in Section III,

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1 as I've previously stated, it's going to end now at
2 Crossland Road and Brannon Plain (ph), which is just
3 north of Puryear there, and that would be the end of
4 the study as it's going now.

5 At this time, I'd like to introduce Brian
6 Trotter. Brian is with Florence & Hutcheson (ph).
7 And Brian and their firm is working on the plans for
8 Section I, so he's going to walk you through a few
9 minutes here of what they're doing.

10 BRIAN TROTTER: Thank you, Terry.

11 Now, I'm speaking, if we could, strictly
12 about Section I. This part of the project has
13 right-of-way funding that should begin the end of this
14 year. We have displays up on the wall, a couple here

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15 on the table, and we can talk about right-of-way
16 impacts to you this evening.

17 The first project, the first section, is
18 about two-point-eight miles long. It begins at Risen
19 Street and ends, generally, at Smith Road. It goes
20 actually a little north of Smith Road.

21 All of it's going to be curb and gutter
22 with a large portion of it having sidewalks. There's
23 going to be a sign for 40 mile per hour speed. We
24 have about 136 property tracts affected with --
25 anticipate relocation of 6 businesses and 25

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1 residences just on Section I. I hope you all can see
2 this (indicating). We try to give you a little bit of
3 a section or a little cross section of what your road
4 is going to look like.

5 From Risen to Scott Tire, you're going to
6 have five lanes with sidewalks with a center turn
7 lane. The outside lanes are going to be probably what
8 they call shared-use lanes which will accommodate
9 bicycles.

10 From about where Scott Tire is to where the
11 old railroad bridge is, there's a historic district on
12 the right-hand side of the road that we plan on
13 building a retaining wall to protect the trees there;
14 to have a buffer between the roadway and the historic
15 district.

16 From the railroad bridge to Logan Road, the
Page 9

17 roadway gets a little wider, not a lot, but basically
18 it's a five-lane section still with a two-way
19 left-turn lane, but you're going to have four-foot
20 bike lanes on the outside of it now. Instead of that
21 shared-use lane, we're actually going to designate
22 four foot for a bike lane. And this section will also
23 have sidewalks.

24 From Logan Road to Smith Road, still a
25 five-lane roadway with a two-way left-turn lane in the

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1 middle. This time, though, the four-foot bike lane
2 has now become ten-foot shoulders on the outside, so
3 it's a little wider section once we get into the more
4 rural areas.

5 And then I'm going to turn it back over to
6 Terry for him to continue his presentation.

7 TERRY YORK: As we've previously
8 mentioned, changes in Section III was where it will
9 end. The reason for that, we originally were studying
10 to go all the way to Kentucky, and we know that the
11 funding and the scheduling and the programming issues,
12 and things that are going on in Kentucky, their
13 schedules don't necessarily coincide with Tennessee's
14 schedule on this.

15 So the prudent thing to do was to -- for us
16 to cut back where the project would end. And at that
17 point when Kentucky does move forward with their

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18 improvements on this corridor, it will give them the
19 opportunity to tie back in to what Tennessee has done.
20 So that is one of the main reasons for that and that
21 changes the improvement with FHWA. They've agreed
22 with it and we moved it into the draft document.

23 A little bit about what happens next. We
24 review the comments that are received here tonight.
25 They'll also be made a part of the public record, and

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1 they'll be a part of the environmental document.

2 Comments will be listened to, and reviewed,
3 and determined what and, if any, changes need to be
4 made as we move forward.

5 The completion of the final document, it's
6 anticipated to be completed in the fall of this
7 year -- or in 2011.

8 Section I, as we've talked about, is
9 currently budgeted for right-of-way, so they're
10 anticipating the funds there.

11 Property appraisal acquisition/relocation:
12 The appraisal process is anticipated, tentatively
13 scheduled to begin, in the winter of 2012. And just a
14 rough guesstimate, it could take a year or so to
15 complete.

16 The proposed construction schedule would be
17 summer of 2014. And the caveat on a lot of these,
18 especially the construction there, is that funding
19 gets approved and allotted for this project. As we

20 all know, funding is tough and tight these days, so
21 you just never know. That's a crystal ball none of us
22 really know about.

23 But the Department is committed and is
24 moving forward with this project, and so those are the
25 anticipated dates that they expect.

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1 The remainder of the project for Section II
2 and III is not scheduled or funded at this time. It
3 is programmed, though. So it is in the program which,
4 once again, shows TDOT's commitment, and we'll see if
5 they don't move forward with the funding of this
6 project, Sections II and III.

7 The third Alternative, which you guys will
8 be making comment on tonight whether A or B, that will
9 give you the opportunity to tell TDOT what you think
10 about them. What impacts you see. What you think is
11 good. What you think may be bad for -- going in
12 either direction. And those will be made a part of
13 the document that moves forward, and the decision will
14 be made by the leaders of the Department and FHWA in
15 the two- to six-month range after this meeting.

16 Alternative A, as we talked about -- and
17 the best way for you to find it is to -- we can talk
18 to you as we look at displays around the room.

19 The Alternate A issues: There will be less
20 right-of-way involved. There would be more

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21 residential and business relocations involved. Less
22 stream impacts. It will be a little less expensive
23 construction than going straight through Puryear
24 there, and it would improve the access to Puryear and
25 the businesses in that town.

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1 Traffic delays would be a minus to that
2 because it will, you know, during construction, it
3 will make traffic a little more difficult to get
4 through.

5 Alternative B: That would be the bypass to
6 the east of Puryear there, and it would take more
7 right-of-way. There would be more right-of-way
8 involved. It would be fewer residential and business
9 relocations, as it's just less crowded there. It
10 would bypass the town. That's a decision some -- you
11 know, we want to hear from you guys whether it's best
12 or not.

13 It would be more expensive to go in and
14 around it. It would be a little bit longer route.
15 And it would be easier in maintaining traffic, and the
16 congestion in Puryear wouldn't be nearly as great
17 through the construction at that time.

18 At this point, I know this was brief, I'd
19 like to open it up for a few questions, if you have
20 any. And we've got some folks here that I'm sure can
21 help answer these questions.

22 If you don't mind if you have questions,
Page 13

23 just stand or raise your hand, and then state your
24 name so the court reporter can identify you.

25

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14

1 OPEN FORUM

2 CHARLES ADLER: I'm Charles Adler (ph)
3 in Puryear. And it just seems to me as a layman that
4 we need to be finishing the 283 (ph) bypass before
5 641 -- that should be first -- so we're not dumping
6 this truck traffic in downtown Paris.

7 TIM WIRGAU: Thank you for that
8 question.

9 I will say, I met with Paul Degges (ph)
10 last week, commissioner second in charge of TDOT. He
11 informed me at that time that 218 is on the plate. We
12 are familiar that it has been slow in the process. He
13 asked for forgiveness for that, but that he
14 understands that.

15 He led me to believe that in 2018 that --
16 or 2012, two highways -- Highway 218 would be in the
17 project because the environmental study -- and I
18 believe we have the other official here. The
19 environmental study and the right-of-way, a lot of
20 people didn't know that the County set in place years
21 ago in the City of Paris to buy the right-of-way for
22 218, which Paul involved informed me last week that it
23 was one of the few places in Tennessee where the

24 Henry Co Pub Hrg SR-54 012511
communi ty got i nvolved and had done that.
25

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1 So he is -- he has told me that Highway 218
2 is underway for 2012.

3 Okay. So we're all in favor and believing
4 that that is the same thing, because that is our goal
5 is to get them trucks out of the downtown area so
6 218 -- the fourth lane (ph) of 218 should come before
7 the section of 641 (ph).

8 NICHOLE LAURENCE: Thank you,
9 Representative.

10 While you all are thinking, we can thank
11 Mayor Thorpe for the use of his cafeteria, and the
12 city officials and Jennifer and all the hard work
13 they've done again to assist us tonight.

14
15 MR. GALLAMORE: My name is Bill
16 Gallamore, and I live at 1018 -- 1020 North Martin
17 Street.

18 And I have spoken with people before, and
19 I'm trying to speak with them today. They say it's
20 not -- the right-of-way is not part of the
21 environmental portion of it, but be that as it may,
22 it's still going to affect the area. The fact that
23 you're going to be taking away from the grounds that's
24 presently there -- we live down almost in a, what they
25 call a bowl -- down through there where it backs up.

1 We have been flooded before, and it's going to get
2 worse because you're going to be taking away ground
3 and extending over, and it's going to be worse.

4 And as I said, we're already in a flood
5 plain, single flood plains. And the issues that I
6 have discussed here of what I see that they're saying
7 would not alleviate the problem we're going to be
8 getting. It's going to be worse rather than
9 alleviating it because of the fact, what they're
10 talking about does not entail the backup that's going
11 to still occur.

12

13 UNIDENTIFIED FEMALE SPEAKER: I
14 haven't got to study the maps as good as everybody
15 else. I mean, I was just wondering, does the red on
16 the maps, is that houses being taken out, or is that
17 being bought out, or is that the right-of-way on
18 Market Street?

19 DAVID LINDERMAN: The houses shown in
20 red on the maps on the wall over here and on the
21 table --

22 UNIDENTIFIED FEMALE SPEAKER: Yes.

23 DAVID LINDERMAN: -- those houses are
24 planned for acquisition, yes.

25 UNIDENTIFIED FEMALE SPEAKER: Okay.

1 MS. RITCHIE: My name is Erma Ritchie
2 (ph). My mother lives, Bobby (inaudible) 1018 North
3 Market.

4 Before the road was built, we're talking
5 about before I was even born, everything was level.
6 Roads were sold to the State. The State built up the
7 road, took the land from where the house is now.
8 Several years later, we flooded one time between 1963
9 and about 1980, or whenever the new road was put in.
10 When that road was put in and widened, they said: Oh,
11 you won't flood anymore. It's not putting any more
12 water on you.

13 Ten times since then has it flooded. Now,
14 once versus ten.

15 Somebody -- it is environmental and
16 that's -- it looks -- on the topical (ph) map, it
17 looks on the aerial map like that land is very level
18 but it's not level.

19 If you flood 10 times in about the last
20 12 years, and you put the road in -- which we want the
21 road. We know Paris needs a six (inaudible). We know
22 it needs to be widened. But there has to be a way to
23 satisfy those homes down there where you can
24 guarantee, number one, that they're not going to flood
25 or that you're going to take and get rid of the

1 probl em.

2 UNIDENTIFIED MALE SPEAKER: Are you're
3 tal ki ng about (i naudi ble).

4 MS. RITCHIE: Yes. Yes.

5

6 BRAD HOSTA: All ri ght. My name's
7 Brad Hosta (ph), and I represent three properties on
8 641 (i naudi ble) Highway; 641, 3960, something I like
9 that.

10 Here's what I've been thi nki ng: You know,
11 we've been here for a long time. We're going to have
12 this expansion of the roadway. We're going to make it
13 better for the folks to get into Paris and to get out
14 of Paris, but we've waited and we've waited and we've
15 waited.

16 I don't have a problem with improvements to
17 highways, but my problem has been all along, if we're
18 going to continue to pursue Highway 218 bypass, why
19 didn't we hurry on this project, which we can now hold
20 off and see what that does to the traffic?

21 What's going to happen when we have this
22 big highway with four lanes going down through there
23 and then heading to downtown Paris and then back in
24 that bottleneck one more time? What's the big deal?

25

1 Just hold off and let's see what 218
2 Highway does. And, yes, maybe we do need these
3 improvements in 641, but why be in a big hurry and why
4 right at this point? We've waited -- how long have we
5 been hearing this: Ten years? Seven years? Nine
6 years?

7 I'll die before they get it done.

8
9 PHILLIP REAGAN: Phillip Reagan (ph).
10 I live in Paris, Tennessee.

11 Will somebody comment on the gentleman's
12 standing up question, please (sic).

13
14 STAN KING: I'm Stan King of Florence
15 & Hutcheson representing the TDOT Design Division.
16 It's in the preliminary design right now on Section I.

17 What we've got displayed here is a
18 preliminary design and all these comments regarding
19 draining are good comments, and we'd like to get them
20 recorded tonight. And whenever the design proceeds,
21 you know, it's -- lets the Department to look at all
22 the comments and address those. Again, that's within
23 the scope of the project, so it's important to get
24 your comments recorded, I think, at this point.

25

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2 (inaudible) and, one, is: What is the status of
3 Kentucky's portion of this project?

4 DAVID LINDERMAN: Kentucky only has
5 funding for preliminary design of the project, and
6 other than (inaudible) a bypass to the west. So
7 that's why our project was backed up from the state
8 line down to Brannon Lane and stopped there was, we
9 didn't want to make a four lane right up through Hazel
10 right in the middle of town and then stop it at
11 Brannon Lane.

12 Whatever Kentucky has come up with where
13 their location west of Hazel, and when Tennessee
14 presumably has funding and it becomes available, to
15 look at the project that ties (inaudible) that
16 Kentucky Planning to do the rest of Hazel.

17 Kentucky doesn't have planning (inaudible),
18 and I don't think Tennessee wants that point to come
19 right at them.

20 Does that answer your question?

21 As far as status, funding-wise, it's quite
22 a ways off. Kentucky will be holding public meetings
23 on the Hazel bypass sometime probably in the next
24 year. But as far as funding for construction or
25 anything really happening out there on the ground, I

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1 don't think that's for several years.

2

3 NICHOLE LAURENCE: While you're
4 thinking, please make sure you have your comment cards
5 in front of you. If you don't ask a question out
6 loud, this is how we know what your thoughts are on
7 either Alternative A or Alternative B.

8 So please make sure you fill this out and
9 turn it in, or take them home and mail them back, or
10 talk to the court reporter before you leave.

11 I do see a few snowflakes, but we're still
12 early.

13 You do have 21 days to get those comments
14 turned in, if you just vote to take them home and send
15 it in later.

16
17 MR. DOUGLAS: My name's (inaudible)
18 Douglas (ph).

19 On that first section, if my house is not
20 going to be taken, most of them sit so close to the
21 road like mine with the right-of-way now, you'd be in
22 my house.

23 So how's that going to affect us?

24 STAN KING: Again, I would say that
25 this is a preliminary design that shows whether it

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1 would even be an impact, a right-of-way, or property
2 acquisitions (inaudible) for the designs as, yet, to
3 be finalized.

4 So these comments -- if you've got a
 Page 21

5 comment that's specific to your tract of concern
6 (inaudible) regarding much with the construction, get
7 those comments recorded. And like I said, we will
8 consider all the comments as the design moves forward.

9
10 NICHOLE LAWRENCE: If there's no more
11 questions, then we'll continue on so everyone who
12 wants to look at the maps and ask questions or see the
13 court reporter.

14 Thank you all for coming.

15
16
17 COMMENTS

18 TRACY (ph) MIDDLETON: I am with -- my
19 family owns Middleton Lumber Company on 641 north of
20 Paris and Puryear. The area that we're located is
21 5755, which is right now Section II of the proposed
22 expansion.

23 We are a third-generation hardwood lumber
24 company, and we produce kiln-dried lumber that is used
25 in furniture, cabinetry, and flooring operations.

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1 The current highway expansion will consume
2 our kiln-drying facility, leaving us without the
3 ability to continue to operate. The property that
4 surrounds Middleton Lumber Company is mainly wetlands,
5 which leaves no room for expansion or rebuilding if

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the highway does come into the kiln-drying area.

So if the current proposal stays in place and we lose the kiln-drying facility, which is the biggest asset to our business, we will have no choice but to cease operation.

We currently employ over 30 individuals, and we're responsible for the job security of an additional 10 more, which are through our contract logging crews.

This would, in turn, leave the approximately 40 people, plus or minus, without a job.

We currently spend over \$2 million in Henry County each year and an additional \$4 million in West Tennessee and other surrounding areas.

Keeping in mind that the current design and layout and assets of Middleton Lumber Company was built through the lifetime -- the working lifetimes of two generations, so to assume that those assets could be replaced in a short amount of time is completely inaccurate, and we would have a job loss for our

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employees.

So our biggest concern is the timeline for Section II, and how do we need to go about accessing further information on why the design layout has to be this way?

We can be contacted at: (731) 642-7621.

E-mail address: MIDLUM@bellsouth.net.

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COLLEEN GALLAMORE: My name is Colleen Gallamore, G-A-L-L-A-M-O-R-E.

We live at 1020 North Market, and we own the house at 1022 also. There's one other house down there, and it is -- it's in, like, a bowl. We get water from everywhere on all sides, and there's a wetland right below us and a creek that flows through there.

There is nothing that they've shown us that they're going to do that's going to help us because anymore fill is going to flood us because we're so low.

It's been suggested that the simple thing for them to do would be just to buy the property and make, like, a holding pond there which, you know, would be fine with us, because we just don't want to be left in that mess because we are already in a

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floodplain.

We need the highway. We're definitely not against the highway. My husband and I feel that we really do need this highway. Paris is suffering because we are hard to get to, and we think 641 would improve business and everything.

Our concerns is, we just don't want to be washed away.

9

10 GLENDA RITCHIE (ph): I'm speaking for
11 Bobby Ritchie.

12 I'm speaking about the property at
13 1018 North market, okay, of which I previously stated.
14 Before they increased the size of the road the first
15 time, the property flooded once. Since they've
16 increased the size of the road, it has now flooded ten
17 times. And now they're asking us if they increase the
18 size of the road more and do away with the road and
19 create a right-of-way from the road to the property,
20 they want to tell us that it won't flood more, and
21 that is an incorrect statement.

22 What we are concerned about, and what
23 Ms. Gallamore was concerned about that spoke
24 previously, is that we don't care about the road being
25 built. We're proud to have the road. But we can't

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1 afford to be flooded anymore.

2 And I want -- they told me to leave the
3 pictures with you, the court reporter, okay? And to
4 leave my public hearing statement with you and see if
5 we can't get someone to understand what we're really
6 talking about. We're talking about a flooding issue.

7 I know that they want to buy as few homes
8 as they can, but you can't put in culverts to a creek
9 that cannot be dredged according to the Army Corps of
10 Engineers which, wherein, lies the entire problem of

11 the flooding.

12 And I guess that's all I've really got to
13 say except I wish someone would figure out what's
14 cheapest for the government. It's cheaper to buy the
15 property because at some point in time if it continues
16 to flood, FEMA will end up buying the property anyway.

17 And so, therefore, we need someone to
18 address our concerns.

19

20 JOHN WADE: Well, the name on the
21 property is my brother, which is Charles William Wade.

22 THE COURT REPORTER: But your name, if
23 you're commenting?

24 JOHN: John.

25

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1 THE COURT REPORTER: And your last
2 name?

3 JOHN WADE: Wade.

4 On the map, it's property Number 10.

5 There's a bridge there, a railroad bridge
6 there, and I think he said it was proposed to be taken
7 out. We was asking for the levy to be tapered to
8 where it would come down more level with our property.

9

10 BRENT DIAL: My name is Brent Dial,
11 D-I-A-L.

12 I own the property starting at Risen
13 Street. I have a 20,000 square foot warehouse there.
14 I own another home down the road about a quarter of a
15 mile on the right, and I own a business down the
16 street that covers ten acres.

17 And I am disappointed that I haven't talked
18 to anybody one-on-one about the impact to my business
19 or to my property, being a large landowner on the
20 road, you know. I would like to talk to somebody
21 about that.

22 I am for progress, but I need to know what
23 the impact to my business and my property: What can I
24 expect?

25 It's Paris Building Supply.

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1 And I also think the meeting should be
2 handled differently, in my opinion. I think everybody
3 affected by Section I ought to be in a meeting without
4 everybody in the future number II and number III being
5 involved. So the number I people can meet in one
6 section and get it thrashed out, and we're talking
7 about other things that are in the future, instead of
8 what's coming first.

9 That's all I got to say. (Respite.)

10 Okay. Brent Dial, Parcel 3 starting at
11 Risen Street, they have it marked -- I will be using
12 that to load and unload trailer trucks. There will
13 not be enough property to load and unload a truck

14 there after the road is put it.

15 And also, I also want to make a comment
16 about Paris Building Supply about business
17 interruption. In front of the store they're going to
18 tear out a box bridge (ph) and have to redo it, and
19 the business interruption there will be bad for
20 business.

21 So that's my comment. Thank you.

22 (Whereupon, no further comments were
23 made on the record and the meeting was officially
24 adjourned.)
25

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1 C E R T I F I C A T E

2

3

4 STATE OF TENNESSEE

5 COUNTY OF MONTGOMERY

6 I, Linda A. Wells, Licensed and Certified
7 Court Reporter, with offices in Nashville and
8 Clarksville, Tennessee, hereby certify that I reported
9 the foregoing public meeting by machine shorthand to
10 the best of my skills and abilities, and thereafter
11 the same was reduced to typewritten form by me.

12 I further certify that I am not related to
13 any of the parties named herein, nor their counsel,
14 and have no interest, financial or otherwise, in the

15 Henry Co Pub Hrg SR-54 012511
outcome of the proceedings.

16

17

18

19

20

21 _____
LINDA A. WELLS, TLCR #546, CCR

22 Notary Public at Large

23 State of Tennessee

24

25 My Commission Expires: 7/27/11.

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SR 54 (U.S. 641) Public Meeting

From SR 69/Wood St. in Paris to Crossland Road/Brannon Lane in Henry County

5:00 PM to 7:00 PM, Tuesday January 25, 2011

Grove Junior High School, Paris, TN

Sign-in Sheet



TDOT employees

Name	Address	Telephone	Email
1. Nichole Lawrence	Region 4 Comm. Relations	731-935-0318	nichole.lawrence@tn.gov
2. LARRY JORDAN	HQ Design	615-741-6416	LARRY.JORDAN@TN.GOV
3. Freddy Miller	HQ Design	615-741-0835	Frederick.Miller@ —
4. DAVID J. GATHAMER	1020 W. MARKET ST	615-741-1145	
5. DAVID THOMPSON	TDOT ENV.	(615) 253-2991	
6. Chris Blewins	Palmer Eng.	859.97441218	cblewins@palmernet.com
7. STAN KING	F&I	615-399-9090	sKing@flouet.com
8. BRIAN TROMER	"	"	
9. PERISA SNOW	"	"	
10. Karis Pumphrey	Palmer Eng	859 355-1355	kpumphrey@palmernet.com
11. David Lindeman	"	859 744 1218	dlindeman@palmernet.com
12. Jerry McElroy	Whitlock Rel. Paris		
13. TERRY YORK	PALMER ENG.	615-297-8957	tyork@palmernet.com
14. Jeana Dodd	Reg 4 ROW	731-935-0121	lajerna.dodd@tn.gov
15. Kimberly VanWinkle		731-935-0117	kimberly.vanwinkle@tn.gov
16. ALAN WADDELL	REG. 3 PMD	(615) 350-4279	alan.waddell@tn.gov
17. Lee Williams	Reg. 4 Proj. Management	731-935-0339	Lee.Williams@tn.gov
18. Whitney Sullivan	Reg 4- Proj. Management	731-935-0146	Whitney.sullivan@tn.gov
19. Tom Lake	HQ - Environmental		tom.lake@tn.gov
20.			

SR (U.S. 641) Public Meeting

From SR 69/Wood St. in Paris to Crossland Road/Brannon Lane in Henry County

5:00 PM to 7:00 PM, Tuesday January 25, 2011

Grove Junior High School, Paris, TN



Sign-in Sheet

Name	Address	Telephone	Email
1. Roslyn Hayes	869 Macedonia Rd. - Henry Jn	336-6796	
2. Jim Hayes	869 Macedonia Hwy Jn	336-5491	
3. BARBARA ALfoonian	4420 Hwy 641 N. Puryear	642-1594	
4. Don ALfoonian	4420 Hwy 641 N. Puryear, TN	642-1594	
5. Bobby NICEIRO	4470 Hwy 641 N Puryear Tn	642-9-88	
6. Preferred Cleaning Systems Chevy Lashore	1419 N. Market	644-7600	
7. Annette Frampton	3280 Hwy 641 N. PARIS	644-7589	
8. Max Middleton	5755 Hwy 641 N Puryear T	642-7621	
9. James & Kevin Kuzinski	5215 Hwy 641 N. Puryear	333-4640	
10. Philip & Jan Reagon	210 Elm St. Paris	336-8 644-9695	
11. Ben Dial Paris Bldg Supply	1180 W Poplar	642-3935	
12. Jimmy Mikey	1209 N. Market	642-0388	
13. GREG STORY	2835 Mill Creek Rd Puryear TN	731-498-8528	
14. Michael L. Scott	706 N. Market St. Paris	642-6640	
15. Jerry Hayes	P.O. Box 1125 Paris	642-4707	
16. Robert Newman	P.O. Box 1416 Paris	336-4735	
17. Doug Wilson	220 Bell Lane, Paris	642-4094	
18. Ken Walker	Paris P-1	642-1162	
19. DAVID HAYES	2340 Hwy 641 N	336-8958	
20.			

SR (U.S. 641) Public Meeting

From SR 69/Wood St. in Paris to Crossland Road/Brannon Lane in Henry County

5:00 PM to 7:00 PM, Tuesday January 25, 2011

Grove Junior High School, Paris, TN

Sign-in Sheet



Name	Address	Telephone	Email
1. J. M. Coley	1407 N MARKET ST	206 6788799	cosbbri@MSN.com
2. B. J. Frank	1409 N. MARKET ST	642-67	
3. Mrs Jim Woodwood	305 Franklin Dr.	642-3805	
4. Helen Hill	85 Old Paris Murray Ks.	642-6204	
5. Duane Parrish	3145 Hwy 641 N Paris, TN	642-6389	
6. Barry Smith	3285 Hwy 64 N Paris	336-4496	
7. Michael Williams	206 Secret Cove Paris TN	336-2475	Mwfireman@charter.net
8. Debra Lemonds	1221 N. Market St. Paris TN	336-8189	" "
9. Randy Valentine	700 Wyringer Rd Paris, TN	247-5511	
10. Betty Plank	800 Crossland Rd Paris TN	247-5497	GMIAM@WK.NET
11. MATT HAYES	95 GATE 3 RD; PARIS, TN 38242	642-7922	
12. Leisa Wimberley	765 Hwy 79 S. Henry TN	642-4363	
13. Mike Salmon	306 Watson Ln	644-7046	
14. Jim Arthurs	3708 County Home Rd	731 693 8443	jarthurs@campbellRheac
15. Melissa Connor	375 Parkway County Club Rd	247-3944	
16. Marty Cole	310 W. Main St. Dresden TN 38225	731-684-0579	martyc@frontier.com
17. David Jennings	2135 Hwy 641 N	731 642 2503	cc/coke@aol.com
18. James Hobbs	1820 N. MARKET ST	731-336-4035	hobbsfarms@yahoo.co
19. Janet Hudgins	2420 Hwy 61 N	731-363-1530	janet.hudgins@murraystate.edu
20. Jamie Hudgins	Paris		

SR (U.S. 641) Public Meeting

From SR 69/Wood St. in Paris to Crossland Road/Brannon Lane in Henry County

5:00 PM to 7:00 PM, Tuesday January 25, 2011

Grove Junior High School, Paris, TN

Sign-in Sheet



Name	Address	Telephone	Email
1. George + Julia Evans	3315 Hwy 641 N-Paris	642 5291	fevans@charter.net
2. Rick Middleton	PO. Box 87 ^{5155 Hwy 641 N} Puryear	642-7621	midlum@bellsouth.net
3. Ray W. Champ	5080 Hwy 641 N, Puryear	642-4137	SCHAMPINER@BELL SOUTH NET
4. Jess Ann Fox	470 Jesse L. Hozel Key	4928617	JessAnnFox@wk.net
5. Thomas E. Paschall	800 Crossland Rd Portersburg TN	247-5497	STANBO WK Net. Com
6. H. Jerry Walker	329 Walnut Paris	336-9044	
7. David B. Shaw	502 Dunlap St.	336-9446	didrill@bellsouth.net
8. David Wilson	2560 Hwy 641 N.	782-3578	
9. Mike Hodge (ICI)	1865 N mk+	642-4251	Mhodge@Campbell
10. Wayne Fisher	2015 H. 641 N	642-0121 hdfisher@yahoo.com	Rhea.Com
11. Bobby Graves	1321 N Market	358-1405	BEGraves7780 at/ah
12. Joe Michuda	90 Rowe School Rd	363-5946	
13. Karen Greer	NWTPD	587-4213	Karen.greer@world
14. C. ALLEN	597 PC 38251	240 6793	ALLENEMFAMILY
15. Brad Hosford	2020 Hwy 641 N 38242 3960 Hwy 641 N 38251	225-8629	brad.hosford@hotmail.com
16. Tim ORANNON	4270 Hwy 641 N	244 2319	baptbrad@hotmil
17.			
18.			
19.			
20.			

SR 54 (U.S. 641) Public Meeting

From SR 69/Wood St. in Paris to Crossland Road/Brannon Lane in Henry County

5:00 PM to 7:00 PM, Tuesday January 25, 2011

Grove Junior High School, Paris, TN



Sign-in Sheet

Name	Address	Telephone	Email
1. Brent Greer	HENRY Co Mayor Office	642-5212	
2. BOBBY FREEMAN Sr	2215 Gum Springs	731-642-3801	bobf3801@hotmail.com
3. Jennifer Morris	672 Kahl + Creek Brecken	731-247-5871	
4. D. & Polly Ballamore	1020 N. Market St	731-642-1145	
5. Janice Thomas	1321 N Market St	363 2176	
6. James Milliken	1321 N Market St	641 6636	
7. GEORGE TOWNLEY	505 FORSYTH - BUCHANAN	247-3343	
8. Bobbie Ritchie	1018 N. Market	642-0482	
9. Glenda Ritchie	1018 N. Market	642-0482	KylaKeProperty@aol.com
10. Carl Holder	1404 Patriot	644-0053	cholder@CityofParisTN.gov
11. Doris Lee Humphreys	1616 Patriot	644-2516	
12. William R. Rhodes	4310 Hwy. 641 N. Puryear TN.	363 4648	
13. Jordan Summing	331 JACKSON ST PURYEAR	731-241-3249	
14. Samuel D. Tharpe	Mayor of Paris	731-641-1402	
15. MARC WILKINS	305 ADIN ST. PARIS	731-642-7120	
16. Serry McDray	7811 Wh. Hock RD	782 782 3385	
17. Ray Myers	1205 Blg the	731 642-1577	
18. Francis Yeadeis	1805 "	731-234-9120	
19. Dale & Vicki Douglass	1308 N Market St	731-642-3056	Vldouglass@charter.net
20.			

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name DAVID B. TRAVIS (Former Mayor - City of Paris)
Street 502 Dunlap St. E-mail 2005-2009
City PARIS State TN Zip 38242 Phone (731) 336-9446

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident _____ Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) _____

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? _____

Are there any changes you would make to the project? _____

Do you have additional comments? For the past several years, Mayor Greer and myself have pushed Hwy 218 to be completed to Hwy 641. It is imperative to get the north-south truck traffic on Hwy 218 and out of downtown Paris. We have tried to show the benefit of four lanes where #218 intersects #641 and going north toward Kentucky. The traffic using the #218 bypass would eliminate much of the need to widen the portion into Paris.

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Comment Sheet

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments:

I would like to see northern sections
completed first to benefit the completion of #218
to #641.

Thank-you,
David Ho

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name THOMAS E. PASCHALL
Street 800 CROSSLAND RD. E-mail GMB@WK.COM Net
City PURYEAR State TN Zip 38251 Phone (731) 247-5497

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident ☒ Affected Landowner ☒
Affected Business ☐ Name of Business ☐

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) _____

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? _____

Are there any changes you would make to the project? _____

Do you have additional comments? STAY AS CLOSE TO 641
AS POSSIBLE

PLEASE DO NOT MAKE A WIDE LOOP AROUND
PURYEAR — THANKS

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TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name Betty L. Paschall
Street 800 Crossland Rd E-mail GMOMB@WK.NET
City Puryear State TN Zip 38257 Phone (731) 247-5497

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident ☒ Affected Landowner ☒
Affected Business ☐ Name of Business ☐

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) _____

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? _____

Are there any changes you would make to the project? _____

Do you have additional comments? Follow 641 If You Do
Anything

No Wide Swing Around - Puryear

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name BOBBY FREEMAN SR
Street 2215 Gum Springs Rd E-mail bob@sallylanes.com
City PARIS State TO Zip 38242 Phone (731) 642-4965

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident ☐ Affected Landowner ☐
Affected Business ☐ Name of Business

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) very good

Alt B (bypass Puryear)

What issues and concerns do you have about the project? NONE

Are there any changes you would make to the project? No

Do you have additional comments?

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BOB FREEMAN SR
2215 Gum Springs
PARIS, TN 38242

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments:

HENRY County need the access
to I-40 & North to Ky.

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name D. L. HUMPHREYS
Street 1616 PATRIOT AVE E-mail _____
City PARIS State TN Zip 38242 Phone (731) 644-2516

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident _____ Affected Landowner ☒
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) _____

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? WE DO NEED THE ROAD

Are there any changes you would make to the project? NO

Do you have additional comments? NO

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TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name MELISSA COMPTON
Street 375 Puryear Country Club Rd. E-mail _____
City Puryear State TN Zip 38251 Phone (731) 247-3944

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident X Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) BAD - WILL INTERFERE WITH PERSONAL PROPERTY USED TO WIDEN THE ROADWAY.

Alt B (bypass Puryear) BAD - NOT ONLY WILL THIS 'KILL' THE BUSINESSES ALONG THE CURRENT HIGHWAY, THIS WILL ALSO CREATE WHAT I BELIEVE WILL BE MORE TRAFFIC IN FRONT OF HARRISON SCHOOL (COUNTRY CLUB RD)

What issues and concerns do you have about the project? FROM A PERSONAL ASPECT, THIS WILL LEAD TO MORE FLOODING ON MY PROPERTY. ALSO, FARMERS' LANDS WILL BE LOST OR SPLIT, THEREFORE, CUTTING OUT MORE OF THEIR FUTURE PROFITS.

Are there any changes you would make to the project? I DO NOT SEE ANY NEED TO SPEND MONEY THE STATE COULD SPEND ELSEWHERE. A 4-LANE HIGHWAY WILL NOT HELP THE LOCAL ECONOMY, AND WILL ONLY

Do you have additional comments? CAUSE MORE ACCIDENTS.
DISCUSSIONS OF WIDENING HWY 641/SR 54 HAVE BEEN GOING ON FOR MORE YEARS THAN I REMEMBER. OUR LOCAL ECONOMY IS JUST THAT. OUR CITY LEADERS DO NOT ENCOURAGE THE GROWTH OF LARGE BUSINESSES IN THIS AREA, SO I DO NOT
(OVER)

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M. Compton
375 P.C.C Rd
Puryear, TN 38251

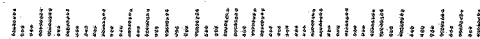
MEMPHIS TN 381

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: UNDERSTAND HOW A LARGER ROADWAY WILL ENTICE
MORE COMMERCIALIZATION IN OUR COMMUNITY. SAVE THE MONEY
ON A ROAD THAT WILL COST MORE TO MAINTAIN IN THE FUTURE
AND SPEND THAT MONEY ON THE SERVICES PEOPLE NEED NOW,
I.E. TENN CARE, LOWER TAXES, UNEMPLOYMENT BENEFITS, ETC.

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name Johnny Michael Key
Street 1209 N. Market St. E-mail Keymike@ymail.com
City Paris State TN Zip 38242 Phone (731) 642-0388

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident ☒ Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) less expensive, Keep Puryear a viable community,
might encourage more retail in area - Good Points

● inconvenient during construction - Bad Points

Alt B (bypass Puryear) I can't think of any real good points to
bypassing Puryear, it would cost more and add
distance to the trip from Murray to Paris.

What issues and concerns do you have about the project? I own plot number 33
on the project and would like my right of way access
to be on Cook Street and not on US641.

Are there any changes you would make to the project? _____

Do you have additional comments? I'm looking forward to there being
sidewalks and a bike path to downtown and I think
the 'Porter Court' area will actually be a better
neighborhood and property values increased with the
addition of the widened road.

2012 - 2014

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name Jim Hayes
Street 869 Macedonia Rd E-mail soyakhwj@bellsouth.net
City Henry State TN Zip 3824 Phone (731) 336-5431

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident ☐ Affected Landowner ☐
Affected Business ☐ Name of Business

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

There are good points for both alternatives of section III. Alternate B would disrupt the traffic's flow and probably cost some more to build. It would also go through some prime farm land, but would effect fewer people getting back & forth to work than Alt A.

Alternate A would require disruption of the utility system and cost for their relocation would be expensive. The disruption & interference with day to day traffic would be great during construction, but in the long run, I think Alt A would be better for the local people, because it would not by-pass any of the businesses on US 641 through town and might bring more traffic for businesses and open up opportunities for other commercial growth.

The main concern that I have for this project is that the need truck traffic to get out of downtown Paris and to help with the passage of massive oil and wind power equipment going into the Northwest that is routed on US 79 & US 641. The sooner TPOT can get the 1st section under way the less expensive they will all become!! There will be concerns of getting traffic to & from the businesses on section I, but after the completion of the project that be a lot better than it is today.

Thanks James W. Hayes

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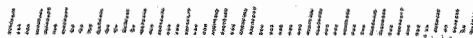
Jim Hayce
869 Macedonia Rd
Henry Tn.
38231

NASHVILLE TN 372



**PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349**

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name MARC WIGGINS
Street 305 ADEN ST. E-mail WMWG@EARTHLINK.NET
City PARIS State TN Zip 38242 Phone()

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident _____ Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) PREFER ALT "A"
THIS WOULD IMPROVE PURYEAR WITH CURBS & BATTERS
AND MAYBE SIDE WALKS COULD BE INCLUDED.

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? IT'S TAKING TOO LONG!
IT'S TIME TO START CONSTRUCTION - BUT, IT
TAKES TIME... SO, START AS SOON AS POSSIBLE.

Are there any changes you would make to the project? I WOULD TAKE SECTION 1
ALL THE WAY TO WHITLOCK ROAD. 5 LANES WITH
CURBS & BATTERS. ALL THE WAY TO WHITLOCK RD.

Do you have additional comments? HWY 218 IS IN THE WORKS
SO I HOPE ~~THE~~ TRAIL WILL MOVE ON AS FAST
AS POSSIBLE SO IT CAN JOIN IN WITH 641
WHILE IT IS UNDER CONSTRUCTION. THEN GET
STARTED ON 218 FROM 641 OVER TO 79 - THIS LAST
SECTION IS NECESSARY TO MAKE 218 WORK AS
A BYPASS - IT NEEDS TO GO ALL AROUND PARIS. LEAN
THIS LAST SECTION 641 TO 29 OFF AND IT WILL FAIL.

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305 ADEN ST
38242

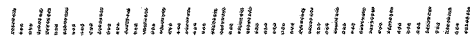
MEMPHIS TN 381

24 JAN 2011 PM 2 T



PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

Visit us Online!
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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name MRS. James E. Underwood (first name Charlie)
Street 305 Franklin Dr. E-mail Do Not Have
City Paris, State TN. Zip 38242 Phone (731) 642-3805

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident _____ Affected Landowner X
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) I much prefer Alt. A. My husband and I bought the farm in 1956 so we could pass land to our children. I have 2 sons ready to take over at my passing. We were so joyful to learn we were not losing the only tillable land we have on the 65 acre farm just above the Brannon Lane cut-off.

Alt B (bypass Puryear) I grew up near Puryear. It's a nice community and I think taking the bypass around Puryear would almost destroy the town and would take away some valuable farm land going so far around.

What issues and concerns do you have about the project? That it will take away older peoples homes and land and uproot them when they are at the age to be settled.

Are there any changes you would make to the project? Not if you use Alt. A

Do you have additional comments? Although much needed, I am concerned about having all the traffic dumped at Crossland/Brannon Lane, especially knowing how slow Ky. has always moved on building a hi-way from Murray to Hazel. I've lived 82 1/2 years and continuously travelled that highway and there has never been much co-operation from Ky. from that direction.

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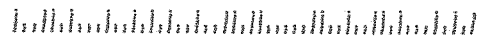


Mrs. Jim Underwood
305 Franklin Dr
Paris, TN 38242-5653



**PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349**

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name Jerry Hayes
Street P.O. Box 1125 E-mail _____
City Paris State TN Zip 38242 Phone (731) 644-4707

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident _____ Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) Save land, Be convenient for citizens

Alt B (bypass Puryear) It wouldn't slow traffic.

What issues and concerns do you have about the project? I wish it would
hurry up time is wasting. It is urgently
needed.

Are there any changes you would make to the project? _____

Do you have additional comments? _____

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TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name Jean Reagan
Street 210 Elm Street E-mail myreagan2007@gmail.com
City Paris State TN Zip 38242 Phone (731) 644-9695

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident X Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) Less expensive

Alt B (bypass Puryear) More expensive

What issues and concerns do you have about the project? Flooding!

Are there any changes you would make to the project? Speed things up. This project should have already started.

Do you have additional comments? _____

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**PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349**

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

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Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name MATT HAYES
Street 95 GATE 3 RD E-mail _____
City PARIS State TN Zip 38242 Phone (731) 642-7922

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident _____ Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) IT WOULD SLOW TRAFFIC THROUGH PURYEAR, ESP,
AROUND THE SCHOOL. BUT THE COSTS WOULD BE CONSIDERABLY LOWER
IT WOULD BENEFIT THE TOWN OF PURYEAR.

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? I WISH IT COULD GET
ALONG A LITTLE FASTER. WE DEFINITELY NEED TO PROCEED WITH IT.

Are there any changes you would make to the project? _____

Do you have additional comments? THIS PROJECT NEEDS TO PROCEED WITHOUT
REGARD TO ANY OTHER PLANNED PROJECTS. WEST TENNESSEE NEEDS THIS
PROJECT.

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Comment Sheet

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

Visit us Online!
www.tennessee.gov/tdot/

Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name DAVID JENNINGS
Street 2135 Hwy 641 N E-mail COLCOKE@AOL.COM
City PARIS State TN Zip 38242 Phone (731) 336 8174

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident ☒ Affected Landowner ☒
Affected Business ☒ Name of Business WOODLAND CAFE AUTO

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) THE RESTRICTIONS ON SPEED THROUGH PURYEAR

Alt B (bypass Puryear) THIS IS THE WAY TO GO

What issues and concerns do you have about the project? MY DRIVE WAY ALREADY DROPS DOWN A BIT HILL IF THAT DROP THAT ROAD ANY MORE I WON'T BE ABLE TO GET UP MY DRIVE OR MY CUSTOMERS

Are there any changes you would make to the project? START THE PROJECT AT 218 BY PASS

Do you have additional comments? FORCE TRUCK TRAFFIC AROUND PARIS

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

Visit us Online!
www.tennessee.gov/tdot/

Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name David Wilson
Street 2560 Hwy 641 N. E-mail _____
City _____ State _____ Zip _____ Phone (731) 782-3578, 363-6487

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident _____ Affected Landowner ☒
Affected Business ☒ Name of Business Hilltop Auto

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) _____

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? _____

Are there any changes you would make to the project? _____

Do you have additional comments? _____

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Comment Sheet

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David Wilson
2560 Hwy 641 N
Paris, TX 38242

PLACE
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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

Visit us Online!
www.tennessee.gov/tdot/

Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name + Vicki Dale Douglass
Street 1308 North market st. E-mail vdouglass
City Paris State TN Zip 38242 Phone (731) 642-3056

Which describes your primary interest in the project?

Concerned Citizen ☒ Affected Resident ☐ Affected Landowner ☒
Affected Business ☐ Name of Business

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) You Should take both Sides of the Road.
We own 2 properties in that Section 1308 N Market St
& 1310 N. Market St.

Alt B (bypass Puryear)

What issues and concerns do you have about the project? You will have a new Road but,
not a better place for your Children to play.

Are there any changes you would make to the project? We think you Should take both
Sides of the Road. The City Park that is there Could be Relocated
& made a better park. The one that is there is Run down &

Do you have additional comments? Water fountains don't work. Swings &
Slide is are Very old & a better Park Could be made
Some where else. Nearly all homes from Cedar Street to
Allison Street are rental properties and are Older homes.

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Comment Sheet

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Dale Douglas
1308 North Market St.
Paris TN 38242

PLACE
STAMP
HERE

**PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349**

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Additional comments: _____

We are interested in your comments about the proposed project.

Please mail your comments by February 15, 2011.

Visit us Online!
www.tennessee.gov/tdot/

Public Hearing: January 25, 2011
PROJECT DESCRIPTION: SR 54 (US641)
From SR 69/Wood St. in Paris to Crossland
Road/Brannon Lane in Henry County
PIN 101886.00 PE # 40003-1213-14

Name Babbie Ritchie (by Glenda Ritchie daughter)
Street 1018 N. Market E-mail KY Lake property@aol.com
City Paris State TN Zip 38242 Phone (731) 642-0482
cell 270 562-1201

Which describes your primary interest in the project?

Concerned Citizen _____ Affected Resident ☒ Affected Landowner _____
Affected Business _____ Name of Business _____

We are interested in your comments about the proposed project.

What do you think are good or bad points of each alternative?

Alt A (through Puryear) _____

Alt B (bypass Puryear) _____

What issues and concerns do you have about the project? flooding of homes
on 1018 & 1020 North Market - only 1 flood of property
prior to 1st flooding 10 since widening of road the 1st time
water runs down hill not up

Are there any changes you would make to the project? you can buy these properties
cheaper than culverts and roads into homes-

Do you have additional comments? the steepness of drives from Hwy
would make these homes lose value as well
as the widening will put additional flooding
on the 3 homes that sit in a bowl. Town Creek
can not be dredged and last I heard water runs down hill
to refresh your memory I am attaching 9 pages of
pictures.

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Comment Sheet

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PUBLIC HEARING COMMENTS
TENNESSEE DEPT. OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243-0349

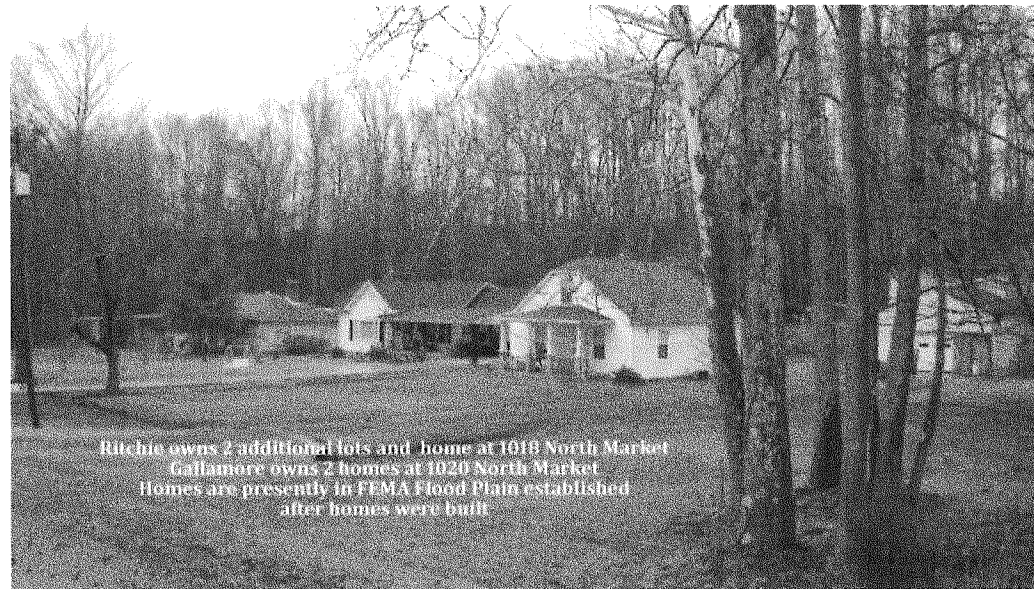
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Additional comments: _____

We are interested in your comments about the proposed project.

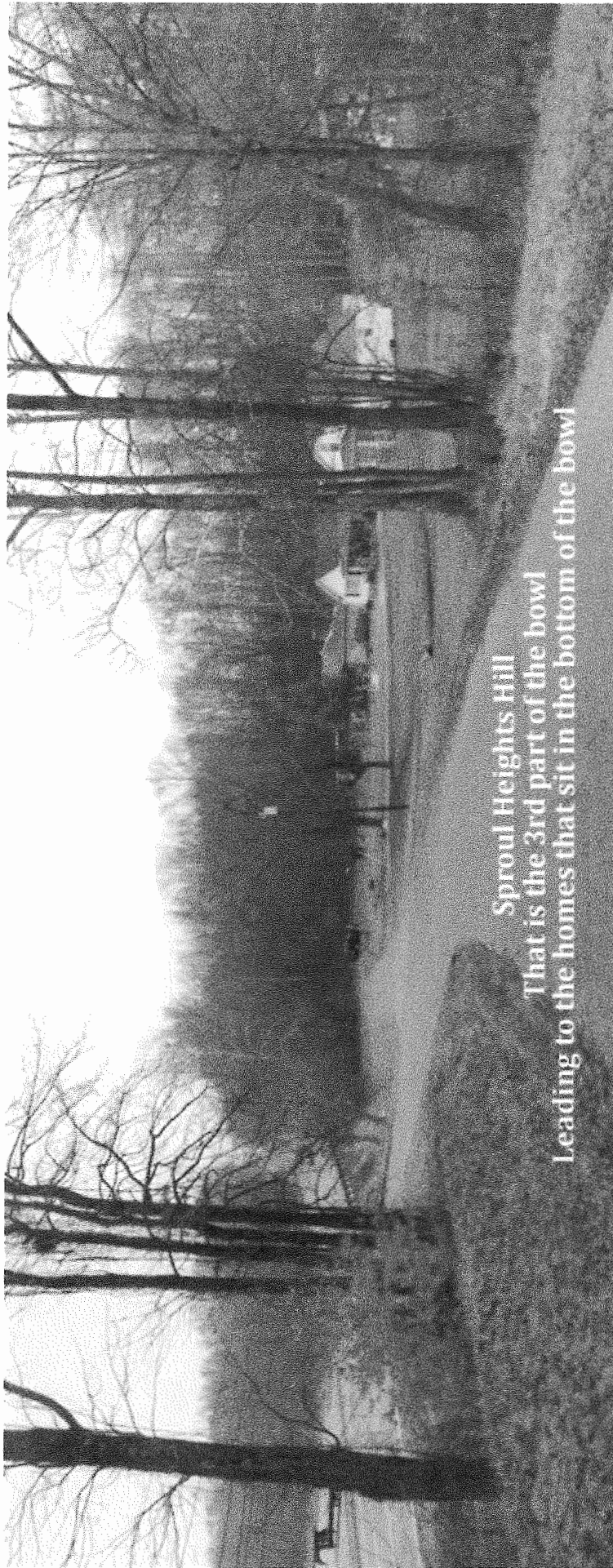
Please mail your comments by February 15, 2011.

Pictures of homes and property at 1018 N Market and 1020 N Market Owned by Ritchie's and Gallamore's



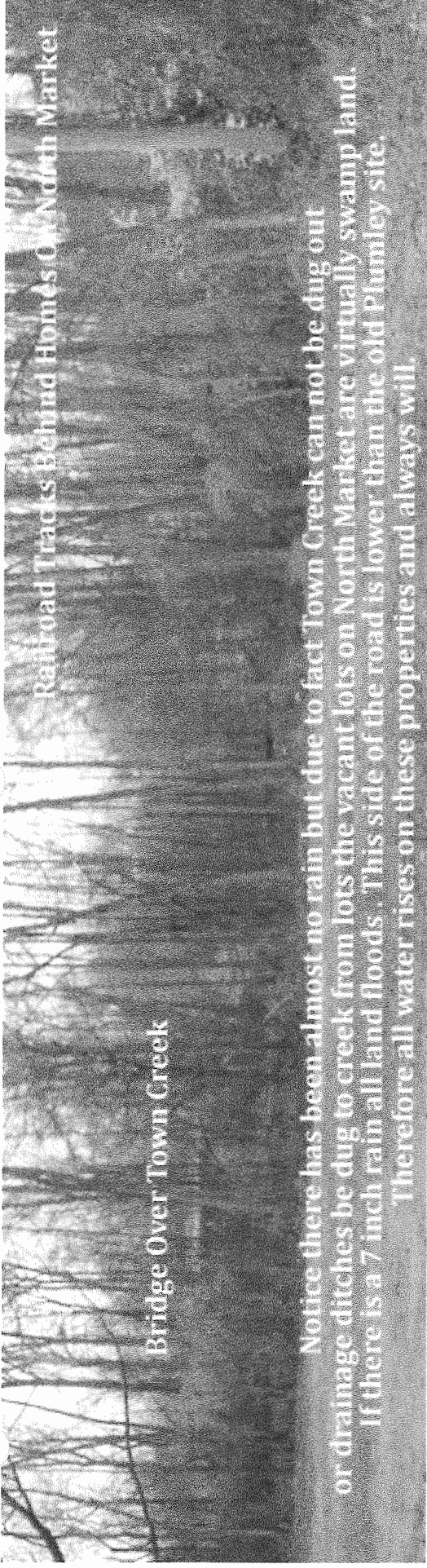
9 pages of
pictures
concerning
1018 & 1020
North Market

These properties are located in a FEMA Flood Plain
They Adjoin Town Creek and sit in a bowl with raised 641 to
one side. Town Creek and the raised lots beyond on
another, railroad tracks to the back of the homes and lots
are also raised 50 to 100 feet, and Sproul Heights Hill lastly
finishes off the bowl.



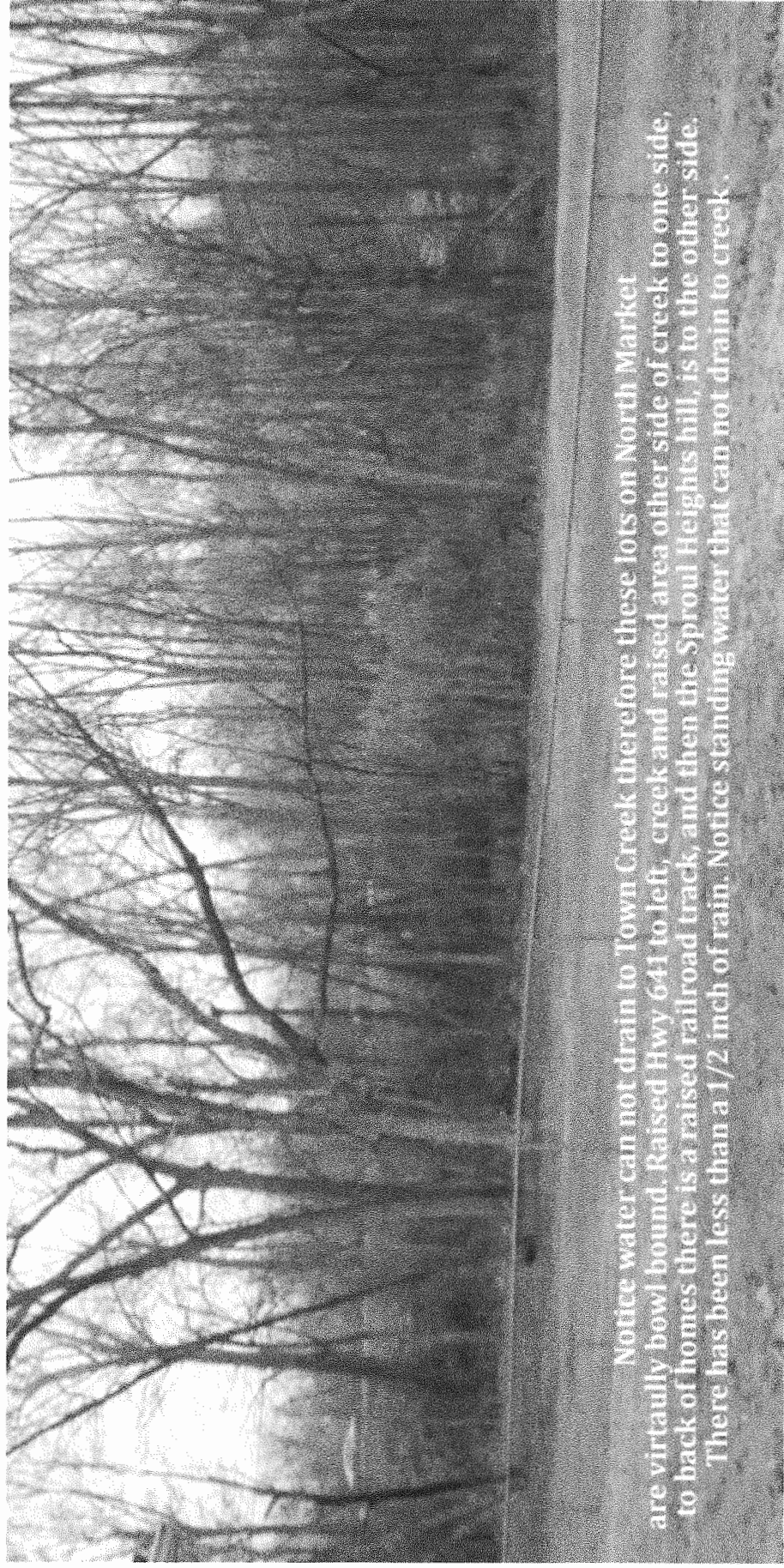
Sproul Heights Hill

That is the 3rd part of the bowl
Leading to the homes that sit in the bottom of the bowl



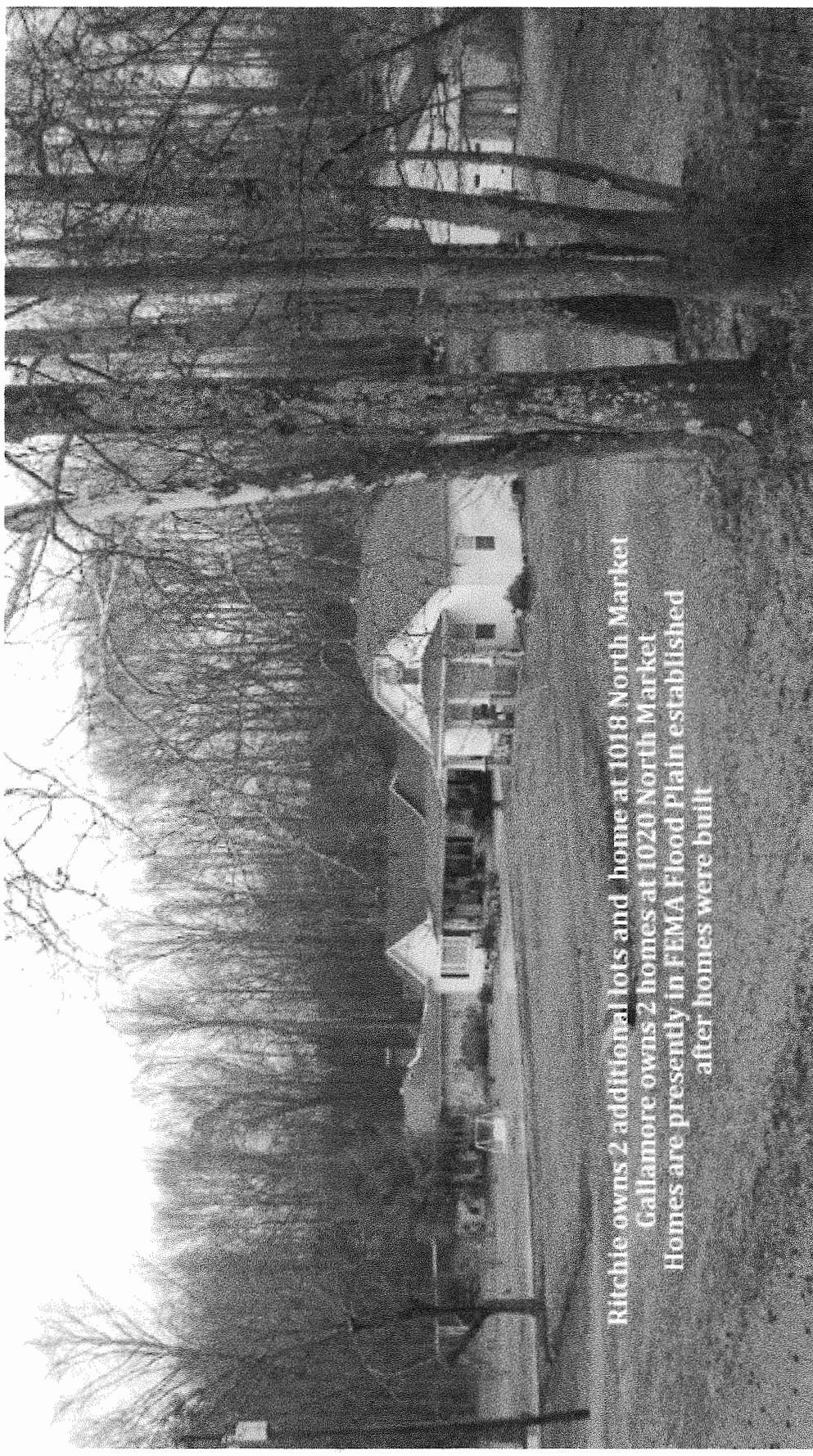
Bridge Over Town Creek

Notice there has been almost no rain but due to fact Town Creek can not be dug out or drainage ditches be dug to creek from lots the vacant lots on North Market are virtually swamp land. If there is a 7 inch rain all land floods. This side of the road is lower than the old Plumley site. Therefore all water rises on these properties and always will.

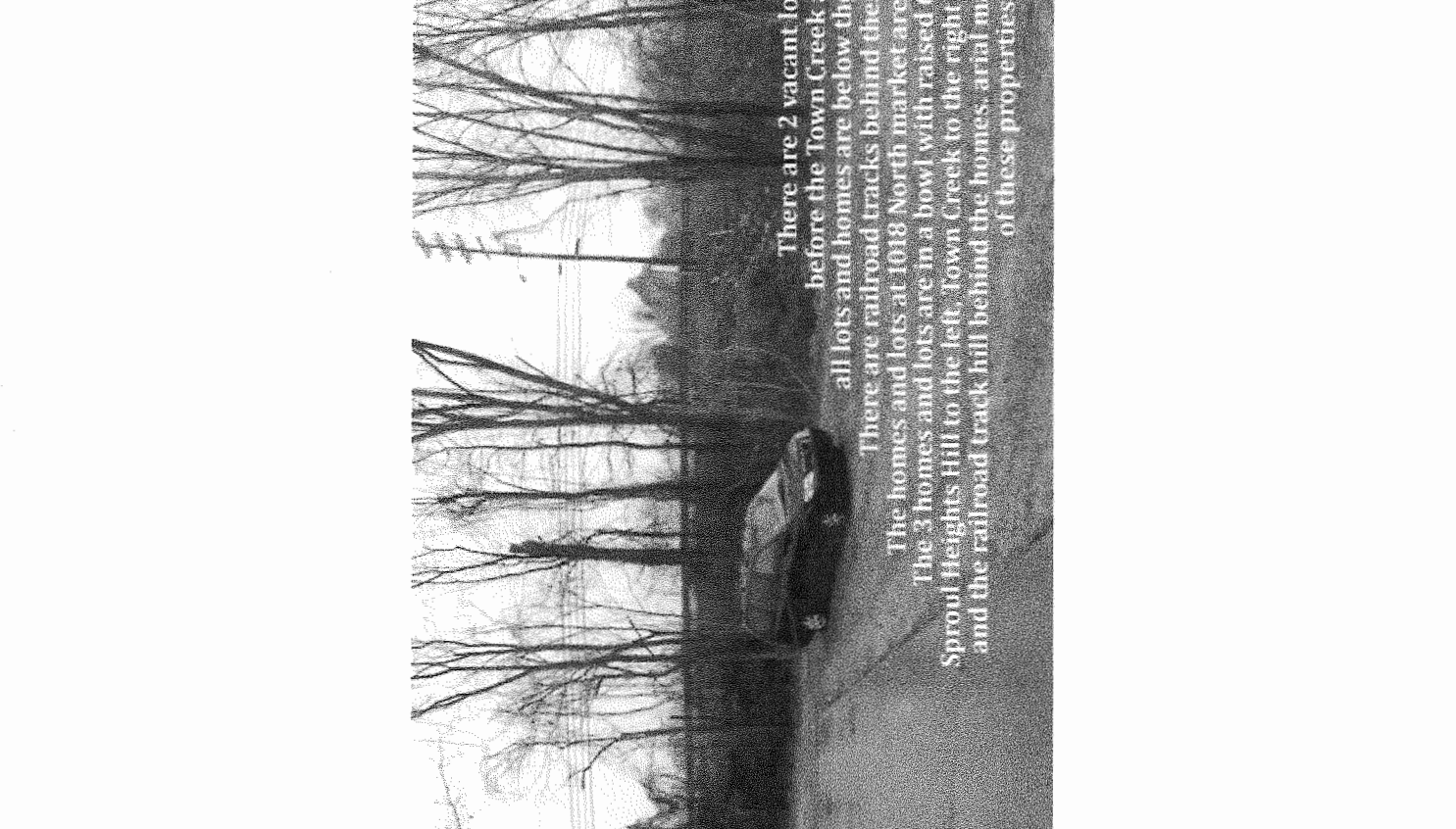


Notice water can not drain to Town Creek therefore these lots on North Market are virtually bowl bound. Raised Hwy 641 to left, creek and raised area other side of creek to one side, to back of homes there is a raised railroad track, and then the Sproul Heights hill, is to the other side. There has been less than a 1/2 inch of rain. Notice standing water that can not drain to creek.

Properties Are In FEMA Flood Plain



Ritchie owns 2 additional lots and home at 1018 North Market
Gallamore owns 2 homes at 1020 North Market
Homes are presently in FEMA Flood Plain established
after homes were built

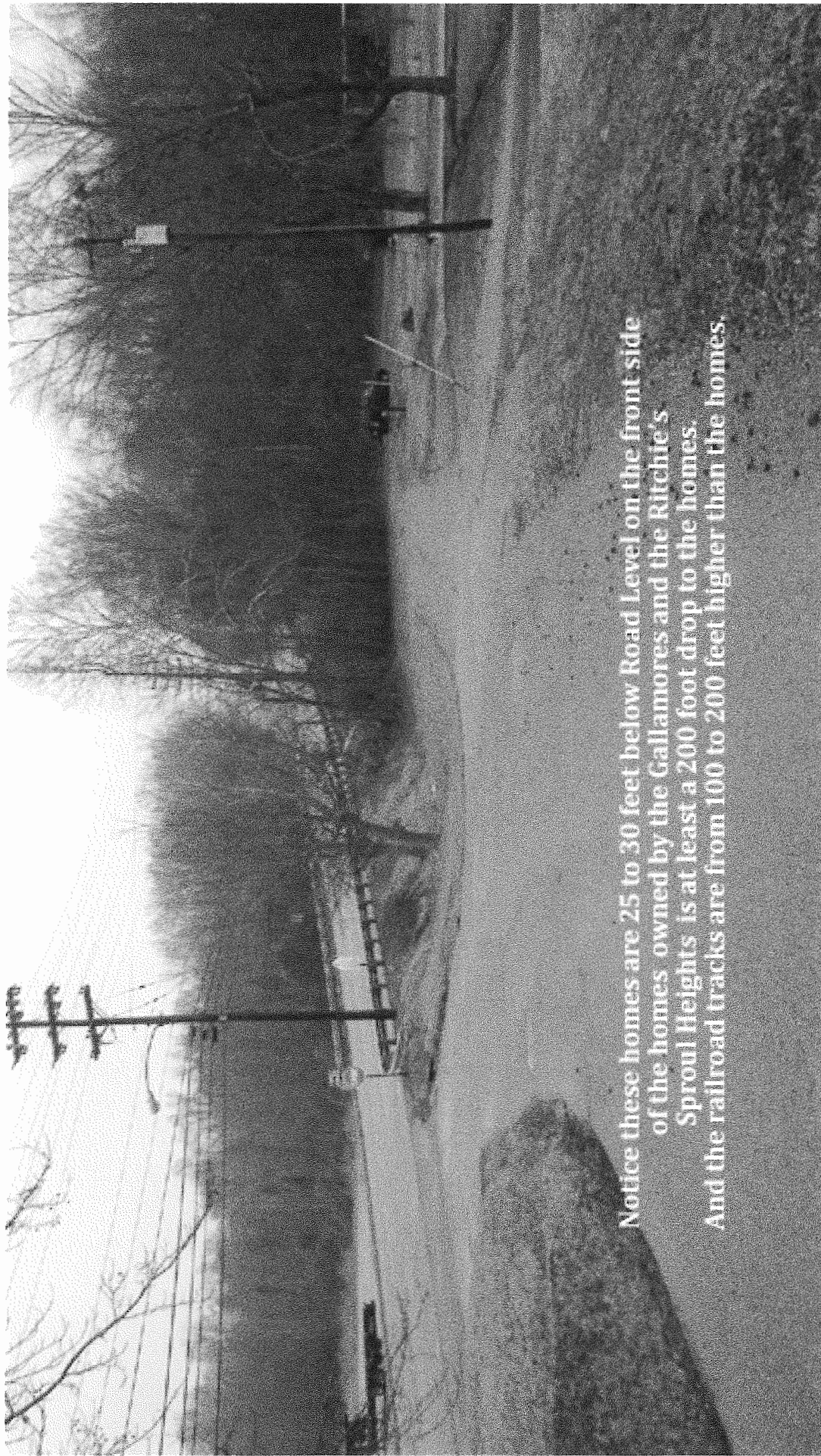


There are 2 vacant lots
before the Town Creek area.

all lots and homes are below the road grade.
There are railroad tracks behind these homes and lots.

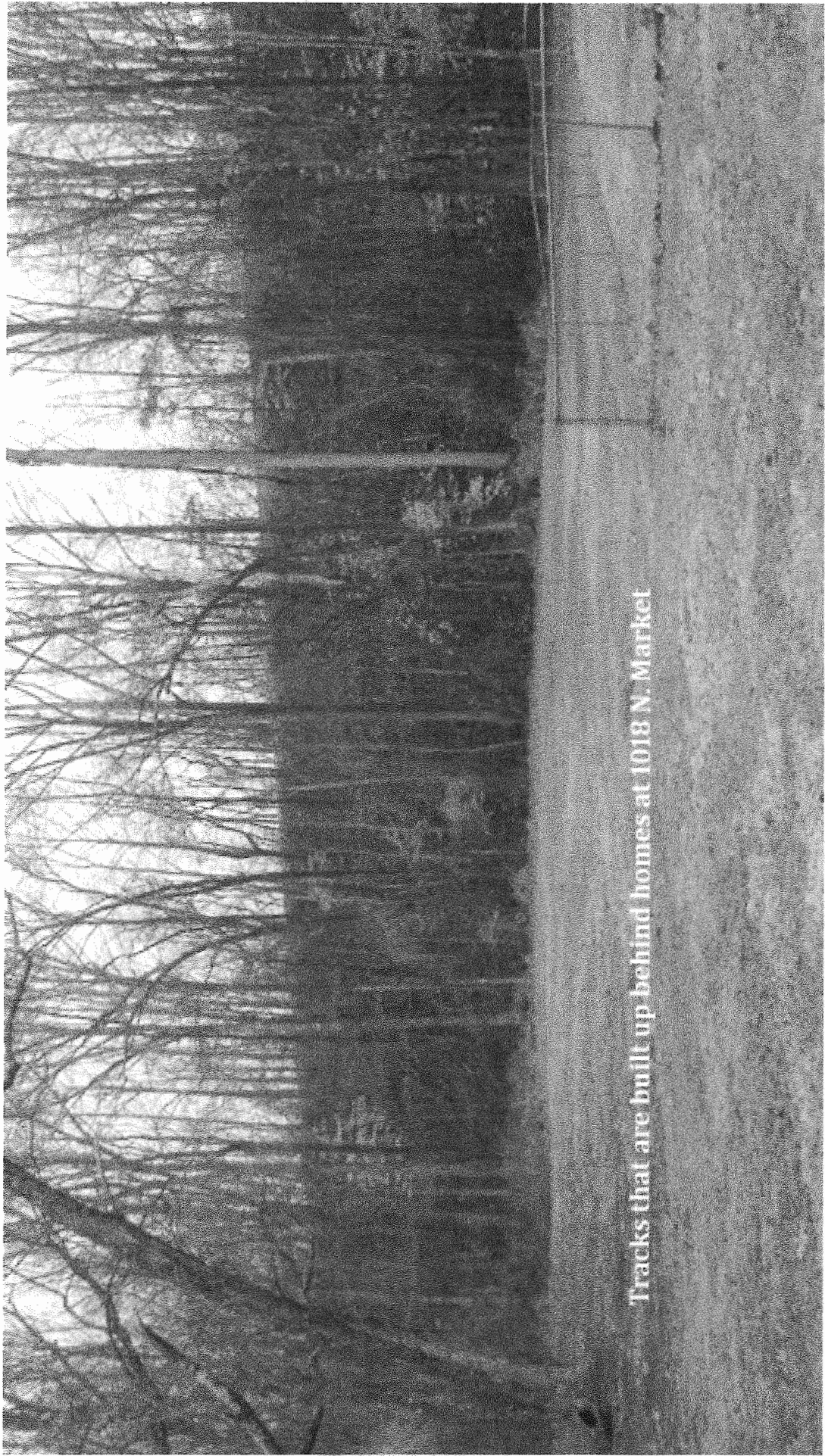
The homes and lots at 1018 North market are presently in a flood plain.

The 3 homes and lots are in a bowl with raised 6-41 to the front of the homes.
Sprout Heights Hill to the left, Town Creek to the right with another hill past Town Creek,
and the railroad track hill behind the homes. arial maps do not portray the true picture
of these properties.

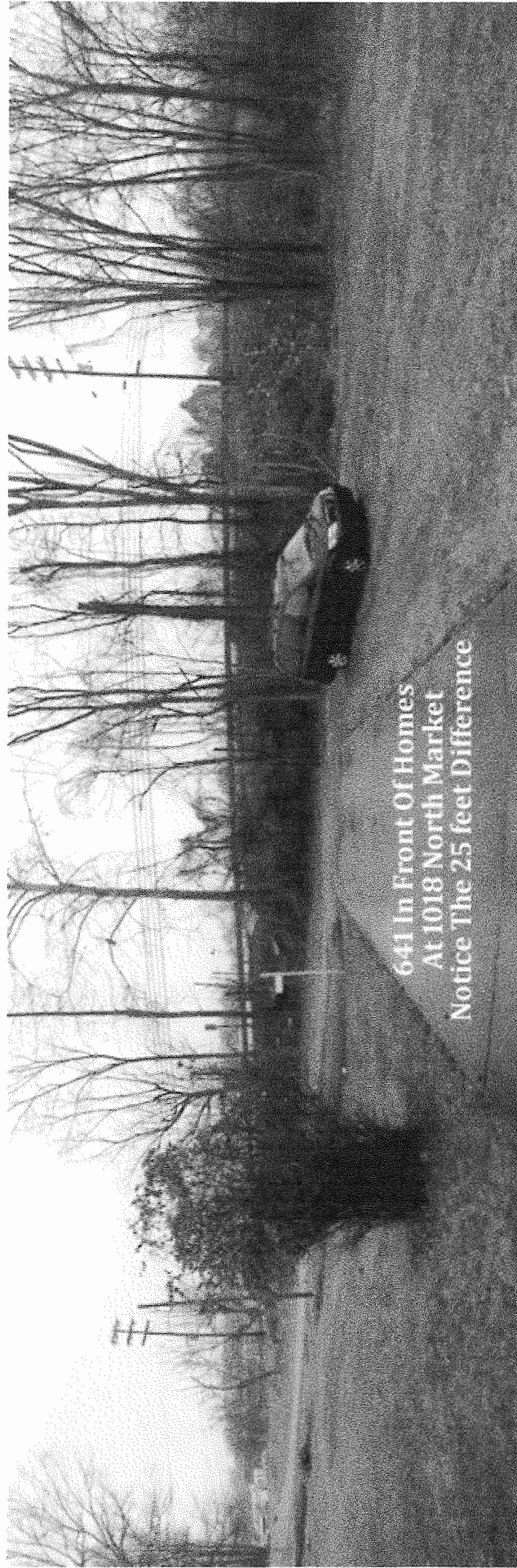


Notice these homes are 25 to 30 feet below Road Level on the front side of the homes owned by the Gallamores and the Ritchie's.

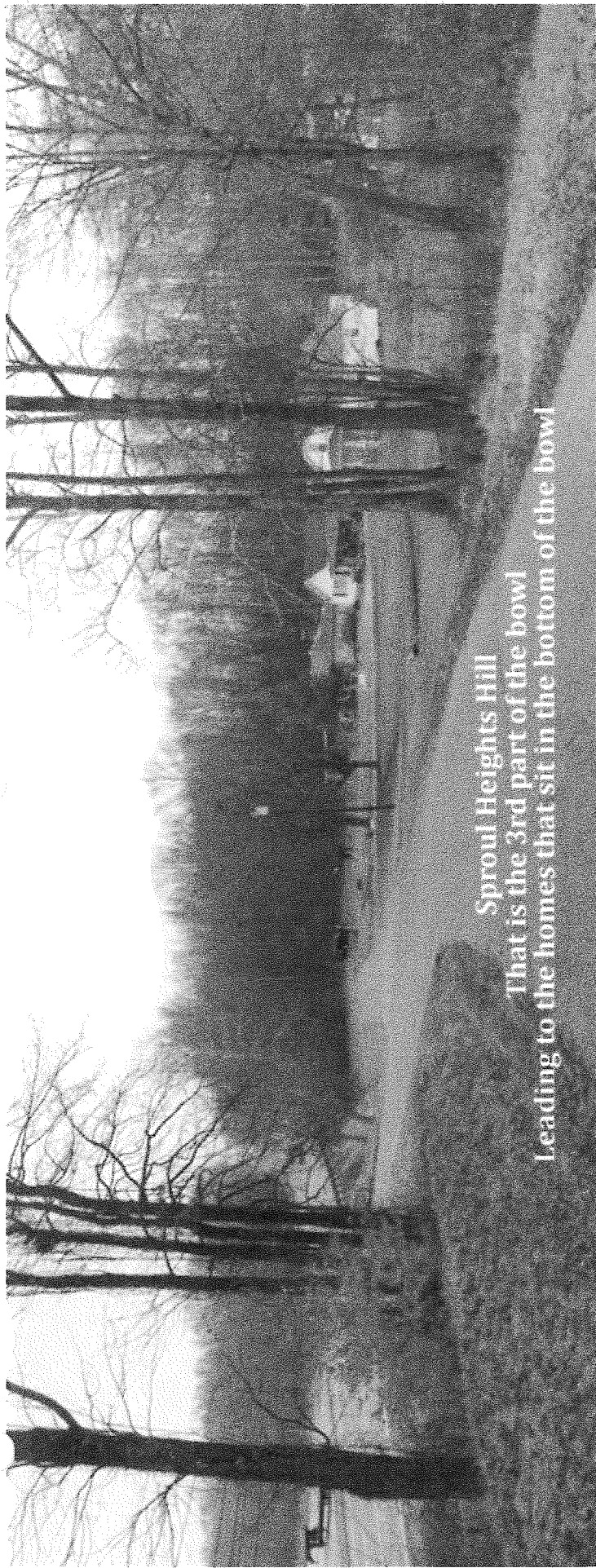
Sproul Heights is at least a 200 foot drop to the homes. And the railroad tracks are from 100 to 200 feet higher than the homes.



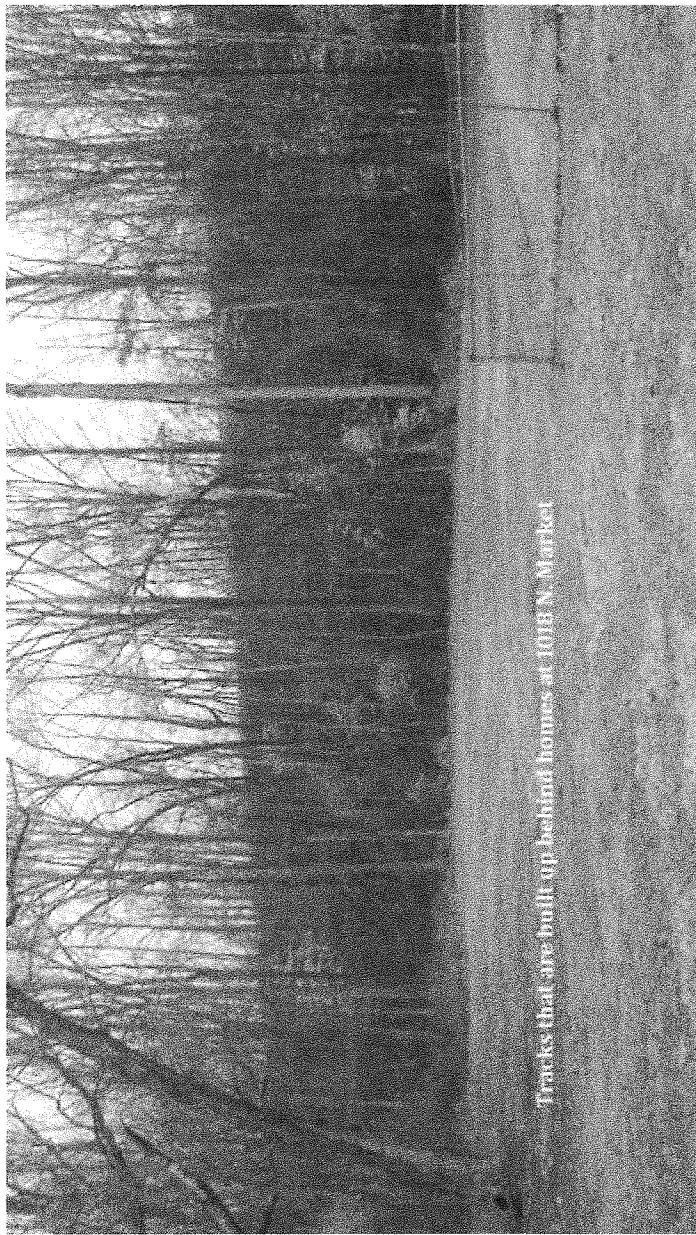
Tracks that are built up behind homes at 1018 N. Market



641 In Front Of Homes
At 1018 North Market
Notice The 25 feet Difference



Sproul Heights Hill
That is the 3rd part of the bowl
Leading to the homes that sit in the bottom of the bowl



Tracks that are built up behind homes at 1018 N. Market

ENVIRONMENTAL ASSESSMENT

State Route 54 (U.S. Highway 641)

**From State Route 69/Wood Street in Paris
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee**

**PIN 101886.01
PE No. 40003-1213-14**



September 2010

**STATE ROUTE 54 (U.S. 641)
FROM STATE ROUTE 69/WOOD STREET IN
PARIS
TO
CROSSLAND ROAD/BRANNON LANE (NORTH OF PURYEAR)
HENRY COUNTY, TENNESSEE**

**ENVIRONMENTAL ASSESSMENT
SUBMITTED PURSUANT TO 42 U.S.C. 4332 (2) (C)
BY THE
U. S. DEPARTMENT OF TRANSPORTATION,
FEDERAL HIGHWAY ADMINISTRATION,
AND THE
TENNESSEE DEPARTMENT OF TRANSPORTATION**


**COOPERATING AGENCIES:
TENNESSEE VALLEY AUTHORITY AND
U. S. ARMY CORPS OF ENGINEERS**

**STATE ROUTE 54 (U.S. 641)
FROM STATE ROUTE 69/WOOD STREET IN
PARIS
TO
CROSSLAND ROAD/BRANNON LANE (NORTH OF PURYEAR)
HENRY COUNTY, TENNESSEE**

**ENVIRONMENTAL ASSESSMENT
SUBMITTED PURSUANT TO 42 U.S.C. 4332 (2) (C)
BY THE
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AND THE
TENNESSEE DEPARTMENT OF TRANSPORTATION**

**COOPERATING AGENCIES:
TENNESSEE VALLEY AUTHORITY AND
U. S. ARMY CORPS OF ENGINEERS**

21 OCT 2010
DATE OF APPROVAL


FHWA

The following persons may be contacted for additional information concerning this document:

Mr. Charlie J. O'Neill
Planning & Program Management Team Leader
Federal Highway Administration
404 BNA Drive
Suite 508
Nashville, TN 37217
Phone: (615) 781-5770

Mr. Jim Ozment
Transportation Manager 2
Environmental Division
Suite 900 – James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334
Phone: (615) 741-5373

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LIST OF ABBREVIATIONS AND ACRONYMS

ADT	average daily traffic
CFR	<i>Code of Federal Regulations</i>
CSRP	Conceptual Stage Relocation Plan
DNH	Division of Natural Heritage
EA	Environmental Assessment
EPA	U. S. Environmental Protection Agency
FHWA	Federal Highway Administration
FWS	U. S. Fish and Wildlife Service
I	Interstate
LOS	level of service
mph	miles per hour
MSAT	mobile source air toxics
NAC	noise abatement criteria
NRHP	National Register of Historic Places
ROW	right-of-way
SR	State Route
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TEMA	Tennessee Emergency Management Agency
TN-SHPO	Tennessee State Historic Preservation Office
TNM	traffic noise model
TVA	Tennessee Valley Authority
USACE	U. S. Army Corps of Engineers
USDA	U. S. Department of Agriculture
UST	underground storage tank
vpd	vehicles per day

SUMMARY

General Project Description

The Tennessee Department of Transportation (TDOT) proposes to improve the overall safety and operation of a portion of existing State Route 54 (U.S. 641) from State Route 69/Wood Street in Paris to Crossland Road/Brannon Lane (north of Puryear) in Henry County, Tennessee. The existing roadway, in the study section, is a two-lane facility. The total length of the proposed improvement is approximately 11.8 miles. The proposed improvement includes widening the highway along a portion of the existing route and the construction of a new route alignment around the town of Puryear. The southern terminus is located at State Route 69/Wood Street; however proposed construction begins at Rison Street due to expected adverse impacts on cultural and historic resources in the Paris business district if construction were to begin at Wood Street. The northern terminus is located north of Puryear at Crossland Road/Brannon Lane. During project development, the northern terminus was changed from near the Kentucky/Tennessee state line to its current location to accommodate future project decisions as State Route 54 (U.S. 641) approaches Hazel, Kentucky. This will allow the state of Kentucky to develop their portion of US 641 and not restrict their decision on where to develop and locate their alignments. Once the state of Kentucky develops their section of US 641, Tennessee could at a later time extend SR-54/US 641 to the north.

The purpose of the project is to improve the roadway operation and correct existing safety and geometric deficiencies. The existing route has narrow lanes, minimum shoulders, limited turn lanes, numerous driveway and local road connections, and it is frequently used by farm machinery, which leads to congestion and safety concerns. The roadway would be widened to four traffic lanes, with a center turn lane. Chapter II of this Environmental Assessment (EA) describes the proposed design and right-of-way (ROW) requirements of the project. TDOT has received no notification of any major proposed actions in the project area by other federal agencies, and there are no physical constraints, such as topography or environmental impacts, that prevent the route from being improved.

Summary of Alternatives

As discussed in Chapter II, the alternatives considered in this EA include the No-Build Alternative and two Build Alternatives, A and B.

Summary of Environmental Impacts

The primary beneficial effects of the proposed action include: (1) improved local and regional accessibility that could promote economic growth for the area; (2) improved traffic service, reducing the potential for future traffic problems; and (3) improved safety and operating conditions in the study area.

The primary adverse effects of the proposed action include: (1) temporary construction impacts (e.g., fugitive dust, siltation, and equipment noise) during the construction period; (2) the loss of land for the new highway ROW; (3) the displacement of families and businesses; (4) the loss of farmland; and (5) the loss of wetlands and open water habitat.

Possible Action Required by Other Federal Agencies

Tennessee Valley Authority – Section 26A Permits
U. S. Army Corps of Engineers – Section 404 Permits

SAFETEA-LU Statute of Limitations

“A Federal Agency may publish a notice in the Federal Register, pursuant to 23USC§139(1), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within a shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.”

Environmental Commitments

The following measures will be utilized to avoid, minimize, or mitigate the impacts of the proposed project on the human and natural environment:

- Vegetation clearing for the project will be limited to the minimum area required for construction of the project and disturbed areas will be revegetated with native species. Fill slopes will be constructed and stabilized during the growing season with the establishment of non-invasive vegetation.
- Disturbed areas will be revegetated in a timely manner to hold soil movement to a minimum.
- Dumping of chemicals, fuels, lubricants, bitumens, raw sewage, or other harmful waste into or alongside of streams or impoundments, or into natural or manmade channels leading thereto, will be prohibited.
- To protect the two historic properties in Paris, TDOT will only widen the road on the western side opposite the historic properties.
- The historic cemetery located within the proposed project corridor will be avoided.
- If previously undiscovered archaeological material is found during construction, all construction will cease in that area and the Tennessee Division of Archaeology and the recognized Native American Tribes will be contacted so a representative can have the opportunity to examine and evaluate the material.
- TDOT will develop a wetland mitigation plan that will be coordinated with the appropriate permit and resource agencies. The final decision in consultation with permit agencies will be made before application is made for a USACE Section 404 Permit.
- TDOT will conduct further hydrological and geomorphologic surveys during the design and permitting phases of the project to ensure that any floodplain impacts are minimized to the fullest extent practicable.

CHAPTER I – PURPOSE AND NEED FOR ACTION

The purpose of this project is to improve the overall safety and operation of a portion of existing State Route 54 (U.S. 641) from State Route 69/Wood Street in Paris to Crossland Road/Brannon Lane (north of Puryear) in Henry County, Tennessee. The existing roadway, in the study section, is a two-lane facility. The total length of the proposed improvement is approximately 11.8 miles. The southern terminus is located at State Route 69/Wood Street; however, proposed construction begins at Rison Street due to expected adverse impacts on cultural and historic resources in the Paris business district if construction were to begin at Wood Street. During project development, the northern terminus was changed from near the Kentucky/Tennessee state line to its current location to accommodate future project decisions as State Route 54 (U.S. 641) approaches Hazel, Kentucky. This will allow the state of Kentucky to develop their portion of US 641 and not restrict their decision on where to develop and locate their alignments. Once the state of Kentucky develops their section of US 641, Tennessee could at a later time extend SR-54/US 641 to the north.

A. PROJECT STATUS

The Tennessee Department of Transportation (TDOT) has determined that there is a need for the proposed project. The project has logical termini, is of sufficient length to address environmental matters on a broad scope, has independent utility, and would not restrict the consideration of alternatives for other reasonably foreseeable transportation improvements.

The project is included in the Tennessee Transportation Improvement Program, Fiscal Years 2008 through 2011, located at http://www.tdot.state.tn.us/programdev/docs/STIP2008_2011.pdf.

B. SYSTEM LINKAGE

Two Federal highways, U.S. 79 (four-lane) and U.S. 641, intersect in Paris with State Highways 79, 77, 69, and 54 to provide excellent transportation for the area. Interstate 40 and Interstate 24 are approximately 40 and 60 miles south and east, respectively, of Paris. Highway 218 Bypass is complete from U.S. 79, north of Paris, to Highway 54, west of Paris.

The improvements are needed to: (1) accommodate future traffic between I-24 in Kentucky and I-40 south of Paris; (2) contribute to overall system connectivity and continuity by completing a portion of U.S. 641 as a four-lane, divided arterial from Murray, Kentucky, to I-40; (3) provide an improved corridor for commuters, shoppers, health service users, college students, and truckers from Kentucky to U.S. 79 south of Paris; and (4) improve the overall safety and operating conditions of the existing roadway.

C. EXISTING CONDITIONS

SR 54 (U.S. 641) is functionally classified as an Urban and Rural Principal Arterial on the National Highway System, and from I-40 to the Kentucky state line, U.S. 641 is on the National Network. The National Network includes the Interstate Highway System and the list of roads in 23 CFR 658, Appendix A. National vehicle size standards (length and width) apply to these roads. U.S. 641 is a major north-south corridor running from I-40, through Paris, Tennessee, and into Kentucky. The proposed project length is approximately 11.8 miles beginning near Rison Street in Paris and extending to north of Puryear. The existing route is two lanes with narrow shoulder widths and bridges; limited turn lanes;

numerous driveway and local road connections; and it is frequently used by farm machinery, which leads to congestion and safety concerns.

D. TRAFFIC

The projected base year (2011) annual average daily traffic (ADT) along this route is 7,820 vehicles per day (vpd). This is based on 2008 cycle counts. The projected design year (2031) ADT is 10,940 vpd. Trucks account for approximately 9% of the traffic on SR 54 in the project area.

E. LEVEL OF SERVICE

The operational characteristics of a highway facility are described in terms of level of service (LOS), which ranges from A to F. The LOS takes into consideration three variables: travel speed, traffic density, and vehicle flow rate. General descriptions of the operating conditions for each LOS are shown on Figure 1-2.

An LOS analysis was performed for the project area, which was divided into three study sections. The LOS classifications were found for the base year (2011) and the design year (2031) in the No-Build Alternative and the design year in the Build Alternative. For the base year, LOS on SR 54 was estimated to be LOS D in Section I and LOS C in Sections II and III. For the design year No-Build Alternative, LOS for SR 54 would remain the same in Sections I and III and decline to LOS D in Section II. With the proposed Build Alternative improvements to SR 54, LOS would improve and is estimated to operate in the design year at LOS B in Section I and LOS A in Sections II, III-A, and III-B. Figures 1-3, 1-4, and 1-5 show the three sections for each alternative.

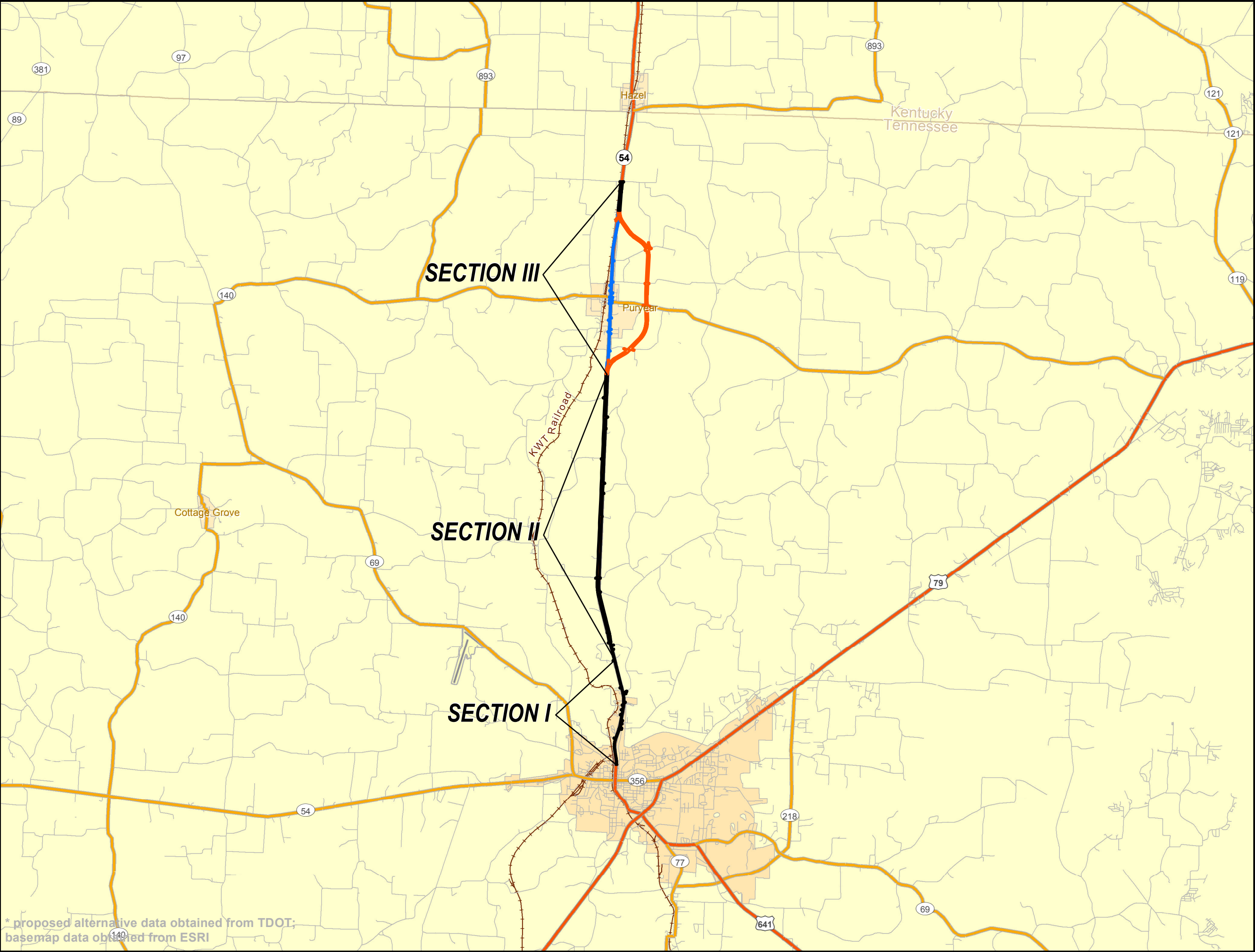
F. SOCIAL AND ECONOMIC CONDITIONS

Paris is a growing city with a four-phased economy of agriculture, tourism, industry, and retail trade. It is a livestock center where emphasis is placed on beef, hogs, and dairy production. The primary agricultural products are corn, soybeans, wheat, and tobacco. Industry is a major factor in the growth of Paris and Henry County. Principal industrial products are extruded molded rubber, school laboratory furniture, molded plastics, brakes, manufactured homes, small electric motors, and compressors for refrigeration equipment.

The initial study for the proposed project was requested by the Paris Chamber of Commerce, who regards this improvement vital for the area's future economic development and the safety of road users. SR 54 is a well-travelled route, especially while classes at Murray State University are in session, and improving transportation is expected to facilitate development for the long term.

G. LAND USE

Paris, the county seat of Henry County, is the oldest incorporated municipality in west Tennessee. Located mid-way between Nashville and Memphis, Paris is the Southern Gateway to the Land-Between-the-Lakes National Outdoor Area. The existing land use in the study area is predominantly rural, and most residences and small businesses are within the towns of Paris and Puryear. Throughout the project corridor, there are forested tracts (upland and bottomland hardwoods) and farmland used for hay, pasture, and row crops.



**ENVIRONMENTAL ASSESMENT
WIDENING/RECONSTRUCTION OF
STATE ROUTE 54 (U.S. 641)**

CORRIDOR MAP

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

LEGEND

- Limited Access
- Highway
- Major Road
- Local Road
- Railroads (Local)
- State Boundary

ALTERNATIVE

- Alternative A
- Alternatives A and B
- Alternative B

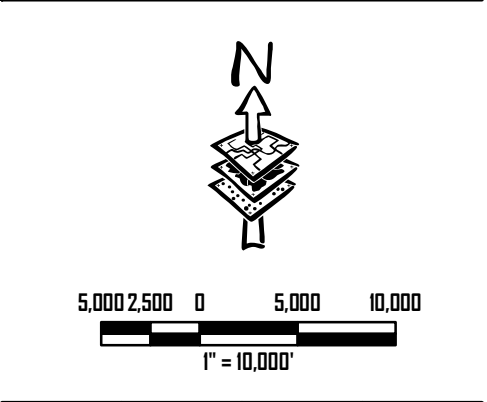


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* proposed alternative data obtained from TDOT;
basemap data obtained from ESRI

H. MODAL RELATIONSHIPS

The railway service for Paris and Henry County is KWT (Kentucky–West Tennessee) Railway, Inc. KWT Railway's line runs from Paris to Murray, from Paris to Henry, and from Paris to Bruceton, Tennessee, where it interchanges with the CSX main line. Trucking is also a dominant means of moving goods to and from local business and industry.

I. SAFETY

Utilizing the ADT acquired from the TDOT Tennessee Roadway Information Management System database for the years 2004 through 2006 and the calculated vehicle miles of travel, a crash rate (crashes per 1 million vehicle miles) was calculated for the existing route. The crash rate was calculated to be 2.48 for the section of SR 54 from near Rison Street to the Paris urban boundary located just north of Smith Road. For the remaining section from near Smith Road to the Kentucky state line, the crash rate was 1.10. The rate for the first section can be compared to the state-wide average rate for these years of 2.34 for a two-lane urban highway. The rate for the second section can be compared to the state-wide average rate of 1.70 for a two-lane rural highway. The critical rate was calculated to be 3.37 for the first section and 2.06 for the second section. The critical rate is a quality control measure that defines statistically how the actual rate differs significantly from the state-wide average accident rate. The ratio of the actual rate to the critical rate indicates the severity of the problem. A ratio of over 1.0 suggests a likely safety deficiency. In this case, the calculated ratio is 0.73 for the urban section and 0.54 for the rural section. In the first section, there were 32 crashes, including 3 severe crashes (1 fatality and 2 incapacitating injuries) over the 3-year period. Nineteen of the crashes occurred along the roadway, and 13 were at an intersection. In the second section, there were a total of 83 crashes, of which, 12 were severe (2 fatalities and 10 incapacitating injuries). Fifty-eight of the crashes occurred along the roadway, and 25 occurred at an intersection. For both sections, the majority of the collisions were rear-end, followed by angle and head-on collisions. By correcting deficiencies, such as narrow shoulder widths and bridges, limited turn lanes, and driveway and local road connections, the overall safety of the highway will be improved. As a result, accident potential, especially for severe crashes, is expected to decrease.

Level of Service (LOS):

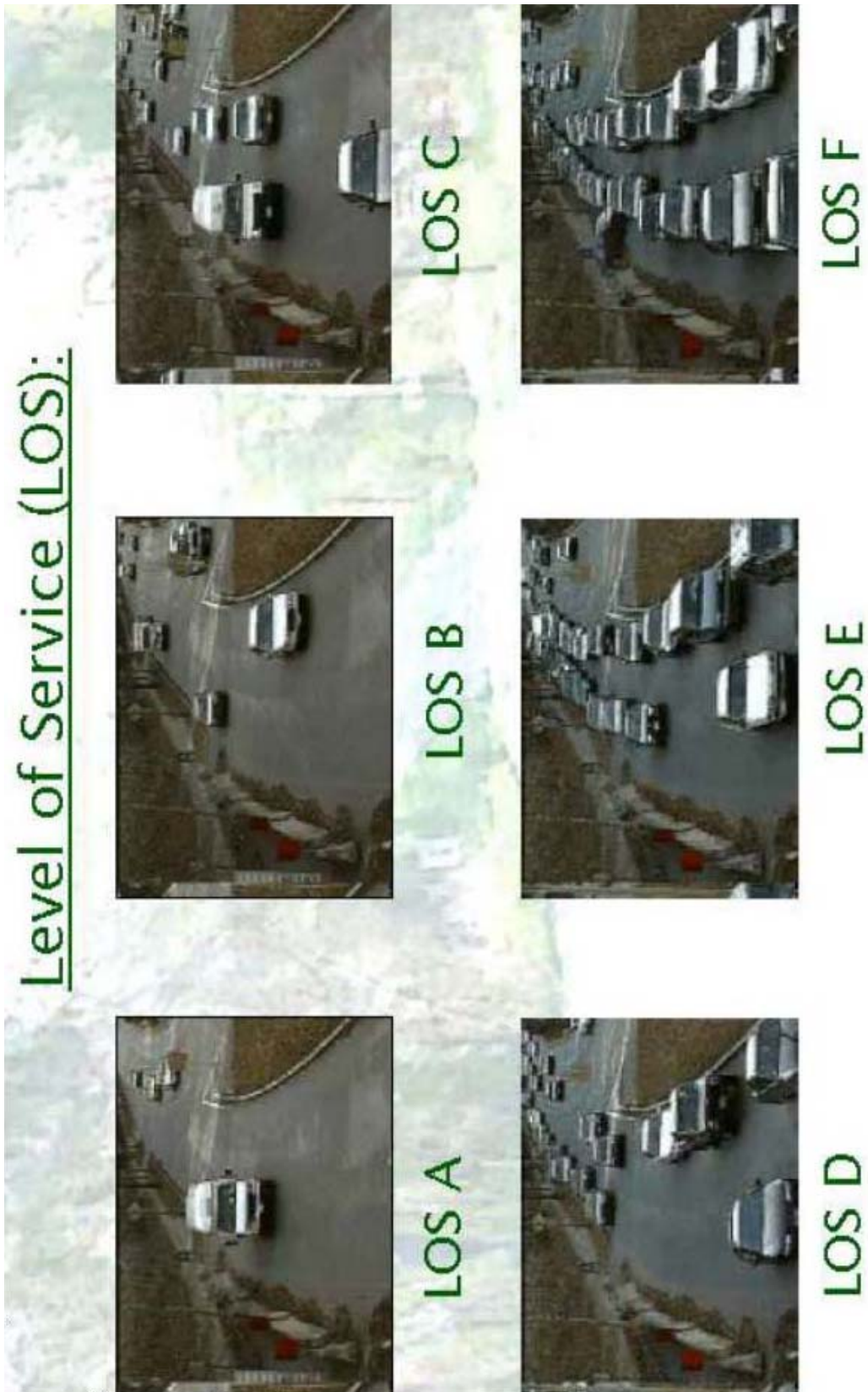


Figure 1-2. Level of Service.




ENVIRONMENTAL ASSESMENT
WIDENING/RECONSTRUCTION OF
STATE ROUTE 54 (U.S. 641)


[Corridor Section I](#)


State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee


LEGEND

 Wetland


ALTERNATIVE


 Alternative A


 Alternatives A and B


 Alternative B

FLOODZONE

 .2% Annual Chance Flood Hazard

 Zone A

 Zone AE

 Zone AE/Floodway

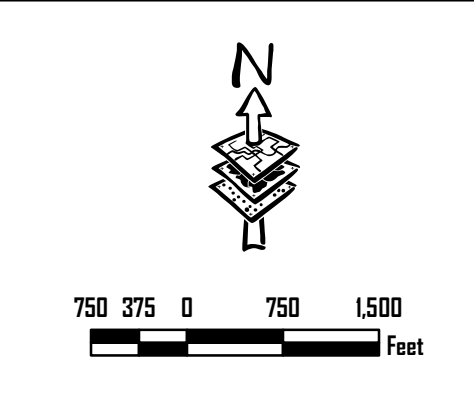
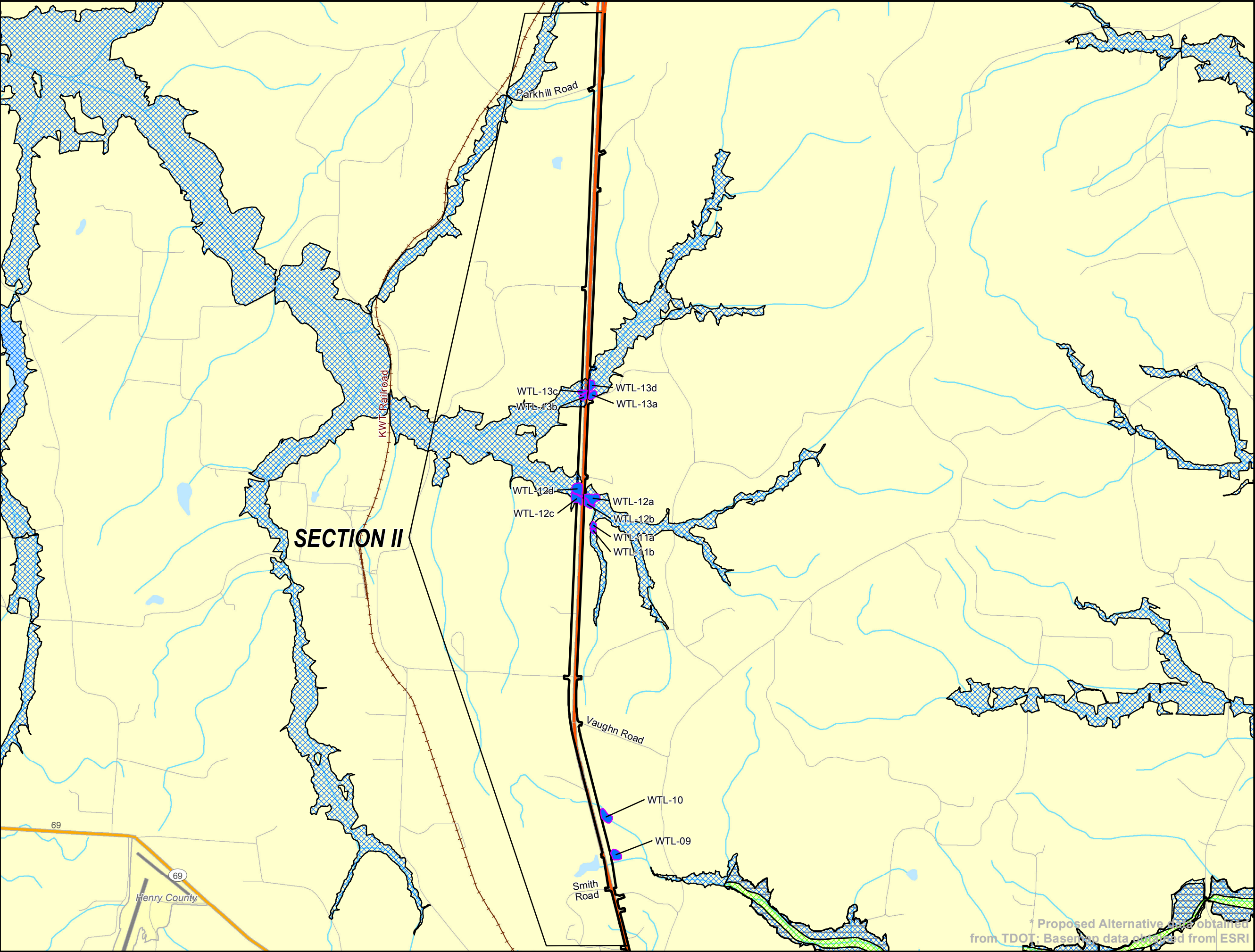


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* Proposed Alternative data obtained from TDOT; Basemap data was obtained from ESRI



ENVIRONMENTAL ASSESMENT
WIDENING/RECONSTRUCTION OF
STATE ROUTE 54 (U.S. 641)

Corridor Section II

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

LEGEND

- Wetland
- ALTERNATIVE
 - Alternative A
 - Alternatives A and B
 - Alternative B
- FLOODZONE
 - .2% Annual Chance Flood Hazard
 - Zone A
 - Zone AE
 - Zone AE/Floodway

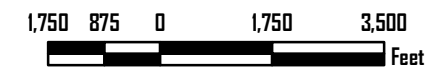
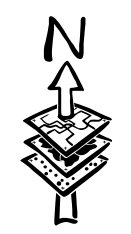
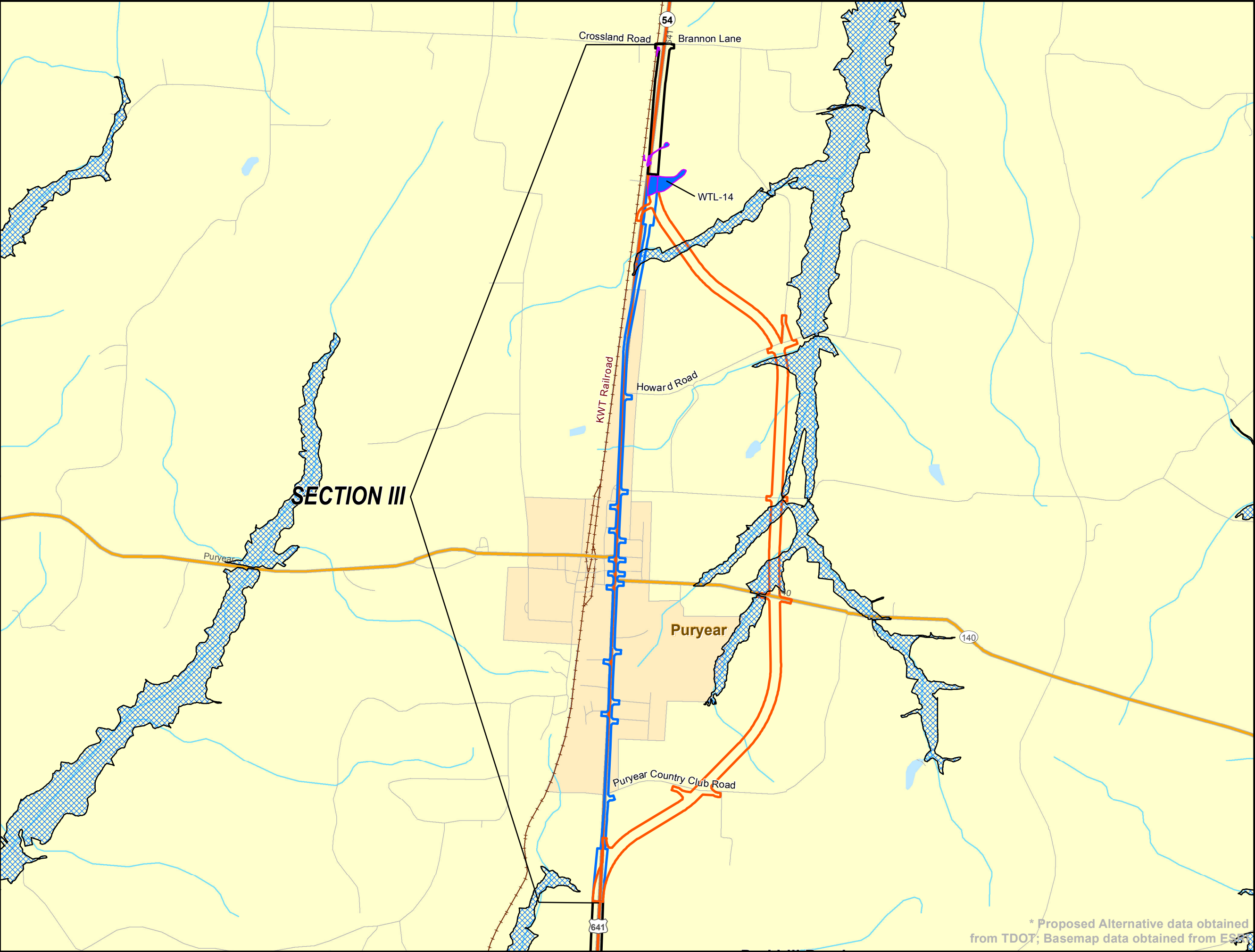


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* Proposed Alternative data obtained from TDOT; Base map data obtained from ESRI



ENVIRONMENTAL ASSESMENT
WIDENING/RECONSTRUCTION OF
STATE ROUTE 54 (U.S. 641)

Corridor Section III

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

LEGEND

- Wetland
- ALTERNATIVE**
- Alternative A
 - Alternatives A and B
 - Alternative B
- FLOODZONE**
- .2% Annual Chance Flood Hazard
 - Zone A
 - Zone AE
 - Zone AE/Floodway

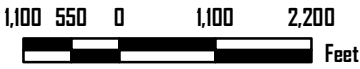


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* Proposed Alternative data obtained from TDOT; Basemap data obtained from ESRI

CHAPTER II – DESCRIPTION OF ALTERNATIVES

The following section discusses the No-Build and Build Alternatives.

A. THE NO-BUILD ALTERNATIVE

Under the No-Build Alternative, the proposed improvements to SR 54 would not occur and the existing route would remain the same. The No-Build Alternative has both advantages and disadvantages. The principal advantages of this alternative are that: (1) there would be no residential or business relocations; (2) there would be no disruption from construction; and (3) noise increases, fugitive dust, siltation, and potential water pollution during construction would be avoided. Furthermore, this alternative would preserve farmland and wildlife habitat, and there would be no disruption of the existing land use or present travel patterns.

The principal disadvantages of this alternative are that: (1) it would do nothing to help relieve the area of existing and future traffic flow congestion and could result in inefficient travel and impaired access to regionally important recreational, employment, educational, residential, and governmental facilities; and (2) it would not eliminate deficiencies in the geometry, structures, operation, and alignment of the existing route.

B. THE BUILD ALTERNATIVE

TDOT proposes to improve a 11.8-mile segment of existing SR 54. The proposed segment under study begins at the intersection with Rison Street in Paris and extends to just north of Puryear in Henry County. The project corridor is divided into three study sections (see Figures 1-3, 1-4, and 1-6). Alternative A is approximately 11.8 miles in length, and Alternative B is approximately 12.3 miles in length. From the beginning of the project, Alternatives A and B are on the same location for 7.8 miles. From that point, Alternative A is 4.0 miles to the end of the project, while Alternative B is 4.5 miles to the end of the project. Sections I, part of II, and most of III-A would follow the present route. Section III-B provides a by-pass alternative around the east side of the town of Puryear.

With the exceptions of Sections I, part of II, and most of III-A within the city limits of Puryear, the proposed alignment would be constructed on or either east or west of the existing route. The shift from one side to another would minimize impacts and reduce the number of residences acquired for right-of-way (ROW). It would also allow traffic to be maintained during construction. The existing roadway is in poor condition and would not be salvaged in areas where the existing alignment is not followed. Widening of Sections I and III-A within the city limits of Puryear is nearly symmetrical along the existing alignment, but will avoid certain areas as much as feasible.

The beginning of Section I would tie into the existing two-lane roadway at Rison Street. Widening of this route farther to the south would have serious negative impacts on Paris's cultural and historic resources in the business district. The typical section from near Rison Street to near Logan Road would upgrade the existing two-lane sections of the roadway to a five-lane cross section consisting of two 12-foot inside traffic lanes (one in each direction), two 14-foot outside traffic lanes (one in each direction to accommodate bicycle traffic), one 12-foot center turn lane, and a mountable curb and gutter within an 88-foot ROW (Figure 2-1). Five-foot sidewalks on both sides of the roadway are proposed from the beginning of the project to just after the bridge over the abandoned L&N railroad, which is proposed to be removed.

The remainder of the project area is rural and not routinely used by pedestrian; therefore, sidewalks are not being proposed.

From near Logan Road to the end of Section I, the roadway would be a five-lane cross section consisting of four 12-foot traffic lanes, one 12-foot center turn lane, 10-foot shoulders, and a mountable curb and gutter within a 104-foot ROW (Figure 2-2). The old Seaboard Railroad Bridge would be removed as part of the project, and the existing bridge over Jones Bend Creek would be widened. Design speed for Section I is proposed to be 40 miles per hour (mph) from the beginning of the project to Logan Road and 50 mph from Logan Road to Smith Road.

Section II continues from the end of Section I and ends just north of Park Hill Road. This section would consist of four 12-foot traffic lanes with a 48-foot median and shoulders and ditches, as required, within a 250-foot ROW (Figure 2-3). From the beginning of Section II to near Vaughn Road, the proposed alignment would be constructed on the east side of the existing route. From Vaughn Road to the end of Section II, the proposed alignment would be constructed on the west side of the existing route. Bridges over the North Fork Obion River and Rowe Creek would be required. A design speed of 60 mph is proposed for this section.

Section III-A follows the existing route through the city of Puryear, continuing from the end of Section II to Crossland Road/Brannon Lane. The entire section would consist of two 12-foot inside traffic lanes, two 14-foot outside traffic lanes, one 12-foot center turn lane, and a mountable curb and gutter within an 88-foot ROW. A 40-mph design speed is proposed for Section III-A.

Like Section III-A, Section III-B continues from the northern terminus of Section II and also ends at Crossland Road/Brannon Lane. However, this alternative provides an alignment on a new location that bypasses Puryear to the east. The typical section around Puryear would consist of four 12-foot traffic lanes, a 48-foot median, and shoulders and ditches, as required, within a 250-foot ROW. A 60-mph design speed is proposed for this area. The crossing at Mormon Branch would require a bridge or major drainage structure. After Section III-B crosses Mormon Branch, it would consist of two 12-foot inside traffic lanes, two 14-foot outside traffic lanes, one 12-foot center turn lane, and a mountable curb and gutter within an 88-foot ROW.

C. PROJECT DATA SUMMARY SHEET

Table 2-1 shows the impacts on the project area and other pertinent characteristics of the proposed project. This table is intended as a quick reference of items of major importance and does not include all of the impacts that are discussed in this report.

PROPOSED 88-FOOT
TYPICAL SECTION

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

PROPOSED 88-FOOT
WITH 5-FOOT SIDEWALKS
TYPICAL SECTION

Not To Scale

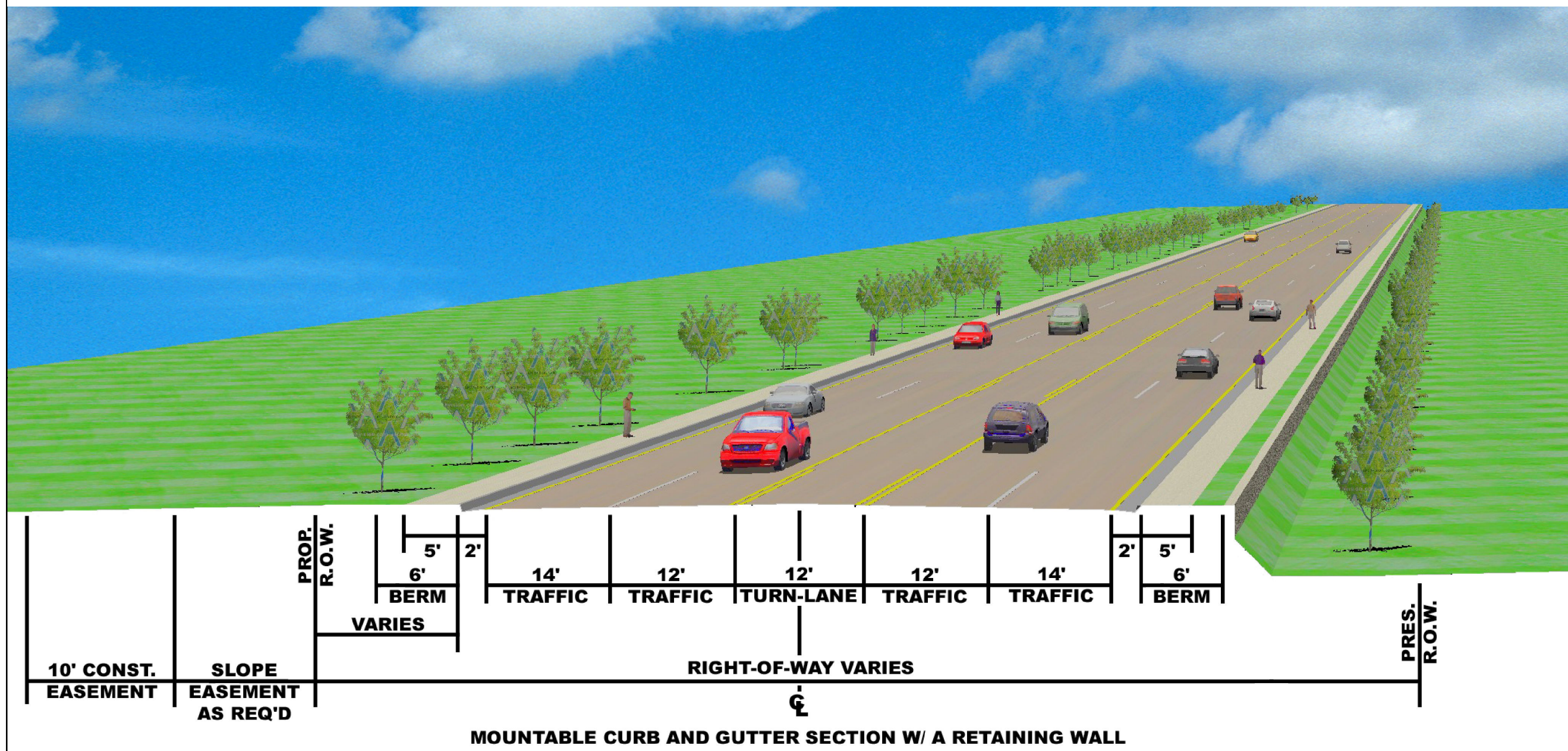


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State Route 54 (U.S. 641)

Alternatives A & B: From Rison Street to North of the Abandoned L&N Railroad Bridge



State Route 54 (U.S. 641)

Alternatives A & B:

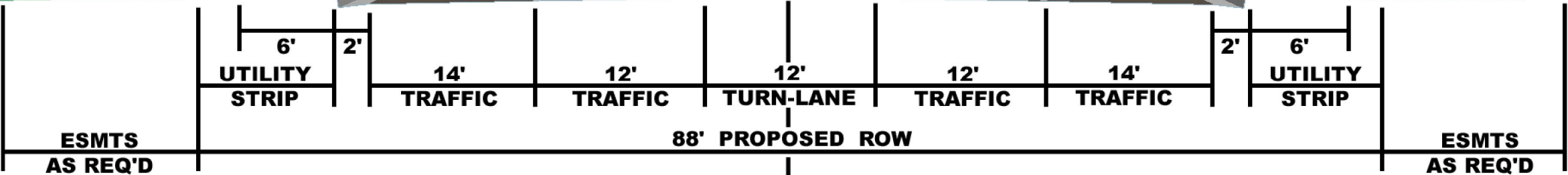
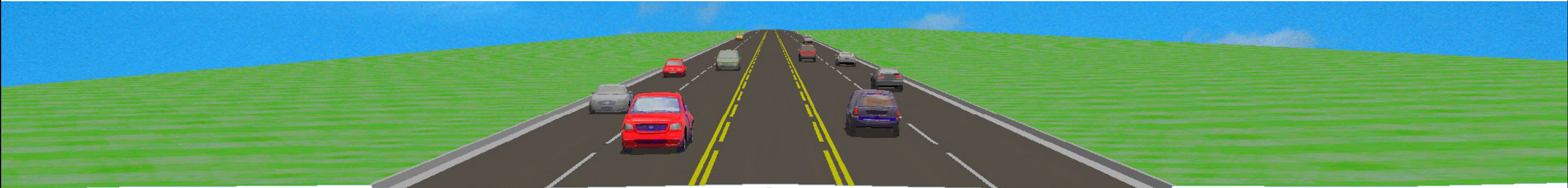
From North of the Abandoned L&N Railroad Bridge To Logan Road

Alternative A:

From South of Puryear Country Club Road To Crossland Road/Brannon Lane

Alternative B:

From North of Morman Branch To Crossland Road/Brannon Lane



MOUNTABLE CURB AND GUTTER SECTION

PROPOSED 88-FOOT
TYPICAL SECTION

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

PROPOSED 88-FOOT
TYPICAL SECTION

Not To Scale



Figure:	Date:	Drawn By:	Checked By:
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PROPOSED 104-FOOT
TYPICAL SECTION

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

PROPOSED 104-FOOT
TYPICAL SECTION

Not to Scale

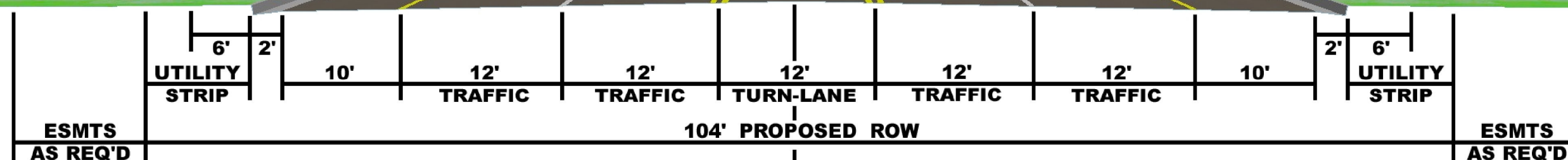
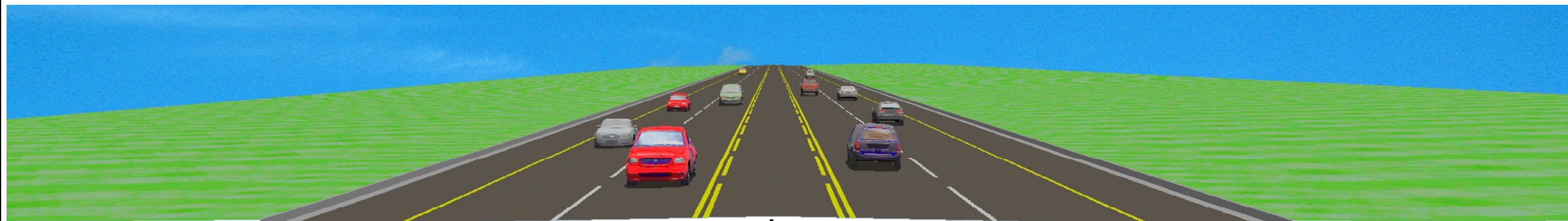


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State Route 54 (U.S. 641)

Alternatives A & B:
From Logan Road to Smith Road



⌄
MOUNTABLE CURB AND GUTTER SECTION

[PROPOSED 250-FOOT
TYPICAL SECTION](#)

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

PROPOSED 250-FOOT
TYPICAL SECTION

Not To Scale



Figure:	Date:	Drawn By:	Checked By:
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State Route 54 (U.S. 641)

Alternatives A & B:
From Smith Road To South of Puryear Country Club Road

Alternative B:
From South of Puryear Country Club Road
To North of Morman Branch

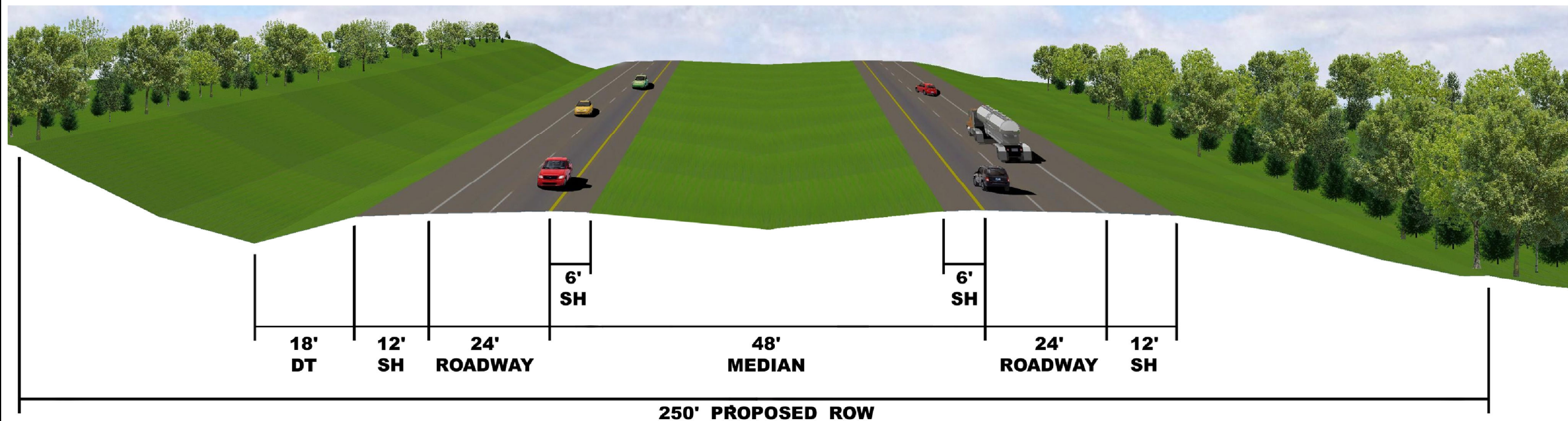


Table 2-1. Project data summary sheet

Item	Existing route	Proposed Build Alternative
Functional Classification	Urban and Rural Principal Arterial	Urban and Rural Principal Arterial
Length	13.5± miles	Alternative A – 11.8± miles Alternative B – 12.3± miles
2011 ADT	7,820	N/A
2031 ADT	10,940	Alternative A – 10,940 Alternative B – 9,510
Percent Trucks	9	9
LOS (2011)	LOS C through D	N/A
LOS (2031)	LOS C through D	LOS A and B
Family Displacements	N/A	Alternative A – 54 Alternative B – 45
Business Displacements	N/A	Alternative A – 14 Alternative B – 9
Non-Profit Displacements	N/A	Alternative A – 1 Church Alternative B – 1 Church
New Right-of-Way	N/A	Alternative A – 270± acres Alternative B – 330± acres
Wetlands Involvement	N/A	Alternative A – 13.98 acres Alternative B – 14.09 acres
100-Year Floodplain Encroachment	Yes	19 streams (Alternative A – 10.8 acres) 20 streams (Alternative B – 18.3 acres)
Stream Crossings	Yes	Alternative A – 15 Alternative B – 15
Wet-Weather Conveyances	Yes	Alternative A – 13 Alternative B – 11
Historical Properties Affected	N/A	No
Archaeological Sites Affected	N/A	No
Hazardous Materials	N/A	4 sites within ROW
Estimated Construction Cost	N/A	Alternative A – \$90,000,000 Alternative B – \$97,000,000

ADT = average daily traffic

LOS = level of service

N/A = not applicable

CHAPTER III – ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The purpose of this chapter is to discuss the probable social, economic, and environmental impacts of the project and proposed mitigation measures, if needed, for those impacts. This chapter discusses anticipated effects, including primary impacts (those that would result directly from construction) and secondary impacts (those that may be caused by changes in the traffic patterns and accessibility through use of the completed facility).

A. LAND USE IMPACTS

Existing land use in the study area is predominantly rural. Most residences and small businesses are within the towns of Paris and Puryear. Throughout the project corridor, there are forested tracts (upland and bottomland hardwoods) and farmland, which is used for hay, pasture, and row crops. New ROW acquisition is estimated to be approximately 270 acres for Alternative A and 330 acres for Alternative B. The acquired ROW would impact forestland, farmland, residential, and commercial property.

It is expected that the construction of the project would help to improve the area's economic and social potential. Control of growth that may occur from implementation of the proposed project would be the responsibility of local government agencies.

B. FARMLAND IMPACTS

Construction of the project would take approximately 81 acres of prime farmland for Alternative A and 139 acres for Alternative B. The project was coordinated with the U. S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and a Farmland Conversion Impact Rating Form AD-1006 was completed. USDA's reply and the Farmland Conversion Impact Rating Form are included in Appendix A. Because the sites along both alternatives received a total score of less than 260 (total score = 138 for Alternative A and 143 for Alternative B), no further alternatives or designs need to be evaluated.

C. SOCIAL IMPACTS

Construction of the project would not adversely affect any health or education facility, sanitation, or water system. Existing neighborhood cohesion would remain because the proposed project would not split them or separate them from any existing services. Alternative A primarily improves existing SR 54 and relocates a small section through farmland close to the present route. Alternative B relocates a larger section of the existing route, but neither alternative proposed would adversely alter local patterns of travel or accessibility to area services.

Environmental Justice

It is TDOT's opinion that the proposed project would be in compliance with Executive Order 12898 on Environmental Justice, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (EO 12898), dated February 11, 1994. Executive Order 12898 requires federal agencies to achieve environmental justice by identifying and addressing disproportionately high and

adverse human health and environmental effects of their programs, policies, and activities on minority and low-income populations of the United States.

According to the Federal Highway Administration's (FHWA's) *Actions to Address Environmental Justice* (6640.23), *adverse effects* means the totality of meaningful individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or meaningful delay in the receipt of, benefits of FHWA programs, policies, or activities.

Disproportionately High and Adverse Effect on Minority and Low-Income Populations means an adverse effect that:

1. is predominately borne by a minority population and/or a low-income population; or
2. will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or low-income population.

Potential environmental justice impacts were identified through field reviews, interviews with local officials during initial scoping efforts, and a review of U.S. Census data. All people living in the project area would equally share in the benefits of the proposed project. Adverse impacts would not be primarily borne by a minority population, and any adverse effects suffered by a minority population would not be more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population. Most of the residences that would be displaced are in Section I of the proposed project, and both block groups affected qualify as low-income populations.

TDOT and the city of Paris arranged an informal meeting for potentially affected low-income and minority residents after it was recognized that there were low-income and minority populations in the project area. At the meeting held on December 22, 2003, TDOT explained the process to those in attendance. No major concerns were raised at the meeting and, based on the information gathered; the proposed project is unlikely to disproportionately affect low-income populations or minorities and complies with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

This document will be sent to TDOT's Civil Rights Staff in accordance with Title VI of the Civil Rights Act of 1964. TDOT would comply with Title VI to ensure that "no person shall be, on the grounds of race, color, or national origin, excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity receiving Federal assistance." The Department notifies the public of proposed highway projects and the availability of environmental documents. Notices of public hearings and the availability of environmental documents for public inspection are published in local newspapers.

Census information, broken down by Census block and block group, is provided below. Population data for Henry County and the potentially affected cities are presented in Table 3-1.

Table 3-1. Population: Henry County and places affected by proposed action

Location	2000
Henry County	31,115
Paris City	9,763
Purvey City	667

Source: Bureau of the Census, "Profile of General Demographic Characteristics 2000"; available at American FactFinder, <http://factfinder.census.gov>. Accessed March 5, 2003.

According to Census data for 2000, minorities comprise 10.9% of the Henry County population, compared to 20.7% in Tennessee and 30.7% nationwide. For the purposes of this analysis, "minorities" include the following categories, based on Office of Management and Budget guidance: Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; Two or More Races; and Hispanic or Latino (of any race). A Census tract with a higher percentage of minority residents than the national average is considered a minority population. At a more detailed level, the existing and proposed routes fall within Census tract 9693, Block Group 3 (includes the section from Rison Street to just south of Smith Lake); Census tract 9696, Block Group 5 (from south of Smith Lake to the North Fork Obion River); and Census tract 9691, Block Groups 1 through 3. In tract 9691, Block Group 2 extends north from Park Hill Road (west of 641 N) and Country Club Road (east of 641 N) to Crossland Road/Brannon Lane. Block Group 1 accounts for the remaining area east of 641 N, while Block Group 3 includes the remaining area on the west side.

Examination of Census data, by block, along the proposed routes identified only 18 blocks with a higher proportion of minority residents than the national average. The blocks included in this analysis and the 18 blocks with high proportions of minorities are shown below in Tables 3-2 and 3-3.

As of the 2000 Census, 14.3% of Henry County residents had incomes below the poverty level, which exceeds both the Tennessee average of 13.5% and the national average of 12.4%. Three of the six block groups affected by the proposed project had poverty rates that exceeded both the national and county averages. In tract 9693, Block Group 3, 25.4% of residents had incomes below the poverty level, while the proportion was 17.5% for tract 9696, Block Group 5 and 18.7% for tract 9691, Block Group 3 (see Table 3-4). Per capita income showed a similar pattern; the \$15,855 figure for Henry County was well below the state-wide per capita income of \$19,393. Corresponding figures for the six block groups ranged from \$11,751 to \$16,837; per capita incomes for the same three block groups mentioned as being impoverished were below both the state and county figures (Table 3-5).

Table 3-2. Census blocks in Henry County affected by proposed action

Tract and block group	Blocks
Tract 9691, Block Group 1 (Alternatives A and B)	1076, 1077, 1079, and 1080
Tract 9691, Block Group 2 (Alternative A)	2001, 2002, 2003, 2004, 2007, 2008, 2014, 2016, 2017, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2040, 2043, 2044, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2071, 2072, and 2073
Tract 9691, Block Group 2 (Alternative B)	2001, 2002, 2003, 2004, 2005, 2008, 2009, 2010, 2011, 2032, 2033, 2034, 2035, 2036, and 2073
Tract 9691, Block Group 3 (Alternatives A and B)	3088, 3089, 3090, and 3091
Tract 9693, Block Group 3 (Alternatives A and B)	3000, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, 3012, 3013, 3018, 3019, 3020, 3021, 3022, 3029, 3030, 3033, 3034, 3035, 3036, and 3043
Tract 9696, Block Group 5 (Alternatives A and B)	5004, 5005, 5034, 5038, 5039, 5040, 5041, 5042, 5043, 5044, 5045, 5046, 5047, and 5085

Source: Bureau of the Census, American FactFinder, Reference Maps; available on the World Wide Web at <http://factfinder.census.gov/>, accessed August 28, 2009.

Table 3-3. Race and Hispanic origin in 2000: blocks affected by proposed action with minority populations above the national average

Tracts and Block Group	Blocks
Tract 9691, Block Group 1	1077 and 1080
Tract 9691, Block Group 2	2021, 2036, 2044, and 2072
Tract 9691, Block Group 3	3090
Tract 9693, Block Group 3	3004, 3005, 3006, 3012, and 3036
Tract 9696, Block Group 5	5042, 5046, and 5085

Source: Bureau of the Census, American FactFinder, Summary File 1; available on the World Wide Web at <http://factfinder.census.gov/>, accessed August 29, 2009.

^aHispanic individuals may be of any race. Hispanic individuals are excluded from their respective races to avoid double counting.

Table 3-4. Poverty status in 1999: Census tracts affected by proposed project

Geographic area	Population for whom poverty status is determined	Percent with income below poverty level
Henry County	30,559	14.3
Tract 9693, Block Group 3	1,018	25.4
Tract 9696, Block Group 5	1,367	17.5
Tract 9691, Block Group 1	1,035	12.2
Tract 9691, Block Group 2	947	9.6
Tract 9691, Block Group 3	847	18.7
Tennessee	5,539,896	13.5

Source: Bureau of the Census, American FactFinder, Census Summary File 3; available on the World Wide Web at <http://factfinder.census.gov/>, accessed August 29, 2009.

Table 3-5. Per capita income: Tennessee, Henry County, and block groups affected by proposed project

Geographic area	1999 Per capita income
Henry County	\$15,855
Tract 9693, Block Group 3	\$11,751
Tract 9696, Block Group 5	\$14,986
Tract 9691, Block Group 1	\$15,792
Tract 9691, Block Group 2	\$16,837
Tract 9691, Block Group 3	\$13,835
Tennessee	\$19,393

Source: Bureau of the Census, American FactFinder, Census Summary File 3; available on the World Wide Web at <http://factfinder.census.gov/>, accessed June 15 and 22, 2004.

D. RELOCATION IMPACTS

Displacements are a potential environmental effect associated with any proposed project. TDOT has prepared a Conceptual Stage Relocation Plan (CSRP) for this project. According to the CSRP, 51 single-family residences, 3 mobile homes, 1 church, and 14 businesses would be displaced by Alternative A. Forty-two single-family residences, 3 mobile homes, 1 church, and 9 businesses would be displaced by Alternative B.

As of 2000, the Census Bureau reported a vacancy rate ranging from 6.6 to 14.9% for housing located in the Census tracts affected by the proposed project (tracts 9691, 9693, and 9696). The vacancy rate for Henry County was higher at 17.5%. The available housing includes apartments, single-family residences, and mobile homes. In addition, a large amount of land is available between Paris and Puryear for potential development. Some mobile home owners may be able to purchase new lots and relocate their current dwellings. Mobile homes that are not suitable for relocation (e.g., because of condition or changes in configuration) would be purchased during project acquisition. The CSRP has concluded that decent, safe, and sanitary replacement dwellings can be acquired or rented. With a supplemental housing payment, if needed, the available housing is expected to be within relocatees' financial means.

This project is expected to cause a single non-profit displacement in Section II (AB): Lakeside Christian Fellowship and Ministry. Although the project does not require acquisition of the entire tract, the sanctuary is in the proposed right-of-way and will be displaced.

This project is not expected to cause any farm displacements.

The Tennessee Department of Transportation will make relocation assistance available to all eligible persons impacted by this project, including residences, businesses, farm operations, non-profit organizations, and those requiring special services or assistance. The Regional Relocation Staff will administer the relocation program under the rules, policies, and procedures set forth in the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended, the Uniform Relocation Assistance Act of 1972, implementing federal regulations, TCA 13-11-101 through 119, The State of Tennessee Relocation Assistance Brochure and Chapter Nine of the State of Tennessee, Department of Transportation, Right-of-Way Manual. TDOT's relocation program is practical and will allow for the efficient relocation of all eligible displaced persons in accordance with State and Federal guidelines.

E. ECONOMIC IMPACTS

Fourteen businesses for Alternative A or 9 businesses for Alternative B would be displaced by the proposed project, ranging from a variety of retail, professional, manufacturing, and service establishments. Based on estimates in the CSRP, these displacements would have a minimal impact on the local economy. The improved roadway is expected to improve access to business districts and neighborhoods. In some cases, only a portion of business property would be required for the new ROW, and a few businesses may be able to shift affected operations to another portion of their property. Local officials expect minimal or slightly positive economic impact from the project. The majority of feedback has been positive, although one or two business owners expressed concern in the December 2003 and September 2009 public meetings about the potential negative impact of relocation on their businesses.

If bypassed, Puryear may experience few, if any, negative economic impacts. No businesses along SR 54 appear to rely heavily on drive-by traffic for business, and bypassing Puryear would not affect the types of businesses in Puryear; however, future residential and commercial growth may be indirectly impacted. Impacts may be positive in that additional businesses relocate to Puryear near the proposed roadway, which may employ area residents. Impacts may be negative in that land that was once agricultural or residential will be irreversibly converted to another land use. Indirect and cumulative impacts to land use are discussed in Section P.1.

F. AIR QUALITY IMPACTS

Based upon the analyses of highway projects with similar meteorological conditions and traffic volumes, the carbon monoxide levels of the subject project would be well below the National Ambient Air Quality Standard. Because the project would have levels below this standard and is located in a region of air quality attainment, there would be no substantial adverse impacts on the air quality of the area.

The reconstruction of SR 54, as part of the project alternatives, will have the effect of moving some traffic closer to nearby homes and businesses; therefore, under the Build Alternatives, there may be localized areas where ambient concentrations of Mobile Source Air Toxics (MSATs) could be higher due to shifts in alignments towards sensitive receptors along the project corridor. However, as discussed above, the magnitude and the duration of these potential increases compared to the No-Build Alternative

cannot be accurately quantified due to the inherent deficiencies of current models. In sum, when a highway is reconstructed, and, as a result moves closer to receptors, the localized level of MSAT emissions for the Build Alternatives could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs will be lower in other locations when traffic shifts away from them. However, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today. Additional MSAT information is located in Appendix B.

G. NOISE IMPACTS

The effects of increased noise levels due to the project have been evaluated according to the guidance of 23 *Code of Federal Regulations (CFR)*, Part 772. In Tennessee, these regulations are implemented by the *Policy on Highway Traffic Noise Abatement*, Departmental Policy, State of Tennessee, TDOT, April 21, 2005 (the Policy). The Policy specifies noise abatement criteria (NAC) for different categories of land use and includes definitions and instructions concerning the characterization of noise impact and the tests of reasonableness and feasibility to be applied to potential noise abatement alternatives when they are appropriate. In conformance with this policy, the criterion of Leq(h) 66 was applied to assess the compatibility of noise-sensitive land uses to the anticipated noise levels. In addition, increases of 5 dBA or more were considered to warrant a more detailed analysis in cases where the Leq(h) 66-dBA criterion was exceeded. Predicted noise levels have been compared to the existing levels, using this criterion, to determine the impact of highway-generated noise on the community. The baseline (2011) and design year (2031) peak hour levels were predicted for receptors in Sections I, II, and III of the project area.

Methodology

From a noise assessment perspective, the proposed action results in a road widening that will bring traffic closer to noise-sensitive land uses along both sides of the alignment. The widening is not associated with any significant changes in traffic volume or mix. Consequently, changes in the noise levels adjacent to the roadway are largely a consequence of geometry rather than flow or mix.

As required by the Policy, FHWA-approved traffic noise model (TNM) 2.5 was used to estimate changes in noise levels during the peak hour traffic condition in the years 2011 and 2031. Using TNM 2.5, a detailed noise impact assessment was performed by applying the volume, mix, and geometry variables for each of the four sections affected. The approach was to estimate $L_{eq(h)}$ levels for the peak traffic hour on both sides of the roadway, for points 100, 150, 200, and 300 feet from the centerline of the near lane. These reference points were established for the No-Build Alternative and remained fixed for the Build Alternative assessment. In this manner, reduced propagation distances reflect geometric variations in the location and number of lanes as the roadway is widened.

A traffic speed of 50 mph was used in conjunction with a truck mix of 7%. Impact was characterized on the basis of comparisons between noise levels with and without the Build Alternative in year 2031. The geometric template used for the assessment assumes a worst-case scenario where a turning lane is provided in all sections. This alignment and geometry provided for a total of five lanes: two existing travel lanes; two new travel lanes; and one new turn lane.

Criteria

The Policy specifies that highway traffic noise impacts will occur if there is a substantial increase in future noise levels above existing levels when the future noise levels are between 57 and 67 dBA, as shown in Table 3-6. In addition, NAC are specified for a variety of activities, as shown in Table 3-7.

Table 3-6. Noise level increase

Increase in existing noise levels (dBA)	Subjective descriptor
0 – 5	Minor increase
6 – 9	Moderate increase
10 or more	Substantial increase

Table 3-7. Noise abatement criteria

Activity category	L _{Aeq1h} (dBA)	Description of activity
A	57 (Exterior)	Land on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above
D	---	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

The criteria in Table 3-6 essentially characterize future increases in noise as minor, moderate, or substantial, while the criteria in Table 3-7 are guidelines for noise levels as a function of land use and activity. As the indicated levels are *approached or exceeded*, some assessment of abatement alternatives is indicated. Potential abatement actions are then evaluated to determine that they are feasible and reasonable.

Findings

Figure 3-1 summarizes the results of the TNM analysis for the affected sections of SR 54. It is immediately evident that the Build Alternative results in an increase of noise levels for most, but not all, points and that these increases are less than 5 dBA. In addition, there is a marked decrease in this increase as distance increases. This effect is consistent with the shift in geometry, which brings the near travel lane closer to fixed reference points but, at the same time, is spreading traffic over more lanes. The near lane has a decrease in volume (compared to the No-Build Alternative) at the same time that it is moved closer to a reference point. There is a decrease in noise level for all locations where improvements widen the roadway on the far side of the ROW.

In those cases where noise levels decrease under the Build Alternative, the reduction in noise level is less than 1 dBA (Build Far). This is due to the fact that the new traffic volumes are shifted away from receptors in cases where new lanes are constructed on the far side of the highway. Although the near lanes still carry traffic, the volume in each lane is lower because of the additional lane capacity under the

Build Alternative. Similarly, potential receptors that are encroached by new travel lanes would experience a slight increase in noise level 1.1 to 4.6 dBA (Build Near) or 0.6 to 3.4 dBA (Centered).

In terms of absolute noise levels, Section III B introduces highway noise to areas where noise levels will be at, or near, ambient under the No-Build Alternative. In this case, the $L_{eq(h)}$ 66-dBA threshold is exceeded only at distances within distances of 100 feet from the near travel lane, where the TNM predicts levels of about 67.4 dBA. This section of the roadway has sufficient ROW to prevent the occurrence of noise-sensitive land uses at this distance.

In all areas where noise levels increase, it is evident from the point data that the $L_{eq(h)}$ 66-dBA noise contours are extended by 60 to 85 feet under the Build Alternative. Although this does expose a limited amount of noise-sensitive property to higher noise levels and, in some cases, to levels that exceed $L_{eq(h)}$ 66 dBA, the impact would still be considered a minor to moderate increase pursuant to Table 3-6.

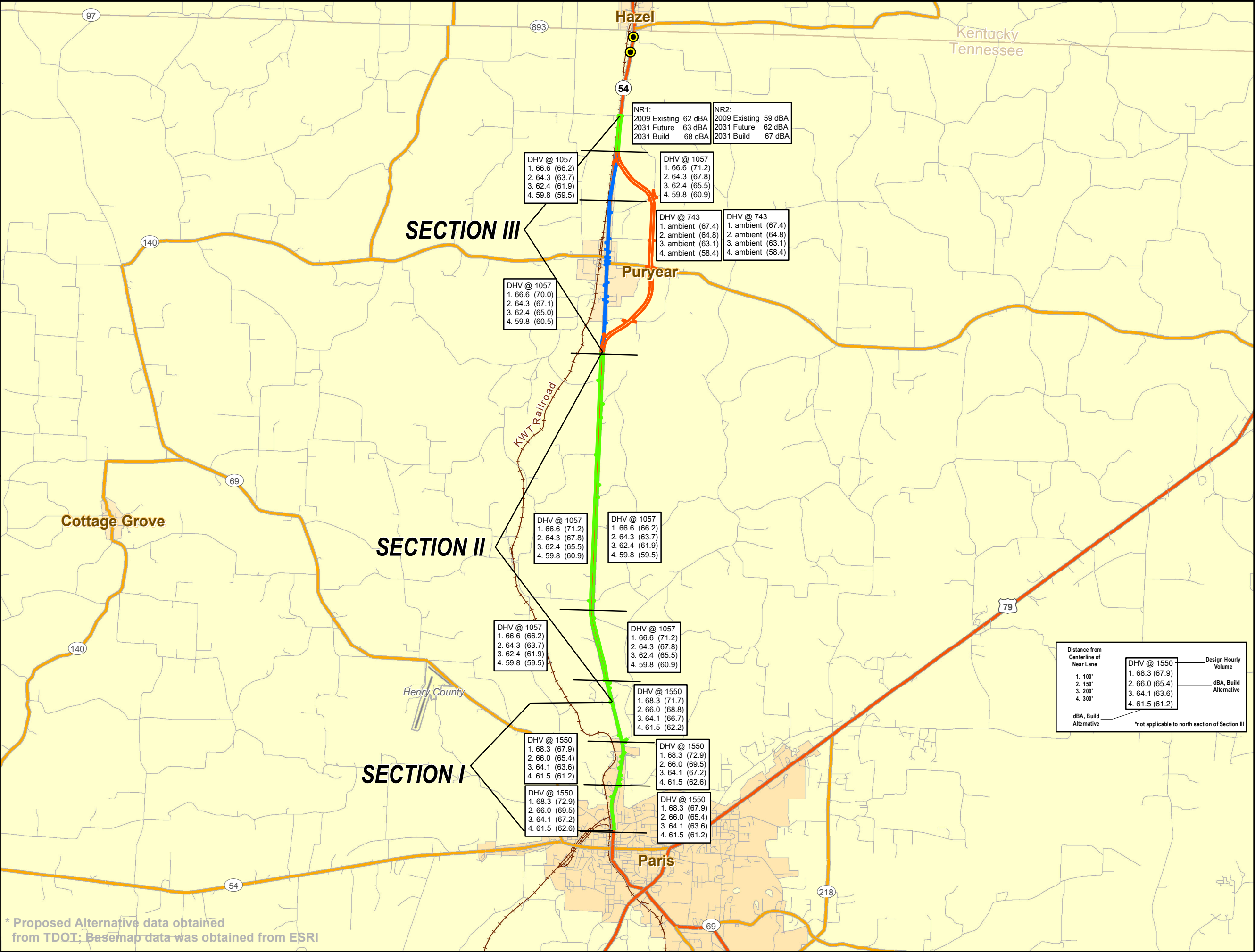
With respect to the *feasibility* of noise abatement barriers, it was found that the presence of a driveway or an intersection made such abatement not feasible from an engineering perspective. This finding is consistent with the statement on page 6 of the Policy:

Generally it is not feasible to provide noise barriers on non-access controlled facilities due to the existence of intersections or driveways.

In addition, those residences within the $L_{eq(h)}$ 66-dBA contour are widely separated and isolated in nature, leading to a finding that potential noise abatement actions are not *reasonable*. This finding is supported by the statement on page 8 of the Policy:

Noise abatement will generally not be considered reasonable for isolated residences due to the cost of abatement versus the benefits provided.

In these few instances where noise abatement has been found to be not feasible and/or not reasonable, the total impact of traffic volume increases from 2011 to 2031 and the impact of the proposed action may still be characterized as moderate pursuant to Table 3-6, as the increase is less than 8 dBA.



ENVIRONMENTAL ASSESMENT
WIDENING/RECONSTRUCTION OF
STATE ROUTE 54 (U.S. 641)

NOISE RECEPTOR SITES AND
PREVIOUS NOISE DATA

State Route 54
From State Route 69/Wood Street
To
Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee

LEGEND

- Limited Access
- Highway
- Major Road
- Local Road
- Railroads (Local)
- State Boundary

ALTERNATIVE

- Alternative A
- Alternatives A and B
- Alternative B

North Arrow

Scale

4,000 2,000 0 4,000 8,000 Feet

Figure:	Date:	Drawn By:	Checked By:
3-1	Aug 2010	JMT	KDP

TDOT

Go.

* Proposed Alternative data obtained from TDOT; Basemap data was obtained from ESRI

H. ECOLOGICAL IMPACTS

1. Water Quality Impacts

The proposed improvement to SR 54 would involve crossing 15 intermittent or perennial streams and 13 wet-weather conveyances along Alternative A and 15 intermittent or perennial streams and 11 wet-weather conveyances along Alternative B. The major perennial stream crossings in both alignments include Jones Bend Creek, Twomile Branch, Threemile Branch, North Fork Obion River, Rowe Creek, and Mormon Branch. There are also crossings for unnamed tributaries to these streams within the proposed alternative ROWs, as well as for tributaries to Phillips Creek and East Fork Clarks River. These tributaries include perennial and intermittent streams and wet-weather conveyances. The wet-weather conveyances are channels that cross the existing and/or proposed project corridor either through a culvert or bridge, do not have permanent water flow, or transport water only during wet-weather conditions. Table 3-8 lists the potentially affected streams and wet-weather conveyances within the project corridor, which alternatives and sections they are within, and the amount of linear feet that could potentially be impacted.

Twomile Creek and a tributary to Twomile Creek from Smiths Lake will be crossed. Twomile Creek is on the state's 303(d) list for impaired waters for habitat loss due to stream flow alteration. The creek is impacted by lack of flow and poor quality releases from Smith Lake. A tributary to East Fork Clarks River will also be crossed; it is on the state's 303(d) list for impaired waters for physical substrate habitat alterations. This type of stream is considered a priority for water quality improvement efforts.

No long-term, adverse water quality impacts to any of the streams would occur as a result of the proposed project. Direct, short-term, adverse impacts to water quality (increased turbidity and siltation from soil and streambank erosion, runoff, and resuspension of sediment) could occur during project construction and possible stream channelization. However, these impacts should be minor and temporary because erosion, runoff, and sedimentation would be controlled. Impacts to water quality would be minimized by implementing standard construction methods that control stormwater runoff, sediment, and soil erosion; prevent soil compaction; and reduce non-point source pollution. During the construction of the project, strict adherence to all applicable provisions of TDOT's *Standard Specifications for Road and Bridge Construction* would also be followed. TDOT would also continue to coordinate with the appropriate resource agencies to develop agreed upon measures.

Without adequate mitigation and engineering controls, adverse water quality impacts could be more severe. The potential impacts to water quality in each flowing channel could occur at the point of roadway construction activities, as well as several hundred feet downstream. Impacts would be most evident from the onset of construction until disturbed areas were stabilized and revegetated.

Table 3-8. Estimated impact to streams and wet-weather conveyances in the SR 54 project corridor

Aquatic feature	Length (ft) of potential impact
<i>Alternatives A and B, Section I</i>	
Unnamed tributary to Jones Bend Creek (WWC)	50
Jones Bend Creek	84
Unnamed tributary to Town Creek	84
Unnamed tributary to Twomile Branch (WWC)	21
Unnamed tributary to Twomile Branch (WWC)	21
Unnamed tributary to Twomile Branch	104
Unnamed tributary to Twomile Branch	104
Unnamed tributary to Twomile Branch (South Smith Lake)	104
Unnamed tributary to Twomile Branch (WWC)	104
Twomile Branch	104
Wet-weather conveyance	42
Wet-weather conveyance	104
<i>Alternatives A and B, Section II</i>	
Unnamed tributary to Threemile Branch (North Smith Lake)	133
Threemile Branch	486
North Fork Obion River	359
Unnamed tributary to North Fork Obion River	417
Rowe Creek	312
Unnamed tributary to Rowe Creek (WWC)	444
Wet-weather conveyance	271
Unnamed tributary to Phillips Creek (WWC)	333
Wet-weather conveyance	250
<i>Alternative A, Section III</i>	
Unnamed tributary to Phillips	271
Wet-weather conveyance	84
Unnamed tributary to East Fork Clarks River (WWC)	84
Unnamed tributary to East Fork Clarks River	729
Unnamed tributary to East Fork Clarks River	84
Unnamed tributary to Mormon Branch (WWC)	233
Mormon Branch	500
<i>Alternative B, Section III</i>	
Unnamed tributary to East Fork Clarks River (WWC)	250
Unnamed tributary to East Fork Clarks River	667
Unnamed tributary to East Fork Clarks River	417
Unnamed tributary to East Fork Clarks River	281
Mormon Branch	271

WWC = wet-weather conveyance

2. Permits

TDOT would apply for applicable federal and state water quality permits. Construction work affecting streams in the project corridor may require various permits from the U. S. Army Corps of Engineers (USACE), Tennessee Valley Authority (TVA), and the Tennessee Department of Environment and Conservation (TDEC), Division of Water Pollution Control. Potential federal permits could be issued by USACE under Section 404 of the Clean Water Act of 1972 and by TVA under Section 26A of the TVA Act. USACE permits could include an individual permit, although much of the work may be covered by general permits, such as Nationwide Permit 14 (Linear Transportation Crossings). Many of the Nationwide Permits require Section 401 water quality certification from the state in which the planned activity would occur as a threshold condition. Tennessee administers Section 401 certification through the Water Quality Control Act of 1977. State permits could include general or individual Aquatic

Resource Alteration Permits for stream crossings, wetlands involvement, and channel alterations. These and other federal, state, and local regulatory bodies may also require other permits or conditions.

TDOT would work closely with the permitting agencies during the design and permitting phases of the project to ensure that the potential impacts would be minimized to the extent practicable.

3. Wetland Impacts

Fourteen wetlands were observed in the SR 54 project corridor during the site visit (Figures 1-3, 1-4, 1-5, and Table 3-9): 14 in Alternative A covering 13.98 acres; and 14 in Alternative B covering 14.09 acres. Seven wetlands were found in Section I covering 2.65 acres (WTL-1, WTL-2, WTL-3, WTL-4, WTL-6, WTL-7, and WTL-8); four wetlands were found in Section II covering 9.30 acres [WTL-9, WTL-10, WTL-12 (a to d), and WTL-13 (a to d)]; one wetland was found in Section III-A covering 2.03 acres (WTL-14); and one wetland was found in Section III-B covering 2.14 acres (WTL-14). Three additional wetlands (WTL-5, WTL-11, and WTL-16) were delineated during the ecological study, but they are outside of the project ROW and would not be impacted by the project. Wetlands exist throughout the project area, and by avoiding one wetland, another will likely be impacted.

Table 3-9. Wetlands in proposed SR 54 project corridor

Wetland ID	Wetland habitat ^a	Wetland area in	
		TDOT ROW (acres)	ROW section
WTL-01	PFO1/PSS1	0.64	I
WTL-02	PSS1	0.41	I
WTL-03	PSS1/PEM1	0.40	I
WTL-04	PSS1/PFO1	0.77	I
WTL-05	PFO1	N/A	N/A
WTL-06	PFO1	0.05	I
WTL-07	PFO1	0.15	I
WTL-08	PFO1	0.23	I
WTL-09	PFO1	0.18	II
WTL-10	PFO1	0.26	II
WTL-11	PEM1/PFO1/PUB	N/A	N/A
WTL-12	PEM1/PSS1/PFO1	4.99	II
WTL-13	PEM1/PSS1/PFO1	3.87	II
WTL-14	PFO1	2.03	III-A
WTL-14	PFO1	2.14	III-B
WTL-15	PEM1	0.28	III-A and III-B
WTL-16	PFO6A	N/A	N/A
WTL-17	PFO6A	0.05	III-A and III-B
Totals			
Section I total		2.65	
Section II total		9.30	
Section III-A total		2.36	
Section III-B total		2.47	

^a Cowardin et al. (1979)

ID = identification

N/A = not applicable

All wetlands within the project corridor are small, palustrine (freshwater) wetlands that are either dominated by trees (WTL-5, WTL-6, WTL-7, WTL-8, WTL-9, WTL-10, WTL-11b, WTL-13b, WTL-13c, WTL-14, WTL-15, and WTL-17), trees and shrubs (WTL-1, WTL-2, WTL-4, and WTL-12b), shrubs and persistent emergent plants (WTL-3, WTL-12a, WTL-12c, WTL-12d, WTL-13a, and WTL-13d), persistent

emergent plants (WTL-15); or emergent plants and open water (WTL-11a). These correspond to Cowardin habitat classification codes (Cowardin et al. 1979) PFO1, for wetlands dominated by trees; PSS1, for wetlands dominated by shrubs; PEM1, for wetlands dominated by emergent plants; and PUB, for wetlands dominated by open water.

Wetlands will be avoided to the fullest extent possible during later stages of roadway design. However, if for whatever reason avoidance is not practicable, some portions of the abovementioned wetlands may be impacted. Filling parts of the wetlands for the new roadbed could possibly create hydrologic conditions conducive to the expansion of wetlands in adjacent areas. Although culverts would be placed to equalize the water flow in the wetland areas remaining outside the road bed, the drainage patterns in the wetland might be affected and could result in localized changes in water levels and vegetation patterns. During project design, efforts would be made to minimize impacts to wetlands remaining outside the road bed and ROW and to reduce changes in drainage patterns and water levels.

Mitigation may be required for all wetland impacts that do not meet requirements for general Aquatic Resource Alterations Permits (TDEC) or for certain Nationwide Section 404 permits (USACE). Required mitigation would depend on permit conditions worked out with the USACE and/or TDEC. Any proposed mitigation would be subject to the approval of regulatory agencies. In the event that no acceptable mitigation sites are available locally, the regulatory agencies may allow mitigation further away, or allow use of credits in a mitigation bank.

Upon receipt of the appropriate project plans, TDOT would prepare a proposed mitigation plan, which would be coordinated with the appropriate permit and resource agencies. This plan would include wetland mitigation measures in accordance with the current regulations. The final decision, in consultation with permit agencies, would be made before application is made for a Section 404 Permit and/or Aquatic Resource Alteration Permit.

4. Water Body Modifications and Wildlife Impacts

The flowing streams in the project area have a moderately diverse assemblage of aquatic biota, such as periphyton, benthic macroinvertebrates, fish, and amphibians, and the diversity is consistent with the overall water quality and habitat at these sites. No long-term, major adverse water quality impacts are expected to occur within any of the streams in the project area. Direct short-term adverse impacts to in-stream habitat downstream of the ROW would occur during highway construction and during placement of metal pipes, concrete culverts, and bridges over the permanent streams and wet-weather conveyances. Extension of existing structures at the perennial and intermittent streams could also result in a permanent loss of riparian habitat at each crossing. The extent of permanent impact will depend on the width of the new ROW and any additional area to accommodate various easements that could be needed to complete the project.

There would be short-term adverse impacts to the stream fish due to the short-term impacts in water quality. Construction and road-clearing disturbances would likely displace larger fish and could cause mortality among smaller species. Displacement of the larger fish could impact spawning activities for fish that require clean gravel, if there are gravel beds in the project area and construction takes place during spawning. Larval and young-of-the-year fish are the most sensitive and susceptible to mortality from increased siltation. Some mortality of larval fish is likely, but overall adverse impacts to populations of fish should be minor because of recruitment from upstream or downstream sources after completion of the disturbance activities.

Benthic macroinvertebrate communities in the project area are at higher risk of adverse impacts because they are less mobile than fish. There were taxa present in many streams that are highly

susceptible to sedimentation and siltation: caddisflies (Trichoptera); mayflies (Ephemeroptera); and stoneflies (Plecoptera). These organisms typically inhabit clean gravelly areas with little sediment. However, the benthic communities at all streams were predominantly comprised of taxonomic orders that are generally tolerant of degraded conditions [e.g., Oligochaeta (worms), Decapoda (crayfish), Amphipoda (scuds), Isopoda (sowbugs), Bivalvia (clams), Odonata (dragonflies and damselflies), Diptera (flies), and Hemiptera (true bugs)]. Also, any impact to the communities from sedimentation or siltation should be temporary as potential sources of sediment and silt are stabilized and sediment and silt that entered the stream are washed downstream. Taxa that are affected should recover rapidly as benthic macroinvertebrates are common and can re-inhabit the impacted areas from upstream and downstream sources. Thus, the short- and long-term adverse impacts to benthic macroinvertebrates at the flowing stream crossings should be minor.

Long-term adverse impacts to resident and migratory wildlife species would result through the permanent loss of habitat and increased fragmentation of resources. Road construction would result in disturbance and loss to pasture lands, agricultural fields, and woodlands in the project corridor and cause disruption to the animals that inhabit these habitats or occasionally move through the project corridor. However, because portions of the proposed project corridor have already been highly disturbed through urban development and agricultural activities, impacts to wildlife would be moderate.

5. Threatened and Endangered Species

A search of the TDEC, Division of Natural Heritage (DNH) database in Nashville, Tennessee, was conducted for state- and federal-listed endangered or threatened animals or plants, or other sensitive biotic resources, within a four-mile radius around the project area. The U. S. Department of the Interior, Fish and Wildlife Service (USFWS) was also contacted for listings of endangered or threatened species, critical habitats, and other sensitive natural resources in the project area during the initial coordination conducted for the project.

Potentially suitable habitat occurs in limited areas of the project corridor for several of the nine state-listed animals and plants that were listed in the DNH database search of the project area (Table 3-10). No federally protected species or designated Critical Habitat were identified by USFWS in, or near, the project corridor. A copy of the letter from USFWS is included in Appendix A. Potential impacts to state-listed species from roadway construction activities are discussed below.

The firebelly darter is known to exist in North Fork Obion River and its tributaries. The firebelly darter prefers sand and gravel-bottomed pools. Impacts to this fish would be expected to be similar to those impacts described for aquatic biota. Impacts could be severe if erosion, siltation, and sedimentation are not adequately controlled at their source during road construction. With effective sediment controls in place, impacts would be minor, and no permanent loss of potentially suitable habitat would occur for the species.

Potentially suitable habitat exists in the project corridor for seven plant species listed in Table 3-11. Cutleaf water-milfoil has been reported from one location in the project corridor north of Puryear, and Halberd-leaf tearthumb was observed at two previously undocumented locations in the project corridor: WTL12 at the North Fork Obion River crossing and WTL13 at the Rowe Creek crossing. Impacts to any of these plants should be minor, and no substantial loss of potentially suitable habitat should occur for any of these species.

Table 3-10. Potential endangered or threatened species in the SR 54 project corridor

Common name	Scientific name	Federal status	State status	Observed?	Suitable habitat?
<i>Plants</i>					
Water purslane	<i>Didiplis diandra</i>	None	Threatened ^a	No	Yes
Cutleaf water-milfoil	<i>Myriophyllum pinnatum</i>	None	Threatened ^a	No	Yes
Halberd-leaf tearthumb	<i>Polygonum arifolium</i>	None	Threatened ^a	Yes	Yes
Blue sage	<i>Salvia azurea</i> var. <i>grandiflora</i>	None	Special concern ^b	No	Yes
River bulrush	<i>Scirpus fluviatilis</i>	None	Special concern ^b	No	No
Compass plant	<i>Silphium laciniatum</i>	None	Threatened ^a	No	No
<i>Animals</i>					
Lark sparrow	<i>Chondestes grammacus</i>	None	Threatened ^a	No	Yes
Firebelly darter	<i>Etheostoma pyrrhogaster</i>	Management concern ^c	Deemed in need of management ^c	No	Yes
Northern madtom	<i>Noturus stigmosus</i>	Management concern ^c	Deemed in need of management ^c	No	Yes
Crayfish	<i>Orconectes burri</i>	**	**	No	Yes

^aThreatened [Tennessee Department of Environment and Conservation-Division of Natural Heritage (TDEC-DNH) and Tennessee Wildlife Resources Agency (TWRA)] = any species or subspecies of wildlife that is likely to become an endangered species within the foreseeable future.

^bSpecial concern (TDEC-DNH) = any species or subspecies of plant that is uncommon in Tennessee or has unique or highly specific habitat requirements or scientific value and, therefore, requires careful monitoring of its status.

^cDeemed in need of management (TWRA) = any species or subspecies of non-game wildlife that the Executive Director of TWRA believes should be investigated to develop information relating to populations, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary for their continued ability to sustain themselves successfully. This category is analogous to “special concern.”

** Many species are considered extremely rare and, although they don't have state or federal protection

I. FLOODPLAIN IMPACTS

1. Beneficial Floodplain Values

The proposed project would require the crossing of the floodplains of 19 blueline streams (10.8 acres) along Alternative A and 20 blueline streams (18.3 acres) along Alternative B; however, the majority of these streams have little to no flow during most of the year. Except for North Fork Obion River, there are no unique aquatic or terrestrial habitats located in the project area, and many of the streams have been impacted as a result of the existing highway, agriculture, and other disturbances. It is not expected that the proposed project improvement would have adverse impacts to the beneficial floodplain values in the area.

2. Hydrological Impacts

The replacement or construction of drainage structures and/or bridges across the affected floodplains would be transverse encroachments. Three crossings would encroach on the FEMA-designated 100-year floodplain associated with Jones Bend Creek, North Fork Obion River, and Rowe Creek (Figures 1-3, 1-4, and 1-5). Replacement and new structures would be designed to perform hydraulically in a manner equal to or greater than the existing structure, and backwater surface elevations are not expected to increase. As a result, there would be no adverse impacts on natural and beneficial floodplain values. There would be no substantial change in flood risk or potential for interruption or termination of emergency service or emergency evacuation routes.

To prevent damage from flooding, 23 *CFR* 650, Subpart A, and provisions of Executive Order 11988, "Floodplain Management," would be followed in the design of the project. Appropriate hydraulic studies would be conducted by TDOT to support the design for the replacement and new structures and to ensure that no adverse impacts would occur due to flooding. The design selected for an encroachment would be supported by analysis of design alternatives with consideration to capital costs; risks; and economic, engineering, social, and environmental concerns.

J. IMPACTS ON CULTURAL RESOURCES

1. Historical Impacts

Pursuant to Section 106 of the National Historic Preservation Act of 1966, TDOT historians surveyed the area of potential effect to identify historic properties that could be impacted by the proposed project. TDOT historians also surveyed the project area for Section 4(f) applicability. In the project area, TDOT historians identified two properties eligible for or listed in the National Register of Historic Places (NRHP): the North Poplar Street Historic District and the Paris Gymnasium and Auditorium. Both historic properties abut the eastern side of SR 54 in Section I.

To lessen impacts to both historic properties, TDOT will hold the edge of pavement on the eastern side of SR 54 and widen the road entirely on the western side opposite the historic properties.

Due to these provisions in the planning process, the Tennessee State Historic Preservation Office (TN-SHPO) concurred via letter on November 26, 2003, that the proposed project would not have an adverse effect on either historic property. In addition, the proposed project would not have a Section 4(f) use. A copy of the TN-SHPO concurrence letter is provided in Appendix C.

2. Archaeological Impacts

A Phase 1 Archaeological Assessment of the proposed TDOT project corridor was conducted in 2003. Twenty-eight archaeological locations were recorded and investigated as a result of this survey. Twenty-four of these cultural resources were recommended not eligible for listing in the NRHP because they lacked the potential to yield important information. One of the sites, a historic cemetery, is recommended for avoidance.

Three sites (40HY150, 40HY152, and 40HY153) were recommended as potentially eligible for listing in the NRHP under Criterion D based on the likelihood of small Mississippian farmsteads being present. All of these sites are located relatively close together on the west side of existing SR 54 north of Whitlock Road. After further review of the site data, the evaluation of 40HY152 was changed from potentially eligible to ineligible for the NRHP. Phase II testing at sites 40HY150 and 40HY153 was conducted in 2007. Upon completion of the Phase II testing, both sites were recommended not eligible for NRHP nomination. TN-SHPO concurred in a February 25, 2008 letter that the project area contains no archaeological resources eligible for listing in the NRHP and that archaeological sites 40HY150, 40HY152, and 40HY153 do not warrant additional archaeological investigation. A copy of the TN-SHPO concurrence letter is provided in Appendix C.

As part of the cultural resources coordination for this project, the following federally recognized Native American nations/tribes were contacted: Eastern Band of Cherokee Indians; Cherokee Nation of Oklahoma; Chickasaw Nation; Choctaw Nation of Oklahoma; Muscogee (Creek) Nation; Seminole Nation of Oklahoma; United Keetoowah Band of Cherokee; and Eastern Shawnee Tribe of Oklahoma. No responses or concerns were received from any of the nations/tribes that were contacted.

If previously undiscovered archaeological material were to be found during construction, all construction would cease in that area and the Tennessee Division of Archaeology and the recognized Native American tribes would be contacted so a representative could have the opportunity to examine and evaluate the material.

K. HAZARDOUS MATERIALS IMPACTS

Spills on highways are a potential source of water quality degradation and a possible public health hazard. The Tennessee Emergency Management Agency (TEMA) has the responsibility and authority for coordination of all state and local agencies during accidents involving hazardous materials. TEMA has demonstrated its ability to effectively manage such incidents.

Six underground storage tank (UST) sites have been identified along the proposed project corridor, although it appears that only two of the sites would be impacted by the proposed improvements. TDOT has demonstrated its ability to deal with UST sites to minimize adverse impacts on the environment.

Other known hazardous material sites along the proposed project corridor include four large-quantity generators of hazardous waste. Only two of these hazardous waste sites (Table 3-11) would be potentially impacted by the proposed improvements. In addition to the UST and hazardous material sites, there is one active Superfund site along the proposed project corridor. According to TDEC files, the vacant building site has been listed as an active Superfund site (TN3640006752), but it is not on the National Priority List. The Superfund site would not be impacted by the proposed improvements. Two other sites were observed in the field, but no data was available from state agencies at the time of the assessment. They are located out of the proposed ROW.

Table 3-11. Known hazardous material sites along the SR 54 project corridor

Type of file	Facility name (as permitted by TDEC)	Current site name	Address	In or out of ROW
UST	Market Street FINA	Car Credit	511 North Market Street, Paris	Out
ND	Greer and Hamilton Oil Co.	Print Advertising Inc	512 North Market Street, Paris	Out
Superfund	TVA Garage	Vacant Building	North Market Street, Paris	Out
HW	Dana Corp-Plumley Division-Market Street Facility	Precision Grinding	1101 North Market Street, Paris	Out
UST	Little General Store # 21	Little General Store	1111 North Market Street, Paris	Out
HW	Mohon International	Mohon International	1865 North Market Street, Paris	Out
UST	Mini Mart # 2240	Mini Mart Foods	9220 Highway 641 North, Puryear	Out
UST	Puryear Amoco	Subway	Highway 641 and SR 140 (have been removed)	In
UST	Dee's Transport	Bluegrass Auto Transport	Highway 641 North	Out
UST	Jim's Amoco	Dale Brothers Used Cars	9945 Highway 641 North	In
HW	Houston Trucking	Houston Trucking	3210 Highway 641 North, Puryear	In
HW	Elmer Middleton and Sons Lumber	Elmer Middleton and Sons Lumber	5755 Highway 641 North, Puryear	In
ND	ND	Tennessee Metals Recycling Center	11001 Highway 641 North, Puryear	Out

HW = hazardous waste

ND = no data

Superfund = The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)

TDEC = Tennessee Department of Environment and Conservation

TVA = Tennessee Valley Authority

The proximity of all of these sites to the existing ROW would require the project to be re-evaluated when preliminary ROW plans are completed. In the event that hazardous substances/wastes are encountered within the proposed ROW, their disposition shall be subject to the applicable sections of the Resource Conservation and Recovery Act of 1976, as amended; the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended; and the Tennessee Hazardous Waste Management Act of 1983.

L. VISUAL IMPACTS

The proposed project would have minor effects on the aesthetic quality of the area due to the loss of trees and other vegetation for ROW purposes. The residences remaining after the construction of the project would have a view of an expanded modern highway. Alternative B would have greater short-term visual impacts because it would involve construction within a new ROW. However, much of the new ROW would occur in undeveloped/vacant/agricultural land.

M. ENERGY IMPACTS

Construction of the project would involve the commitment of energy resources both during the short-term construction period and throughout the long-term operation of the facility. The project would require greater energy resources in its construction than the No-Build Alternative would require in its maintenance.

The post-construction operational energy requirements of the Build Alternative flow characteristics would be less than with the No-Build Alternative. The new facility would have better horizontal and vertical grades that would allow automobiles and trucks to operate more efficiently than on the existing highway. The savings in the operational energy would offset the construction energy requirements and, thus, in the long term, result in net savings in energy resources.

N. CONSTRUCTION IMPACTS

Adverse impacts from construction are primarily short term in duration or exist only during construction periods. Some construction inconveniences such as noise, dust, traffic conflicts, etc., are unavoidable.

Adherence to the requirements of TDOT's *Standard Specifications for Road and Bridge Construction* would minimize the effects of siltation, soil erosion, or the possible pollution of the water resources in the vicinity of the proposed project.

Disposal of solid waste generated by the construction of the project would be in accordance with all solid waste management rules and regulations. TDOT would coordinate all utility relocations with the affected utility companies. During the construction of the project, adhering to all federal and state regulations would ensure public safety.

If open burning is used to dispose of vegetation from land clearing or construction material, the process must comply with the requirements of the Tennessee Air Pollution Control Regulations or local regulations. This action would be in accordance with Chapter 1200-3-4, "Open Burning," of the Tennessee Air Pollution Control Regulations. The proposed action would also comply with the regulations on fugitive dust (Chapter 1200-3-8). The general contractor and all asphalt plants, quarry operations, etc., connected to the project would be required to have valid construction and/or operating permits from TDEC, Division of Air Pollution Control or obtain an exception from the regulations through Board action.

O. PEDESTRIANS AND BICYCLISTS

Although the new facility would not be marked specifically for pedestrian and bicycle traffic, paved shoulders in certain sections and 14-foot outside lanes in others could accommodate these uses. Presently, this project is not part of any planned bicycle route or pedestrian greenway improvement. However, it is TDOT policy to routinely integrate bicycling and walking options into the transportation system as a means to improve mobility and safety of non-motorized traffic. This policy pertains to both bicycle and pedestrian facilities.

P. INDIRECT AND CUMULATIVE IMPACTS

Direct effects, as outlined in 40 *CFR* 1508.8, are those, that are “caused by the action and occur at the same time and place.” Indirect effects are those that are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as traffic patterns, housing availability, and employment.

Land use, farmland, and terrestrial habitats have the greatest potential to experience indirect and cumulative effects associated with the proposed Build Alternative.

1. Land Use

Completion of the SR 54 project would result in an improvement to the existing highway system with respect to improved travel convenience, mobility, and access. This may result in expanded growth in the project area. The indirect impacts are increased growth potential and the continued spread of residential, commercial, and other economic development on vacant land adjacent to and near the existing SR 54.

The improvement of the highway would increase access to local and regional resources and could facilitate development because access to large amounts of vacant properties within the study corridor would be improved. This would especially be true under Alternative B, which would bypass Puryear. In the reasonably foreseeable future, land use changes are anticipated to follow the established trend of converting open vacant land to low-density residential and small commercial use. This trend could be accelerated as a result of the Build Alternative.

Cumulative impacts in the study area are primarily tied with residential development. Based on current land development trends in the study area, development would continue in the corridor as long as large, open space tracts are available for development.

2. Farmland

Indirect impacts to farmlands within the study area are a result of changes in land use and improved accessibility to much of middle and west Tennessee. Improvements in the region’s transportation system have resulted in sustained population growth, which, in turn, has increased demand for additional residential housing. This demand for more residential housing has resulted in the conversion of farmland to residential development. Typically, increased commercial development also follows an increase in residential development. Cumulative impacts would include further loss of farmland to residential and commercial development, and this trend will likely continue even under the No-Build Alternative.

3. Terrestrial Habitats

Conversion of land from agricultural or open space to residential and commercial development also has indirect and cumulative effects in the terrestrial habitats that are present. Continued growth and development has resulted in the continued loss of habitat for native plants and animals indigenous to the area. This loss would likely continue even without the proposed project but, if the Build Alternative is selected, it would likely accelerate development activities and ultimately the loss of native habitat. In addition to loss of habitat through changes of land use, indirect and cumulative effects also involve the continued spread of invasive and non-native species.

CHAPTER IV – PUBLIC INVOLVEMENT AND INTERAGENCY REVIEW

A. PUBLIC INVOLVEMENT

TDOT held a public meeting on June 18, 2002, for a section of SR 54 (US 641 N) from Rison Street to near Smith Road. Seventy-one members of the public signed the attendance sheet. A court reporter accepted comments and comment sheets were collected from the public.

TDOT and the city of Paris held an informal meeting on December 22, 2003, with potentially affected low-income and minority residents in the project area. Approximately 75 people attended, and no major concerns were raised nor was there substantial opposition to the proposed project.

On September 24, 2009, TDOT held a public meeting for the proposed project from 5:00 p.m. to 7:00 p.m. at the Paris Civic Center Auditorium. A formal presentation was followed by a comment/question and answer period; a court reporter also accepted comments. One hundred and fourteen people attended the meeting, and no major concerns were raised nor was there substantial opposition to the proposed project. Twenty-six comment sheets were turned in at the meeting or mailed to TDOT at a later date.

B. INITIAL COORDINATION

On May 13, 2003, a description of the project and a list of social, economic, and environmental concerns were sent to various federal, state, local, and other agencies and officials. These agencies and officials were requested to review and comment, within their areas of expertise, upon any possible environmental, economic, or social impacts. Comments were solicited so that any areas of specific concern could be taken into account during the development of the environmental and location studies. A list of these agencies and officials follows, as well as a summary of comments received, and the disposition of those comments. As part of the NEPA process and with approval of the EA, TDOT will conduct a public hearing before proceeding to the final environmental document.

Coordination with Federal, State, and Local Agencies and Officials

Following below is a list of federal, state, and local agencies and officials who were sent copies of TDOT's Initial Coordination Package.

✓ – Denotes Reply

FEDERAL AGENCIES

RESPONSE

U. S. Department of the Interior,
U. S. Geological Survey – Office of
Environmental Affairs

U. S. Department of the Interior,
U. S. Geological Survey – Water
Resources Division

U. S. Department of the Interior,
Office of Surface Mining

U. S. Department of the Interior,
U. S Fish and Wildlife Service

✓

U. S. Department of Commerce,
National Oceanic and Atmospheric Administration

FEDERAL AGENCIES (CONTINUED)

RESPONSE

Federal Energy Regulatory Commission,
Office of Energy Projects
Division of Environmental and Engineering Review

U. S. Department of Agriculture,
Natural Resources Conservation Service

✓

Tennessee Valley Authority,
Environmental Policy and Planning

✓

U. S. Army Corps of Engineers,
Memphis District Engineer

✓

U. S. Army Corps of Engineers,
Nashville District Engineer

✓

U. S. Environmental Protection Agency,
Environmental Accountability Division
Office of Environmental Assessment

Federal Railroad Administration,
Office of Economic Analysis

FEDERALLY RECOGNIZED NATIVE AMERICAN NATIONS/TRIBES

Eastern Band of Cherokee Indians

Cherokee Nation of Oklahoma

Chickasaw Nation

Choctaw Nation of Oklahoma

Muscogee (Creek) Nation

Seminole Nation of Oklahoma

United Keetoowah Band of Cherokee

Eastern Shawnee Tribe of Oklahoma

STATE AGENCIES

RESPONSE

Tennessee State Planning Office,
West Tennessee Section

Tennessee Department of Economic and
Community Development

STATE AGENCIES (CONTINUED)

RESPONSE

Tennessee Department of Environment and Conservation,
Commissioner's Office

Tennessee Department of Environment and Conservation,
Division of Natural Heritage

✓

Tennessee Department of Environment and Conservation,
Division of Water Pollution Control

✓

Tennessee Department of Environment and Conservation,
Division of Ground Water Protection

✓

Tennessee Department of Environment and Conservation,
Division of Water Supply

Tennessee Department of Environment and Conservation,
Division of Solid Waste Management

Tennessee Department of Environment and Conservation,
Division of Air Pollution Control

✓

Tennessee Wildlife Resources Agency

Tennessee Department of Environment and Conservation,
Tennessee Historical Commission

✓

Tennessee Department of Agriculture

Tennessee Department of Education

LOCAL AGENCIES AND OFFICIALS

RESPONSE

Fort Donelson National Military Park

Henry County Executive

Henry County Historical Society

✓

Henry County Historian

Mayor, City of Paris

Mayor, City of Puryear

Northwest Tennessee Development District

✓

OTHER AGENCIES AND ORGANIZATIONS

RESPONSE

Tennessee Trails Association

Sierra Club,
Chickasaw Group (Memphis)

Sierra Club,
Tennessee State Chapter

Tennessee Environmental Council

The Nature Conservancy

Tennessee Conservation League

C. SUMMARY AND DISPOSITION OF COMMENTS RECEIVED FROM THE INITIAL COORDINATION

The following is a summary of the comments received as a result of the initial coordination distribution and a disposition to those comments. The letters of reply can be found in Appendix A.

U. S. Fish and Wildlife Service – stated that the proposed improvement to SR 54 (U.S. 641) from Rison Street in Paris to the Kentucky/Tennessee state line in Henry County, Tennessee, has been examined. The U. S. Fish and Wildlife Service recommended that TDOT use the application of Best Management Activities during daily construction activities to prevent excessive sedimentation, which include a well-developed erosion control plan, diversion channels to keep work site free of flow-through water, using silt barriers to prevent runoff of sediment into streams and wetlands, reseed cuts and fill slopes immediately following disturbance, stabilizing stream banks with an accepted bioengineering technique(s), and limiting in stream activities. The U. S. Fish and Wildlife Service also noted wetlands may be in the area, and no federally listed or proposed endangered or threatened species occur within the impact area of the project.

DISPOSITION: An Ecological Study was conducted for the project to describe the ecological resources in the proposed project corridor and to evaluate impacts associated with the planned

improvements to the highway. The potential impacts identified in the study have been summarized for this Environmental Assessment (EA). Water quality impacts, permitting requirements, wetland impacts, water body modifications and wildlife impacts, and threatened and endangered species resulting from the proposed crossings are presented in Chapter III, Section H. TDOT will utilize best management practices and its *Standard Specifications for Road and Bridge Construction* to minimize impacts.

U. S. Army Corps of Engineers, Nashville District Engineer – stated that the subject project (within the regulatory boundaries of the Nashville District) would include potential construction activities in or over waters of the United States, including wetlands, and that a Department of Army general permit (Nationwide Permit #12) would most likely be required. The design of the highway improvements should avoid impacts or adverse modification to wetlands, waters, floodplains, and riparian vegetation. The permit application should include work plans, crossing locations, wetland delineations, any proposed mitigation, and any supporting environmental documentation.

DISPOSITION: An Ecological Study was conducted for the project to describe the ecological resources in the proposed project corridor and to evaluate impacts associated with the planned improvements to the highway. The potential impacts identified in the study have been summarized for this EA. Water quality impacts, permitting requirements, and wetlands impacts resulting from the proposed crossings are presented in Chapter III, Sections H-1, H-2, and H-3. Floodplain impacts are discussed in Section I.

U. S. Army Corps of Engineers, Memphis District Engineer – stated that the subject project within the regulatory boundaries of the Memphis District would include potential construction activities in or over waters of the United States and that a Section 404 permit will be necessary. Efforts should be made to minimize impacts to wetlands and streams, which may include shifting the proposed alignment or increasing the length of bridges.

DISPOSITION: An Ecological Study was conducted for the project to describe the ecological resources in the proposed project corridor and to evaluate impacts associated with the planned improvements to the highway. The potential impacts identified in the study have been summarized for this EA. Water quality impacts, permitting requirements, and wetlands impacts resulting from the proposed crossings are presented in Chapter III, Sections H-1, H-2, and H-3. Floodplain impacts are discussed in Section I.

U. S. Department of Agriculture, Natural Resources Conservation Service – stated that the Farmland Conversion Impact Rating for the proposed improvements to SR 54 (U.S. 641) from Rison Street in Paris to the Kentucky state line, Henry County, Tennessee, has been completed.

DISPOSITION: Because the site received a total score of less than 260, further consideration for protection is not required, and no additional sites need to be evaluated.

Tennessee Valley Authority – stated that they had reviewed the information provided on the project, and noted that the proposed project would involve crossings of Town Creek, Threemile Branch, Mormon Branch, and other Tennessee River tributaries and would, therefore, require approvals under Section 26a of TVA. TVA requested that they be included as a Cooperating Agency in the preparation of the environmental document for this project. They requested that the document contain information related to wetlands and mitigation, endangered and threatened species, floodplains, National Historic Preservation Act compliance, socioeconomics, environmental justice, aesthetics, noise, air quality, farmland, and other environmental information to assist in TVA's eventual review of the project.

DISPOSITION: An Ecological Study was conducted for the project to describe the ecological resources in the proposed project corridor and to evaluate impacts associated with the planned improvements to the highway. The potential impacts identified in the study have been summarized for this EA. Water quality impacts, permitting requirements, wetland impacts, water body modifications and wildlife impacts, and threatened and endangered species impacts resulting from the proposed crossings are presented in Chapter III, Section H. Section 26a approvals would be required for the crossings noted, and TDOT will coordinate with TVA to secure all necessary approvals prior to construction.

Tennessee Department of Environment and Conservation, Division of Water Pollution Control – stated that the programs administered by the Division that may be applicable to the project include *General Water Quality Criteria*, *Use Classification for Surface Waters*, *Aquatic Resource Alteration*, and the *Tennessee Construction General Permit for Storm Water Discharges from Construction Activities*. Permit issues that should be addressed early in the project are the identification and assessment of all watercourses, including identification of Tier II, Tier III, and 303(d) streams; the performance of an ecological study to identify unique habitat or endangered species; and the consideration of stream mitigation and sediment control. It is important to note that there may be other waters of the state not designated on U. S. Geological Survey topographical maps, which typically requires a field investigation.

DISPOSITION: An Ecological Study was conducted for the project to describe the ecological resources in the proposed project corridor and to evaluate impacts associated with the planned improvements to the highway. The potential impacts identified in the study have been summarized for this EA. Water quality impacts, permitting requirements, wetland impacts, water body modifications and wildlife impacts, and threatened and endangered species impacts resulting from the proposed crossings are presented in Chapter III, Section H.

Tennessee Department of Environment and Conservation, Division of Ground Water Protection – stated that the proposed improvements to SR 54 (U.S. 641) from Rison Street in Paris to the Kentucky State line, Henry County, Tennessee, will likely impact existing subsurface sewage disposal systems located along the length of the project.

DISPOSITION: The TDOT ROW Division is responsible for the coordination of local utility relocation efforts for highway construction and issuance of utility encroachment permits.

Tennessee Department of Environment and Conservation, Division of Air Pollution Control – stated that the project is in an area designated as attainment/unclassified for the National Ambient Air Quality Standards and does not require a Conformity determination. The main concerns at the site are fugitive dust emissions and exhaust emissions from heavy equipment during the construction phase, and assuring that structures requiring demolition are asbestos free. There is also concern for burning wood and they recommend reviewing Chapter 1200-3-4, Open Burning rules (<http://www.state.tn.us/environment/air.htm>) as these regulations have changed dramatically in recent years. The Division appreciates the chance to review the Environmental Impact Statement when available.

DISPOSITION: Air quality impacts are discussed in Chapter III, Section F, and construction impacts that could potentially impact air quality are covered under Section N. The project would comply with all aspects of the Tennessee Air Pollution Control Regulations, and TDOT and its contractors would obtain all required permits prior to construction.

Tennessee Department of Environment and Conservation, Tennessee Historical Commission – stated that pursuant to the request for initial coordination under Section 106 of the National Historic Preservation Act, their office has reviewed documentation concerning the proposed undertaking. The project, as currently proposed, might affect properties that are eligible for listing in the NRHP. They recommended continued consultation with their office and designated consulting parties. Appropriate survey documentation for review and comment should also be provided.

DISPOSITION: An intensive cultural resources survey for the proposed project has been conducted. A summary of historical impacts is presented in Chapter III, Section J-1, and archaeological impacts are summarized in Section J-2. The complete Historical and Architectural Survey reports are on file with TDOT, and TDOT will continue to coordinate with the Tennessee Historical Commission as needed.

Henry County Historical Society – stated that they are familiar with the SR 54 area and that there is nothing of historical importance along the proposed route. They also stated the new road will benefit the local communities and provide a safe passage to Murray State University.

DISPOSITION: An intensive cultural resources survey for the proposed project has been conducted. A summary of historical impacts is presented in Chapter III, Section J-1, and archaeological impacts are summarized in Section J-2. The complete Historical and Architectural Survey reports are on file with TDOT. It has been determined that the proposed project would have no impacts to any historic properties (see Appendix C).

Northwest Tennessee Development District – provided information to assist with complying with Title VI of the Civil Rights Act of 1964. There are numerous organization, churches, and social service organizations in the impacted area of the proposed improvements to SR 54 (U.S. 641). However, more may exist as information becomes available. Discussions with the County Executive and the Chamber of Commerce of Henry County indicate the project is needed for the region for safe travel, smooth traffic flow, and economic development.

DISPOSITION: The information will be provided to TDOT's Civil Rights Office. The organizations listed will also have the opportunity to provide comments on the EA during the public hearing that will be held for the project. TDOT acknowledges the comment indicating support for the project to provide for safe travel, smooth traffic flow, and economic development.

CHAPTER V – REFERENCES

Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.

Etnier, D.A., and W.C. Starnes. 1993. *The Fishes of Tennessee*, The University of Tennessee Press, Knoxville, Tennessee, 681 pp.

National Cooperative Highway Research Program Report Number 117, *Highway Noise, a Design Guide for Highway Engineers*, Highway Research Board, National Research Council, National Academy of Sciences (1971).

Parmalee, P.W., and A.E. Bogan. 1998. *The Freshwater Mussels of Tennessee*, The University of Tennessee Press, Knoxville, Tennessee, 328 pp.

TDOT (Tennessee Department of Transportation) 1995. *Standard Specifications for Road and Bridge Construction*, March.

TDOT, Planning Division 1997. *Advance Planning Report, State Route 1 (U.S. 70), from U.S. 27 (State Route 61) in Rockwood to the four-lane section near State Route 29, Roane County*, September 24.

TDOT 2001. *Historic and Architectural Assessment for Proposed Improvements to State Route 1 from State Route 61 at Rockwood to State Route 29 at Midtown, Roane County*, TDOT Department of Environmental Planning and Permits, August.

APPENDIX A
INITIAL COORDINATION REPLY LETTERS



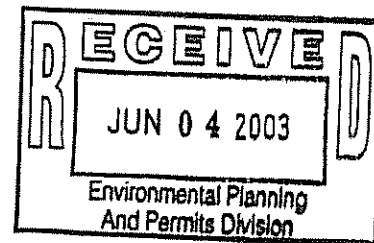
United States Department of the Interior

FISH AND WILDLIFE SERVICE

446 Neal Street
Cookeville, TN 38501

June 3, 2003

Mr. Charles E. Bush
Transportation Manager II
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334



Re: FWS #03-1221

Dear Mr. Bush:

Thank you for your correspondence of May 13, 2003, regarding the Tennessee Department of Transportation's (TDOT) proposed State Route ~~45~~ (US Highway 641) Improvements Project in Henry County, Tennessee. TDOT proposes to improve the above subject highway from Rison Street in Paris to the Kentucky/Tennessee State Line as shown on the attachment to your correspondence. Fish and Wildlife Service (Service) personnel have reviewed the information submitted and the following comments are provided in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Information available to the Service indicates that wetlands exist in the vicinity of the proposed project. Attached is a copy of a portion of the National Wetlands Inventory's (NWI) Paris, Tennessee, quadrangle, and copies of two portions of the NWI Puryear, Tennessee, quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted regarding the presence of regulatory wetlands and the requirements of wetlands protection statutes.

The Service is concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands which can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering

bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue far downstream from the point where the erosion occurs.

Prevention of excessive sedimentation can occur only through application of Best Management Practices during daily construction activities. Rigid application of your agency's construction erosion control standards can preclude most sedimentation problems; however, in some cases additional measures will need to be taken by on-site inspectors and construction representatives.

Upon review of the proposed projects, we find that the information provided is insufficient to determine if the proposed actions will require U.S. Army Corps of Engineers' permits. Since permit applications could more thoroughly reveal the extent of construction activities affecting aquatic resources, we will provide additional comments during the 404 review process should the project necessitate Corps' permits. However, we would likely have no objection to the issuance of permits if any necessary stream channel work is held to a minimum and Best Management Practices are utilized and enforced, effectively controlling erosion, sedimentation, and other potential hazards. The following conditions are specifically recommended:

1. Erosion and sediment control measures, including but not limited to the following, should be implemented on all vegetatively denuded areas:
 - a. Preventive planning: A well-developed erosion control plan which entails a preliminary investigation, detailed contract plans and specifications, and final erosion and sediment control contingency measures should be formulated and made a part of the contract.
 - b. Diversion channels: Channels should be constructed around the construction site to keep the work site free of flow-through water.
 - c. Silt barriers: Appropriate use should be made of silt fences, hay bale and brush barriers, and silt basins in areas susceptible to erosion.
 - d. Temporary seeding and mulching: All cuts and fill slopes, including those in waste sites and borrow pits, should be seeded as soon as possible.
 - e. Limitation of instream activities: Instream activities, including temporary fills and equipment crossings, should be limited to those absolutely necessary.
2. Channel excavations required for pier placement should be restricted to the minimum necessary for that purpose. Overflow channel excavations should be confined to one side of the channel, leaving the opposite bank and its riparian vegetation intact.

3. All fill should be stabilized immediately upon placement.
4. Streambanks should be stabilized with riprap or other accepted bioengineering technique(s).
5. Existing transportation corridors should be used in lieu of temporary crossings where possible.
6. Good water quality should be maintained during construction.

Efficient management practices can minimize adverse impacts associated with construction. It is important that these and other measures be monitored and stringently enforced. This will aid in preserving the quality of the natural environment.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact area of the project. We note, however, that collection records available to the Service may not be all-inclusive. Our data base is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitat and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality. However, based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under Section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Wally Brines of my staff at 931/528-6481, extension 222.

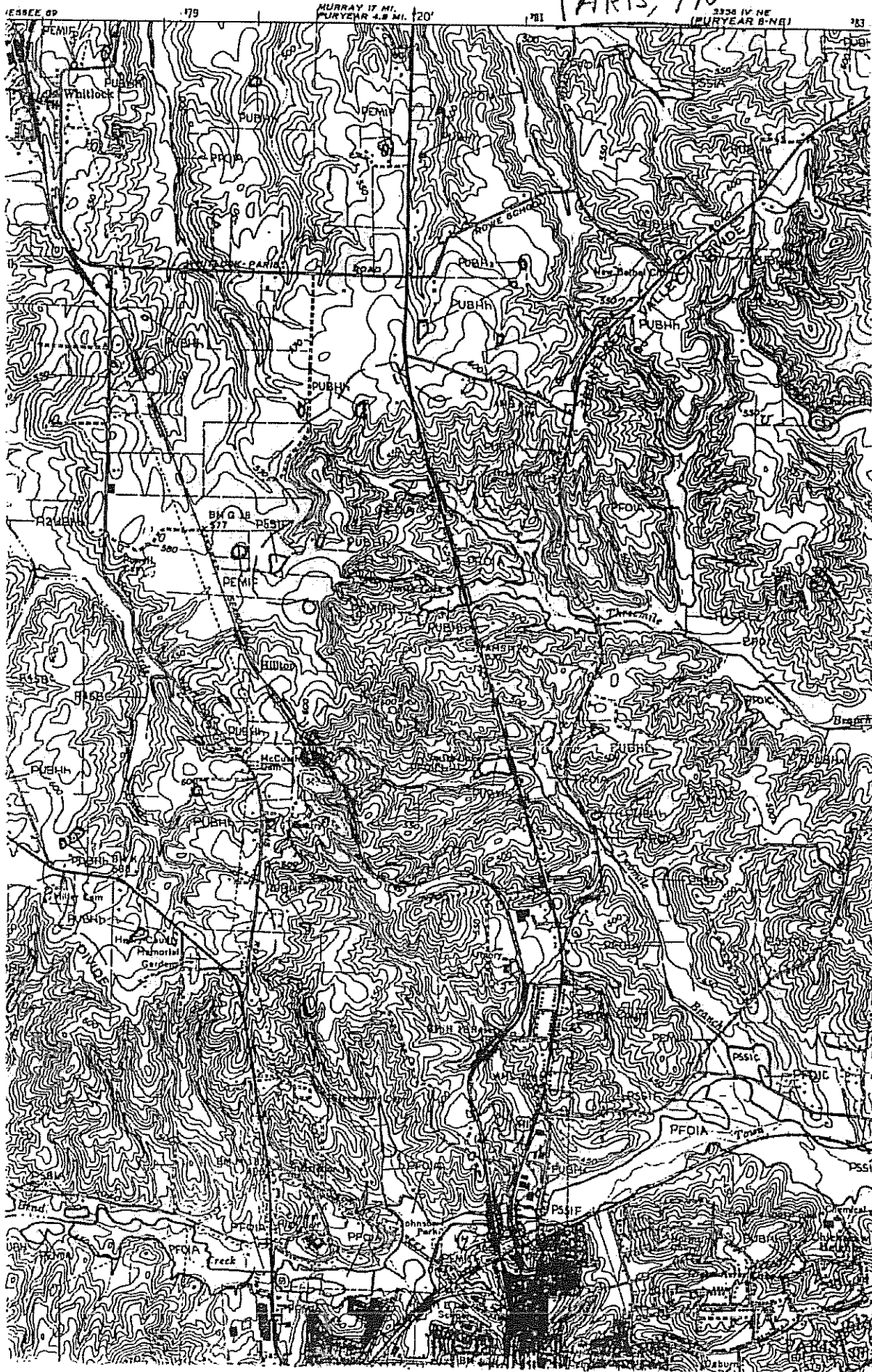
Sincerely,

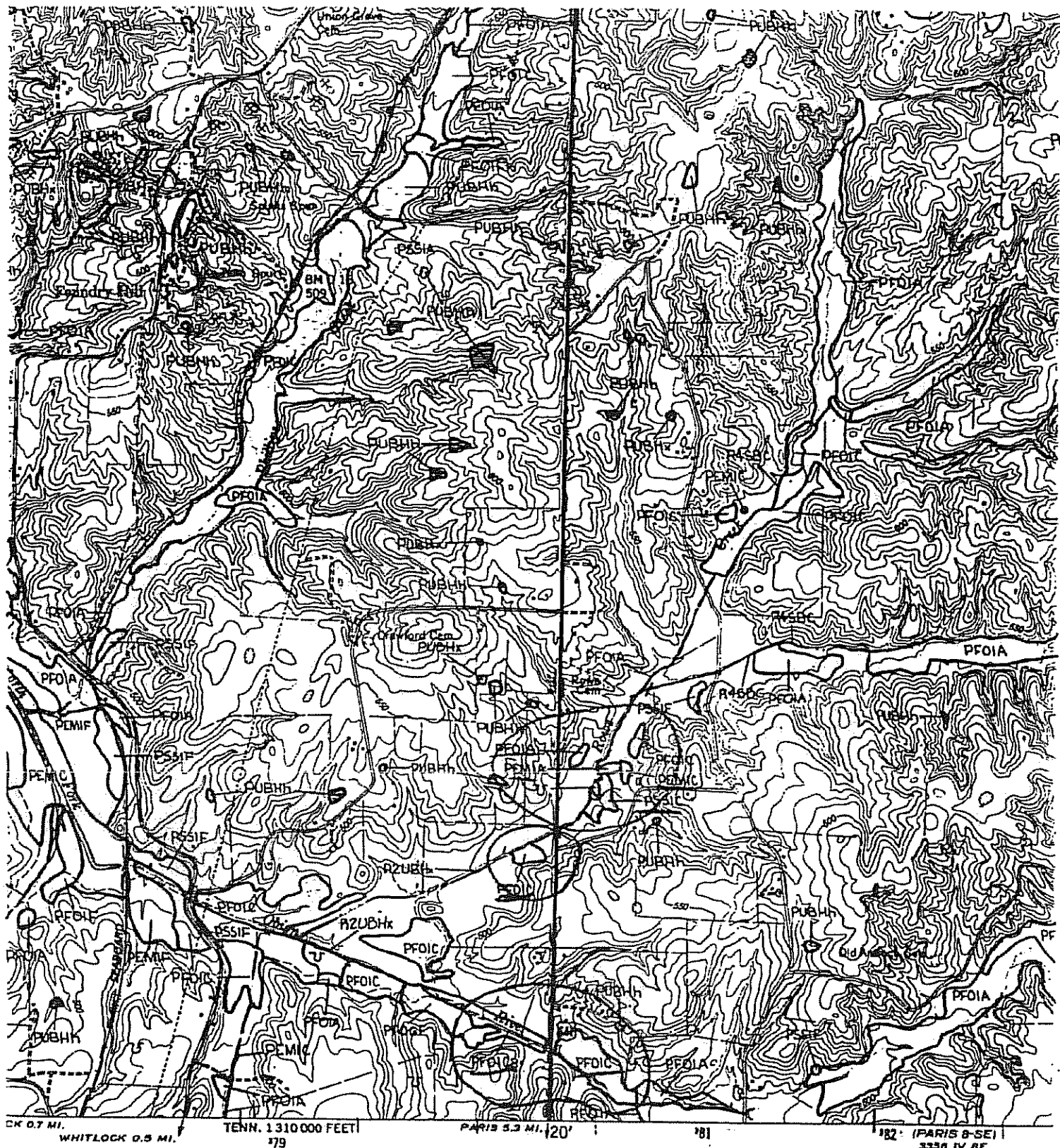
A handwritten signature in cursive script, reading "Lee A. Barclay".

Lee A. Barclay, Ph.D.
Field Supervisor

Attachments

PARIS, TN





PURYEAR, TN

SPECIAL NOTE

This document was prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography in accordance with Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS - 75, 31 December 1979). The aerial photographs typically reflect conditions during the specific year and season when they were taken. In addition, there

SYMBOLGY EXAMPLE

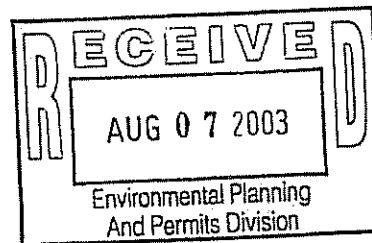
SYST
S
LZEN

Tom L.



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

August 4, 2003



Mr. Charles E. Bush
Transportation Manager II
Environmental Planning and Permits Division
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

PROPOSED IMPROVEMENTS TO STATE ROUTE (SR) 54 (US 641) FROM RISON STREET IN PARIS TO THE KENTUCKY STATE LINE, TRIBUTARIES TO THE EAST FORK CLARKS RIVER AND BIG SANDY RIVER, HENRY COUNTY, TENNESSEE

TVA has reviewed information provided in your letter of May 13, 2003, on the proposed four- and five-lane construction of US 641 between Hazel and Paris, including a proposed Puryear bypass. The FHWA environmental document prepared for this project should note that an approval under Section 26a of the TVA Act would be needed for the crossings of Town Creek, Threemile Branch, Mormon Branch, and other Tennessee River tributary streams. In accordance with Section 1309 of the Transportation Equity Act for the 21st Century and the January 30, 2002 Council on Environmental Quality guidance, please include TVA as a cooperating agency in the preparation of NEPA documentation for this project.

The environmental document should contain information related to wetlands and mitigation, endangered and threatened species, floodplains, National Historic Preservation Act compliance, socioeconomics, environmental justice, aesthetics, noise, air quality, farmland, and other environmental information in order to assist in TVA's eventual review of the project.

Should you have any questions, please contact Harold M. Draper at (865) 632-6889 or hmdraper@tva.gov.

Sincerely,

Jon M. Loney, Manager
NEPA Administration
Environmental Policy and Planning

cc: Bobby W. Blackmon
Federal Highway Administration
640 Grassmere Park, Suite 112
Nashville, Tennessee 37211

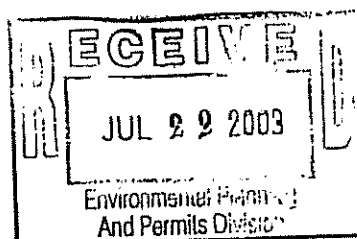


DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
3701 Bell Road
NASHVILLE, TENNESSEE 37214

July 16, 2003

REPLY TO
ATTENTION OF:

Regulatory Branch



SUBJECT: File No. 2003-00820; Proposed Improvements to State Route 54 (US 641) from Rison Street in Paris to the Kentucky State Line, Henry County, Tennessee.

Mr. Charles E. Bush
Transportation Manager 11
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

This is in response to your letter requesting Corps of Engineers comments concerning the proposed improvements to State Route 54 (US 641) project. Please refer to File No. 2003-00820 in any future correspondence with us concerning this project.

Your proposed project was reviewed pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for certain structures or work in or affecting navigable waters of the United States (U.S.), prior to conducting the work (33 U.S.C. 403). Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including wetlands, prior to conducting the work (33 U.S.C. 1344).

Your letter did not indicate if any of the multiple waterways (and/or wetlands) that cross the proposed route would be impacted by the construction (i.e. stream crossings) of the proposed improvements. Please note that wetlands and stream crossing impacts may be considered waters of the United States pursuant to Section 404 of the Clean Water Act (CWA). However, your proposed plan lacks the necessary information sufficient for a determination whether a permit is required.

My preliminary jurisdictional determination is that a Department of the Army (DA) permit would be required for the work proposed in your request. The discharge of backfill material and stream loss associated with the installation of culverts and other work required for the crossing of creeks and/or similar crossings in wetlands requires a DA approval. While this activity is generally covered under an existing general permit (Nationwide Permit #12) for linear transportation construction, notification of your work is required. When available, please provide detailed plans of the proposed crossings and a location map on 8½" x 11" sized paper.

To the extent possible, your design scheme of the proposed alignment, and consideration of alternative alignments, should avoid impacts or adverse modification to any wetlands, waters, floodplains and riparian vegetation, consistent with DA permit evaluation requirements for mitigation (i.e., impact avoidance, impact minimization, and compensatory mitigation in sequential order).

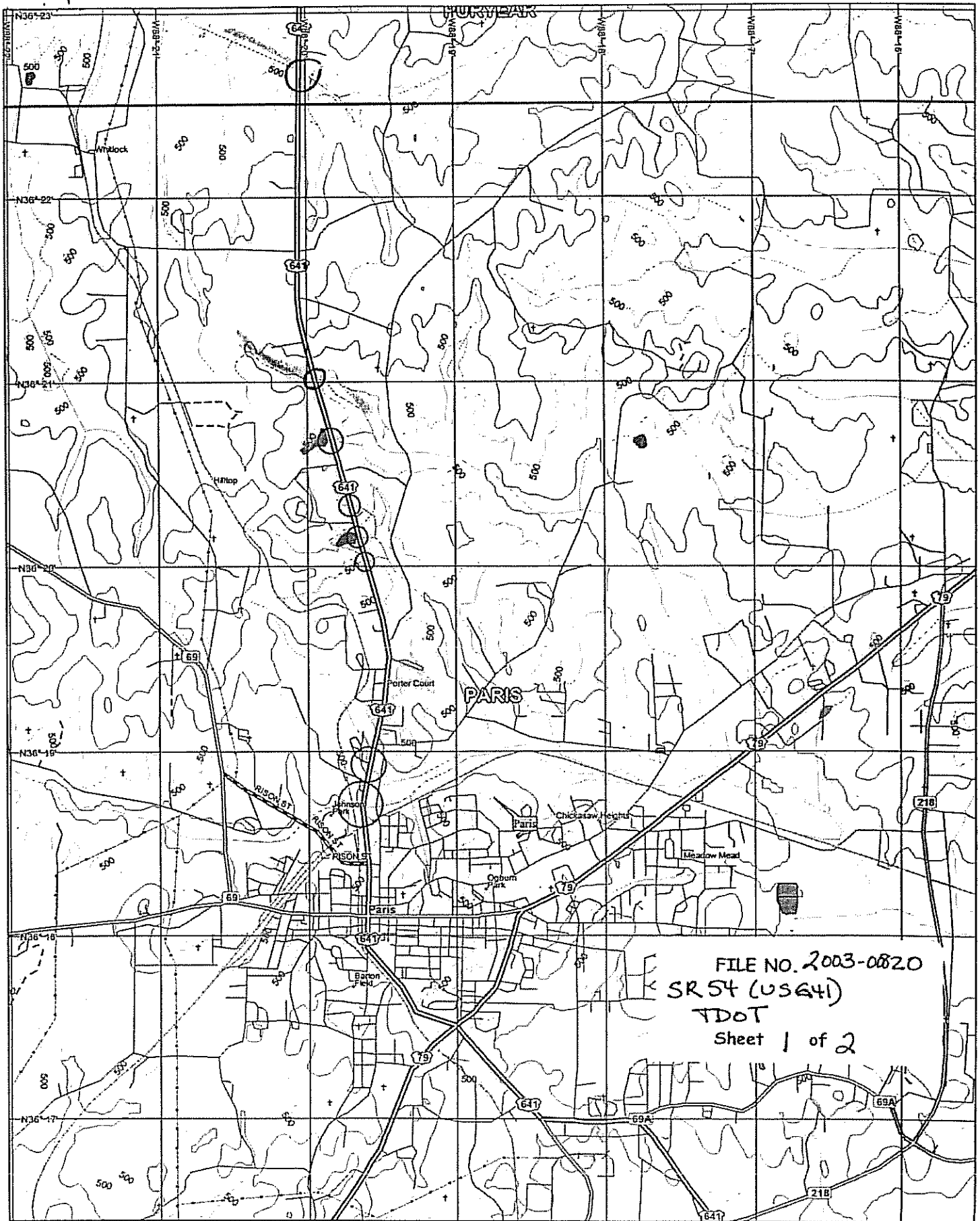
Therefore, we encourage a construction plan and alignment that would avoid wetland and stream impacts if possible. Also, we would request that you avoid the floodplain and riparian vegetation impacts to the extent possible. Your application should include plans of the work, and locations of all crossings, a wetland delineation if available, any proposed mitigation, and any supporting environmental documentation.

While we do not wish to become a "Cooperating Agency", the Nashville District is available to participate in any onsite inspections of the proposed site and/or attend pre-application meetings to discuss aquatic resource impact avoidance and minimization.

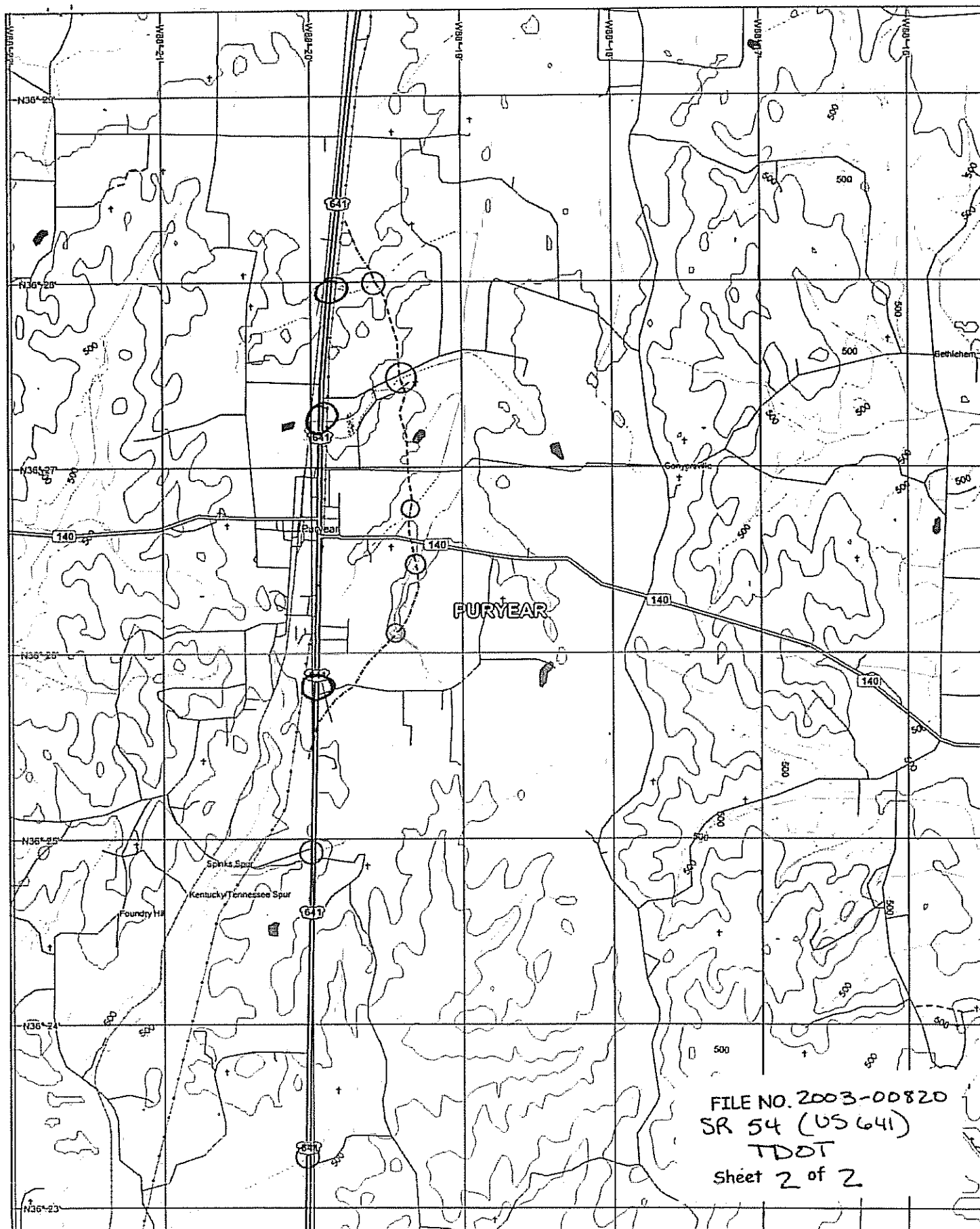
Thank you for including this office in your scoping process. If we can be of further assistance or if you have any questions regarding DA permit requirements, please contact me at the above address, telephone 615-369-7506 or at kathleen.j.kuna@usace.army.mil.

Sincerely,

Kathleen J. Kuná
Project Manager
Operations Division



FILE NO. 2003-0820
SR 54 (US 64)
TDO
Sheet 1 of 2



FILE NO. 2003-00820
SR 54 (US 641)
TDDT
Sheet 2 of 2

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Tennessee Department of Transportation		File Number: 2003-00820	Date: 16 July 2003
Attached is:		See Section below	
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
	PERMIT DENIAL	C	
	APPROVED JURISDICTIONAL DETERMINATION	D	
XX	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I: The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://usace.army.mil/inet/functions/cw/cccw/reg> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Kathleen J. Kuná
(615) 369-7506
FAX (615) 369-7501

If you only have questions regarding the appeal process you may also contact:

Suzanne Chubb
(513) 684-7261
FAX (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:

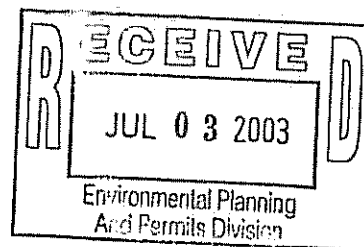
Tom L.



DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT, CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TENNESSEE 38103-1894

REPLY TO
ATTENTION OF:

June 25, 2003



Regulatory Branch
File Number 200300319

Charles E. Bush

Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

Thank you for the opportunity to comment on the proposed improvements to State Route 54 (U.S. Highway 641) in Henry County between Rison Street in Paris and the Kentucky state line. Much of the alignment falls within the regulatory boundaries of the Nashville District, Corps of Engineers. However, a portion of the proposed project area (from a point approximately 1800 feet south of Whitlock-Paris Road to a point approximately 5,000 feet south of Puryear) is within the regulatory boundaries of the Memphis District. We look forward to working with you on this project as a Cooperating Agency.

The proposed work should not impact any programs of the Memphis District, Corps of Engineers. However, based on a review of the project area, jurisdictional waters of the United States (North Fork Obion River, Rowe Creek and wetlands adjacent to these streams) are present within the proposed alignment. It will be necessary to apply for a Section 404 permit for impacts to the wetlands and stream channels within this alignment. Additionally, efforts should be made to minimize impacts to these wetlands and streams; these efforts could include shifting the proposed alignment to the side of the existing roadway with fewer wetlands or increasing the length of the bridges over the streams mentioned above to minimize the amount of fill placed into wetlands adjacent to these channels.

If you have any questions, please contact Roger Allan at (901) 544-3682 and refer to File No. 200300319. Thank you.

Sincerely,

Larry D. Watson
Chief
Regulatory Branch

**FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS**

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 8/21/09	4. Sheet 1 of 1	
1. Name of Project Section IV State Route 54 Widening		5. Federal Agency Involved Federal Highway Administration		
2. Type of Project Highway Widening		6. County and State Henry County, Tennessee		
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 9-21-2009	2. Person Completing Form C. J. [Signature]	
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form)		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated NA
				Average Farm Size 223 ac.
5. Major Crop(s) CORN, SOYBEANS	6. Farmable Land in Government Jurisdiction Acres: 213,198 % 56		7. Amount of Farmland As Defined in FPPA Acres: 129956 % 61	
8. Name Of Land Evaluation System Used CORN, SOYBEANS HENRY CO.	9. Name of Local Site Assessment System NA	10. Date Land Evaluation Returned by NRCS 9-22-2009		

PART III (To be completed by Federal Agency)	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	314 AB-A	390 AB-B		
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor	314	390	0	0

PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	81	139		
B. Total Acres Statewide And Local Important Farmland	NA	NA		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.06	0.1		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	71	71		

PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)				
	82	85		

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points			
1. Area in Nonurban Use	15	12	13		
2. Perimeter In Nonurban Use	10	7	8		
3. Percent Of Corridor Being Farmed	20	15	16		
4. Protection Provided By State And Local Government	20	0	0		
5. Size of Present Farm Unit Compared To Average	10	5	3		
6. Creation Of Nonfarmable Farmland	25	5	5		
7. Availability Of Farm Support Services	5	1	1		
8. On-Farm Investments	20	5	5		
9. Effects Of Conversion On Farm Support Services	25	0	0		
10. Compatibility With Existing Agricultural Use	10	8	7		
TOTAL CORRIDOR ASSESSMENT POINTS	160	X 56	X 58	0	0

PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100	82	85		
Total Corridor Assessment (From Part VI above or a local site assessment)	160	X 56	X 58	0	0
TOTAL POINTS (Total of above 2 lines)	260	X 138	X 143	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>
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5. Reason For Selection:

Signature of Person Completing this Part:

K. D. [Signature]

DATE

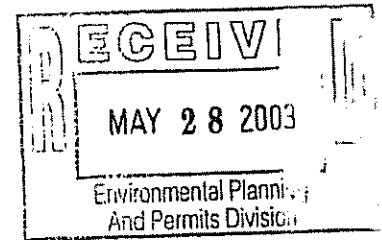
10/14/09

NOTE: Complete a form for each segment with more than one Alternate Corridor



May 21, 2003

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550



Mr. Charles E. Bush
Environmental Planning Office
Dept of Transportation
Nashville, Tennessee, 37243-0330

RE: FHWA, SR-54/RISON ST. TO KENTUCKY ST., PARIS, HENRY COUNTY

Dear Mr. Bush:

In response to your request, received on Friday, May 16, 2003, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800. You may wish to familiarize yourself with these procedures (Federal Register, December 12, 2000, pages 77698-77739) if you are unsure about the Section 106 process.

Considering available information, we find that the project as currently proposed **MAY AFFECT PROPERTIES THAT ARE ELIGIBLE FOR LISTING IN E NATIONAL REGISTER OF HISTORIC PLACES**. You should continue consultation with our office, designated consulting parties and invite them to participate in consultation, and provide us with appropriate survey documentation for review and comment. Please direct questions and comments to Joe Garrison 615) 532-1550-103. We appreciate your cooperation.

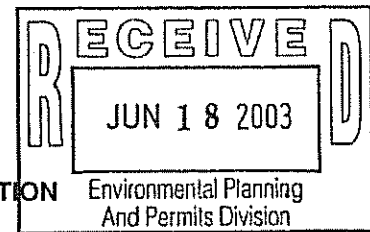
Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jyg



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Pollution Control



June 12, 2001

Mr. Charles E. Bush, Transportation Manager II
State of Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Re: State Route 54 (US 641) from Paris to Kentucky State Line
Henry County

Dear Mr. Bush:

This letter responds to your letter of May 13, 2003, regarding proposed improvements to State Route 54 from Paris to Kentucky State Line in Henry County and your request for comments relative to any potential environmental impacts or concerns the Division of Water Pollution Control (Division) may have. The Division of Water Pollution Control has delegated authority from the U.S. Environmental Protection Agency to administer certain portions of the *Clean Water Act*. This Division also administers requirements of the *Tennessee Water Quality Control Act of 1977* ("ACT"). Please understand that there may be other regulatory programs applicable to this project that are administered by other divisions of the Department of Environment and Conservation.

The programs administered by this Division that may be applicable to the described project include programs promulgated by Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control including *General Water Quality Criteria, Chapter 1200-4-3, Use Classification for Surface Waters, Chapter 1200-4-4, and Aquatic Resource Alteration, Chapter 1200-4-7 (ARAP)*, and the *Tennessee Construction General Permit for Storm Water Discharges from Construction Activities (TNCGP)*. In addition, in cases where §401 certification under the *Federal Water Pollution Control Act* or an individual permit is required, rules 1200-4-7-.04(3)(b) and 1200-4-7-.04(5)(b) of the *Aquatic Resource Alteration* rules state that a practicable alternatives evaluation for the proposed activity shall be performed. Further, the description of the project included in your May 13, 2003, letter indicates that the ARAP and TNCGP programs are directly applicable. The applicant is responsible to determine if other regulatory programs apply.

The "ACT" requires that permits be acquired to perform certain activities. Permit conditions are placed on activities proposed by the applicant. These conditions are intended to protect water quality. Specifically, Section 69-3-108(a) of the "ACT" requires acquisition of permits prior to initiation of activities listed in Section 69-3-108(b). The listed activities must be conducted in accordance with conditions of the permit(s).

A number of issues should be addressed as early in the project development as possible. First, identification and assessments of all watercourses in the area must be completed to determine those that are considered waters of the state and, further, those streams that require special consideration, Tier II, Tier III, and 303(d) listed streams. The Division can assist you with this effort, if needed. All "waters of the state" determinations will be evaluated during the permit review process. Second, a detailed ecological study must be completed to identify any unique

wildlife habitat or endangered species present in the study area affected by the proposed project. Third, stream mitigation and sediment control should be considered early in the design stage to allow for acquisition of sufficient right-of-way. Completed applications will be reviewed by Division personnel for completeness, accuracy, and adequacy. Incomplete applications will be returned.

In regards to this specific project and information you have provided, numerous "blue line" streams and numerous unnamed tributaries are shown within the study area on the US Geological Survey topographical map for the subject area. However, there may be other "waters of the state" that are not shown as "blue line" streams on this information source. Typically, a field investigation is required to properly identify all streams and other "waters of the state". We expect that a more thorough investigation will precede submittal of applications for ARAPs and coverage under TNCGP. Division personnel can assist you with other determinations, if needed.

If you have any questions regarding these issues or require additional information, please call Mr. Doug Ezell at (615)532-0648.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan C. Eagar", followed by a horizontal line.

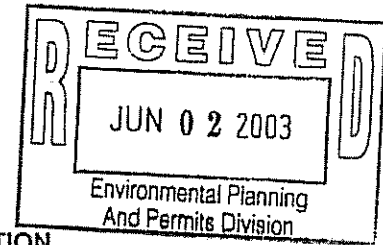
Dan Eagar, Manager, Natural Resources Section
Division of Water Pollution Control

CC: Jerry M. Shoemake, Assistant Director
Saya Qualls, Manager, Permits Section
Doug Ezell, Policy Office



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Ground Water Protection
10th Floor, L & C Tower
401 Church Street
Nashville, Tennessee 37243-1540



May 21, 2003

Mr. Charles E. Bush
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville TN 37243-0334

Subject: Proposed improvements to State Route 54 (US 641) from Rison Street in Paris to the Kentucky State line, Henry County, Tennessee

Dear Mr. Bush:

We are appreciative of the opportunity to review the **Initial Coordination or Scoping Process** information for the subject project. The Division of Ground Water Protection regulates all aspects of subsurface sewage disposal (SSD) in the State of Tennessee. In this regard, division staff has worked closely with TDOT on those construction projects where it is anticipated that the project will potentially impact existing SSD systems.

Regarding the above referenced project, the Division of Ground Water Protection anticipates that it is likely the project will impact existing SSD systems that are located along the length of the proposed route from Paris to the Kentucky State line, in Henry County.

If you have any questions or think that assistance will be requested on this project, you should contact Mr. Conner Franklin at (731) 512-1302.

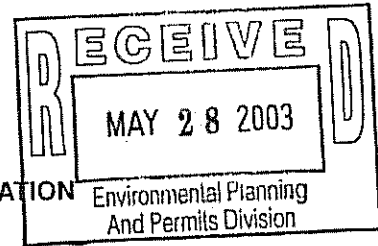
Sincerely,

Kent D. Taylor
Director
Division of Ground Water Protection

cx: Mr. Conner Franklin, Jackson Environmental Assistance Center



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Tennessee Air Pollution Control Division
9th Floor L&C Annex, 401 Church Street
Nashville, Tennessee 37243-1531



May 23, 2003

Mr. Charles E. Bush
Transportation Manager II
Department of Transportation
Office of Environmental Planning and Permits
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334

Dear Mr. Bush:

The Division of Air Pollution Control has reviewed your project summary for the proposed improvement to State Route 54 (US 641) from Rison Street in Paris to the Kentucky State Line, Henry County, Tennessee. This project is in an area designated as attainment/unclassified for the National Ambient Air Quality Standards (NAAQS), so a Conformity determination is not required.

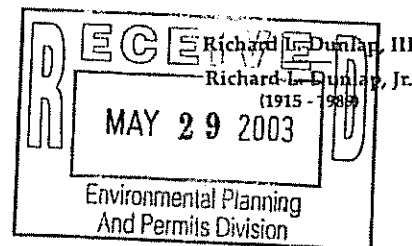
This agency's other interests, above what would be addressed through the standard NEPA process, concerns the control of fugitive dust and equipment exhaust emissions during the construction phase, and the assurance that any structures requiring demolition are asbestos free, as per the requirements of Chapter 1200-3-11, Hazardous Materials. I would also like to point out that the open burning regulations have changed dramatically. Before burning any wood waste, please refer to Chapter 1200-3-4, Open Burning rules at: <http://www.state.tn.us/environment/air.htm> under the regulations link. We also suggest contacting other applicable regulatory agencies.

We appreciate the chance to comment on this, and we would also appreciate the chance to review the Environmental Impact Statement when it becomes available.

The
Dunlap
Law Firm

Dunlap - Lawyers Serving
Henry County Since 1823

May 22, 2003



Mr. Charles E. Bush
Transportation Manager 11
Department of Transportation
Environmental Planning and Permits Division
Suite 900, James k. Polk Building
505 Deaderick St.
Nashville, TN. 37243-0334

RE: Proposed Improvements to State Route 54 (641) from Rison St. to Kentucky State Line,
Henry Co., Tennessee

Dear Mr. Bush:

I am totally familiar with the area in question. There was one historical building along Highway 641 N. but the city fathers about 20 years ago destroyed it and made it into a very small park, which is not used by anybody. Otherwise, there is nothing of historical importance along the proposed route of the road, if for no other reason than the existing route was not built until the 1930's.

I doubt that I will live long enough to see the road built but if we citizens of Paris could get to Murray State University in a safe fashion driving the speed limit, it would be an enormous benefit to the citizens of Paris, and to Henry County and Carroll and Benton Counties.

Very truly yours,

Richard L. Dunlap, III

RLDIII:rs

APPENDIX B
MOBILE SOURCE AIR TOXICS

MOBILE SOURCE AIR TOXICS (MSATs)

1.0 INTRODUCTION

This report summarizes the results of an analysis of the potential air quality effects of the project. The purposes of this analysis are, first, to address the transportation conformity requirements for the project and, second, to address potential Mobile Source Air Toxics (MSATs) effects of the project.

2.0 TRANSPORTATION CONFORMITY

Transportation conformity is a process required of Metropolitan Planning Organizations (MPOs) pursuant to the Clean Air Act Amendments (CAAA) of 1990. CAAA require that transportation plans, programs, and projects in nonattainment or maintenance areas that are funded or approved by the Federal Highway Administration (FHWA) be in conformity with the State Implementation Plan (SIP), which represents the State's plan to either achieve or maintain the National Ambient Air Quality Standard (NAAQS) for a particular pollutant.

Projects conform to the SIP if they are included in a fiscally constrained and conforming Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).

Henry County is currently in attainment of the NAAQS for all regulated criteria pollutants. Therefore, conformity does not apply to this project.

3.0 MOBILE SOURCE AIR TOXICS (MSATs)

On February 3, 2006, the FHWA released "*Interim Guidance on Air Toxic Analysis in NEPA Documents.*" [1] This guidance was superseded on September 30, 2009, by FHWA's "*Interim Guidance Update on Air Toxic Analysis in NEPA Documents.*" [2] The purpose of FHWA's guidance is to advise on when and how to analyze Mobile Source Air Toxics (MSATs) in the NEPA process for highways. This guidance is interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

Technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions. The qualitative assessment presented below has been prepared in accordance with FHWA's Interim Guidance derived in part from a study conducted by the FHWA entitled "*A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives.*" [3]

FHWA's Interim Guidance groups projects into the following categories:

- Exempt Projects and Projects with no Meaningful Potential MSAT Effects;
- Projects with Low Potential MSAT Effects; and,
- Projects with Higher Potential MSAT Effects.

FHWA's Interim Guidance provides examples of "Projects with Low Potential MSAT Effects." These projects include minor widening projects and new interchanges, such as those that replace a signalized intersegment on a surface street or where design year traffic projections are less than 140,000 to 150,000 AADT.

The Build Alternative includes the widening of SR 54. The highest projected design year 2031 AADT on SR 54 is 10,940 AADT and substantially lower than the FHWA criterion. Therefore, the project meets the criteria for a "Project with Low Potential MSAT Effects."

For both the No-Build and Build Alternatives A and B, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. ***The estimated VMT for Build Alternative A is the same as the VMT for the No-Build Alternative and lower for Alternative B when compared to the No-Build Alternative as shown in Table 1.***

Table 1: Estimated VMT for the No-Build vs. Build Alternatives A and B for SR 54

	Year 2031 AADT	Segment Length (miles)	VMT
No-Build	10,940	12.02	131,499
Build Alternative A	10,940	12.02	131,499
Build Alternative B	9,510	12.55	119,351
Difference Alternative A vs. No-Build			0
Difference Alternative B vs. No-Build			-12,148

Therefore, it is expected that there would be no appreciable difference in overall MSAT emissions between the No-Build and Build Alternatives A and B.

Additionally, travel speeds for the Build Alternatives are expected to be higher than for the No-Build Alternative. According to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated for the sections of Build Alternatives A and B which parallel existing SR 54 and Alternative B which shifts to the east of existing SR 54 will have the

effect of moving some traffic closer to nearby residences or commercial sites. Therefore, under Build Alternatives A and B there may be localized areas where ambient concentrations of MSATs could be higher than under the No-Build Alternative. However, as discussed above, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.

In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternatives could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Substantial construction-related MSAT emissions are not anticipated for this project as construction is not planned to occur over an extended building period. However, construction activity may generate temporary increases in MSAT emissions in the project area.

4.0 CONSTRUCTION AIR QUALITY

This project will result in the temporary generation of construction-related pollutant emissions and dust that could result in short-term air quality impacts. These construction-related impacts will be mitigated through the implementation of Best Management Practices, which are included in *TDOT's Standard Specifications for Road and Bridge Construction*. All construction equipment shall be maintained, repaired and adjusted to keep it in full satisfactory condition to minimize pollutant emissions.

5.0 REFERENCES

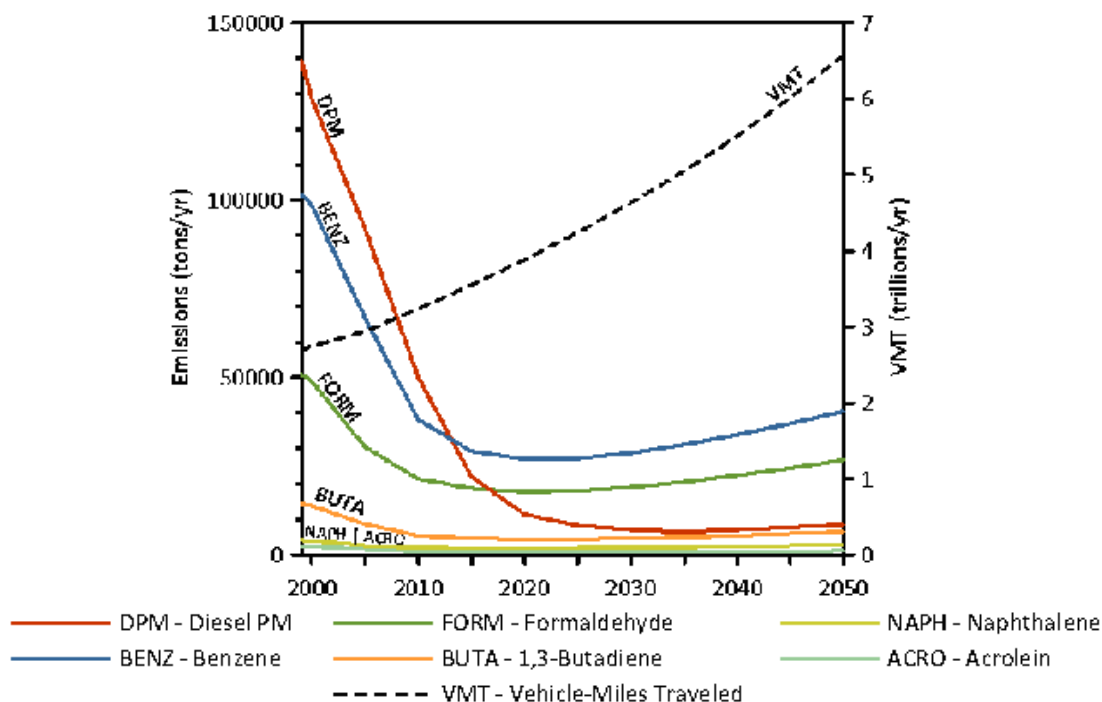
- [1] *Interim Guidance on Air Toxic Analysis in NEPA Documents*, FHWA, February 3, 2006.
<http://www.fhwa.dot.gov/environment/airtoxic/020306guidmem.htm>
- [2] *Interim Guidance Update on Air Toxic Analysis in NEPA Documents*, FHWA, September 30, 2009.
<http://www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm>
- [3] Claggett, M., et. al., "A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives," Federal Highway Administration, Resource Center.

Mobile Source Air Toxics (MSATs) Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (<http://www.epa.gov/ncea/iris/index.html>). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (<http://www.epa.gov/ttn/atw/nata1999/>). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in Figure 1.

Figure 1: NATIONAL MSAT EMISSION TRENDS 1999 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING EPA's MOBILE6.2 MODEL



Note:

(1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
 (2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors
 Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the National Environmental Policy Act (NEPA).

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

Unavailable Information for Project Specific MSAT Impact Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <http://www.epa.gov/ncea/iris/index.html>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, <http://pubs.healtheffects.org/view.php?id=282>) or in the future as vehicle emissions substantially decrease (HEI, <http://pubs.healtheffects.org/view.php?id=306>).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would

have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (<http://pubs.healtheffects.org/view.php?id=282>). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (<http://www.epa.gov/risk/basicinformation.htm#g>) and the HEI (<http://pubs.healtheffects.org/getfile.php?u=395>) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Due to the limitations cited, a discussion such as the example provided in this Appendix (reflecting any local and project-specific circumstances), should be included regarding incomplete or unavailable information in accordance with Council on Environmental Quality (CEQ) regulations [40 CFR 1502.22(b)]. The FHWA Headquarters and Resource Center staff Victoria Martinez (787) 766-5600 X231, Shari Schaftlein (202) 366-5570, and Michael Claggett (505) 820-2047, are available to provide guidance and technical assistance and support.

APPENDIX C

CULTURAL RESOURCES



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

February 25, 2008

Mr. Gerald Kline
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

RE: FHWA, ARCHAEOLOGICAL ASSESSMENT, SR-54 - KY ST. LN/40HY150/40HY153,
UNINCORPORATED, HENRY COUNTY, TN

Dear Mr. Kline:

At your request, our office has reviewed the above-referenced archaeological testing report and previous consultation documentation in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, we find that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places. Archaeological sites 40HY150, 40HY152 and 40HY153 do not warrant additional archaeological investigation.

If project plans are changed or archaeological remains are discovered during construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb



November 26, 2003

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

Ms. Martha Carver
TDOT Environmental Planning Office
505 Deaderick Street/900
Nashville, Tennessee, 37243-0334

**RE: FHWA, ARCHITECTURAL SURVEY REPORT, SR-54/RISON ST. TO KENTUCKY SL,
UNINCORPORATED, HENRY COUNTY**

Dear Ms. Carver:

In response to your request, received on Monday, November 24, 2003, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800. You may wish to familiarize yourself with these procedures (Federal Register, December 12, 2000, pages 77698-77739) if you are unsure about the Section 106 process.

Considering the information provided, we find that the area of potential effect contains two architectural resources eligible for listing in the National Register of Historic Places affected by this undertaking: the North Poplar Street Historic District and the Paris Gymnasium and Auditorium. We further find that the project as currently proposed will not adversely affect either of these historic properties. You should notify interested persons and make the documentation associated with this finding available to the public.

All borrow areas outside proposed rights-of-way will require separate certification as specified under Section 107.06-Federal Aid Provisions. If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact us to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

This office appreciates your cooperation.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jyg

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02




Appendix E
PIN 101886.02
Technical Report (dated 04/02/2020)

TENNESSEE
DEPARTMENT OF TRANSPORTATION



TECHNICAL REPORT
STATE ROUTE 54 (US-641)
FROM NEAR SMITH ROAD IN PARIS TO NEAR HOWARD ROAD
(NORTH OF PURYEAR)
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY
101886.02

PREPARED BY TENNESSEE DEPARTMENT OF TRANSPORTATION
Strategic Transportation Investments Division

Recommended by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION		04-02-2020

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.

Executive Summary

Purpose of Report

The purpose of this Technical Report is to provide an overview of the existing route deficiencies, define the preliminary purpose and need for the project, and recommend preliminary design that is feasible, cost effective, and improves mobility for this segment of State Route (S.R.) 54 (US-641) in Henry County. The widening of S.R. 54 will provide connectivity to PIN 101886.01 at the beginning of the project near Smith Road, and the project end termini is contingent upon the adjacent Kentucky Transportation Cabinet (KYTC) project (PIN 101886.05) begin termini that will tie into this project near Howard Road. The proposed project was initiated as a result of the Improving Manufacturing, Public Roads and Opportunities for a Vibrant Economy (IMPROVE) Act project delivery commitments.

Description of the Existing Route

This section of S.R. 54 (US-641) is functionally classified as a Rural Other Principal Arterial, and the typical section consists primarily of two (2) twelve (12) foot travel lanes in each direction, three (3) foot paved outside shoulders within sixty (60) feet of existing Right-of-Way (ROW). There are eight (8) structures along the project route, five (5) of which are culverts. The existing roadway is a connector between Paris, Tennessee and Puryear, Tennessee to the north at the Tennessee-Kentucky State Line near Hazel, Kentucky. The adjacent land use primarily consists of residential housing, agricultural land use, and some service businesses along the corridor. The posted speed limit is posted as fifty-five (55) miles per hour (MPH) and forty (40) MPH through the City of Puryear. Overall, the route is in rolling terrain. The existing route has narrow shoulders, limited turn lanes, and numerous driveway and local road connections.

Existing Traffic and Safety Conditions

The base year (2023) annual average daily traffic (AADT) is 5,630 vehicles per day. The design year (2043) AADT is projected to be 6,760 vehicles per day. The facility was analyzed with uninterrupted flow methodologies from the Highway Capacity Manual (HCM). The level of service (LOS) for the No Build and Build Alternative is shown in the table below.

Existing Traffic Conditions

LOS Analysis			
Segment	Segment Length (miles)	No Build Alternative (2023 / 2043)	Build Alternative (2023 / 2043)
1) 5-Lane From Near Smith Rd to Paris Bypass (L.M. 14.02 to L.M. 14.87)	0.85	B / C	A / A
2) 3-Lane From Paris Bypass to Puryear (L.M. 14.87 to L.M. 20.00)	5.13	B / C	B / B
3) 3-Lane From Puryear to Near Howard Rd (L.M. 20.00 to L.M. 22.24)	2.24	C / C	C / C

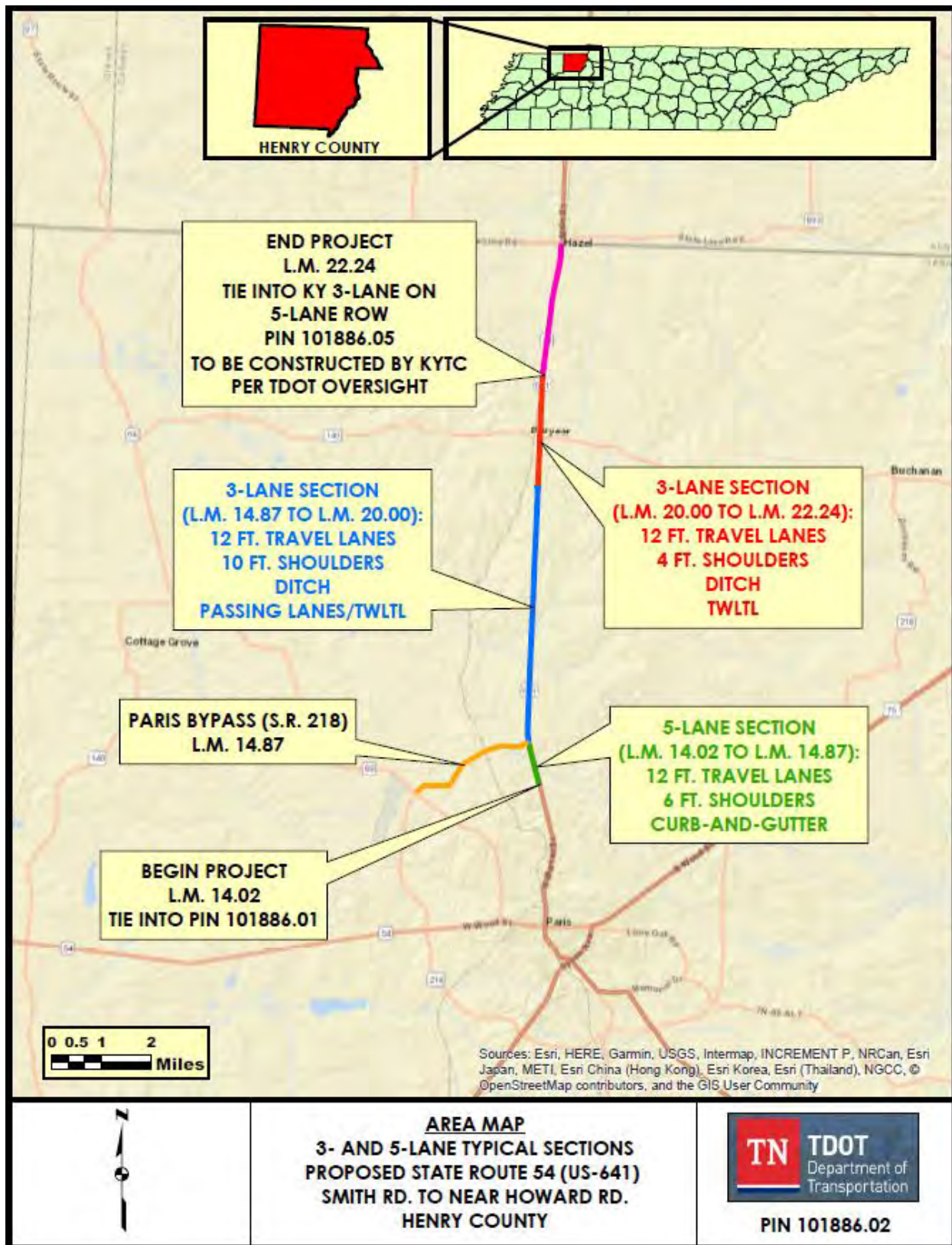
Previous research (Maryland State Highway Administration and Alabama Department of Transportation) involving comparisons with the daily service volumes in relation to the LOS consistently shows that the daily traffic throughput efficiency will be improved by approximately 20% with the addition of a TWLTL on a rural arterial. It should be noted that, per the HCM, the addition of a TWLTL is expected to result in an approximate 15 second reduction in delay per left-turning vehicle under the future design year conditions. The existing crash rates were compared to the statewide average crash rates in Henry County as shown in the table below.

Crash Rates

Location	Total Crash Rate (A)	> or <	Statewide Average Total	Severe Crash Rate	> or <	Statewide Average Severe	Critical Crash Rate (C)	A/C Ratio
Henry S.R. 54 (L.M. 14.02 to L.M. 22.24)	0.663	<	1.596	0.095	<	0.137	2.01	0.33

Conceptual Alternative

After evaluating the safety, operational, environmental, and geometric conditions on existing S.R. 54 within the study limits, two options were considered to address the deficiencies: The No Build Alternative and Build Alternative. The No Build Alternative denotes that only routine maintenance would be made to the existing corridor. No improvements or substantial modifications would be made with the No Build Alternative. The Build Alternative includes roadway and shoulder widening including a TWLTL and passing lanes in both the northbound and southbound direction. It is estimated that ROW is to be acquired and that overhead and underground utilities will need to be relocated. The figure below shows the proposed typical sections throughout the project limits.



Area Map of Proposed S.R. 54 Typical Sections

Recommendations

Future improvements to existing S.R. 54 are recommended in order to address the local and regional needs of the area by providing a safer facility. The Build Alternative will improve safety and operations by:

- Providing sufficient shoulder width along the corridor by widening the shoulder from three (3) feet to four (4) feet, six (6) feet, and ten (10) feet throughout the project limits
- Providing passing lanes in both the northbound and southbound direction, with the northbound passing lane ending as a right turn lane at the intersection with Puryear Country Club Road
- Providing increased capacity along S.R. 54 for future traffic demand along with a TWLTL
- Predicted to reduce crashes by approximately 22.9% from S.R. 218 to Puryear and 6% from Puryear to near Howard Road based on the CMF Clearinghouse for widening the shoulder from three (3) feet to six (6) feet and ten (10) feet, respectively, throughout the project limits
- Predicted to reduce crashes by approximately 42% by the addition of passing lanes
- Predicted to reduce crashes by approximately 36% by the addition of a TWLTL

Cost Estimate Summary

The total estimated cost for the improvements along S.R. 54 is \$66,200,000.

Summary of Cost Estimates

COST ESTIMATE SUMMARY						
Year	Project Type of Work	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Project Cost (2019):
2019	From Near Smith Rd. to Puryear	\$2,090,000	\$3,680,000	\$10,000,000	\$32,950,000	\$46,000,000
	From Puryear to Near Howard Rd.	\$824,000	\$5,250,000	\$4,590,000	\$10,396,000	\$20,200,000
	Total	\$2,914,000	\$8,930,000	\$14,590,000	\$43,346,000	\$66,200,000
2024 (Inflated 5 Years)	From Near Smith Rd. to Puryear	\$2,670,000	\$4,700,000	\$12,800,000	\$42,100,000	\$58,700,000
	From Puryear to Near Howard Rd.	\$1,050,000	\$6,700,000	\$5,860,000	\$13,300,000	\$25,800,000
	Total	\$3,720,000	\$11,400,000	\$18,660,000	\$55,400,000	\$84,500,000
2029 (Inflated 10 Years)	From Near Smith Rd. to Puryear	\$3,400,000	\$5,990,000	\$16,300,000	\$53,700,000	\$74,900,000
	From Puryear to Near Howard Rd.	\$1,340,000	\$8,550,000	\$7,480,000	\$16,900,000	\$32,900,000
	Total	\$4,740,000	\$14,540,000	\$23,780,000	\$70,600,000	\$107,800,000

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1.0 Introduction

The Technical Report process involves a comprehensive study of historic, current, and projected highway data. An assembled team reviews the project to validate identified deficiencies and determine cost-effective measures to resolve those deficiencies with an emphasis placed on mobility.

The purpose of this Technical Report is to provide an overview of the existing route deficiencies, define the preliminary purpose and need for the project, and recommend preliminary design that is feasible, cost effective, and improves mobility for this segment of State Route (S.R.) 54 from log mile (L.M.) 14.02 to L.M. 22.24 in Henry County. This section of S.R. 54 is 8.22 miles in length. The project end termini is contingent upon the adjacent Kentucky Transportation Cabinet (KYTC) project begin termini that will tie into this project near Howard Road (PIN 101886.05). This section of S.R. 54 will be a 5-lane built in phases. The widening S.R. 54 from near Smith Road to near Howard Road will provide connectivity to PIN 101886.01 (widening S.R. 54 to a 5-lane roadway) and preserve Right-of-Way (ROW). In addition, any modifications to the existing improvements strive to provide a safer facility for all users and a regional route which fits the needs of the community. The proposed project was initiated as a result of the Improving Manufacturing, Public Roads and Opportunities for a Vibrant Economy (IMPROVE) Act project delivery commitments.

1.1 Study Area, Vicinity, Existing Roadway Network Maps

S.R. 54 is being evaluated from near Smith Road in Paris to Near Howard Road (North of Puryear). This section of S.R. 54 is located within Henry County in West Tennessee and is a connector between Paris, Tennessee and Puryear, Tennessee to the north at the Tennessee-Kentucky State Line near Hazel, Kentucky. The 8.22-mile section of S.R. 54 under study is in the Northwest Rural Planning Organization (RPO). Figure 1 presents an area map, Figure 2 presents a location specific map, and Figure 3 details the corridors geographic features on United States Geographical Survey Map.

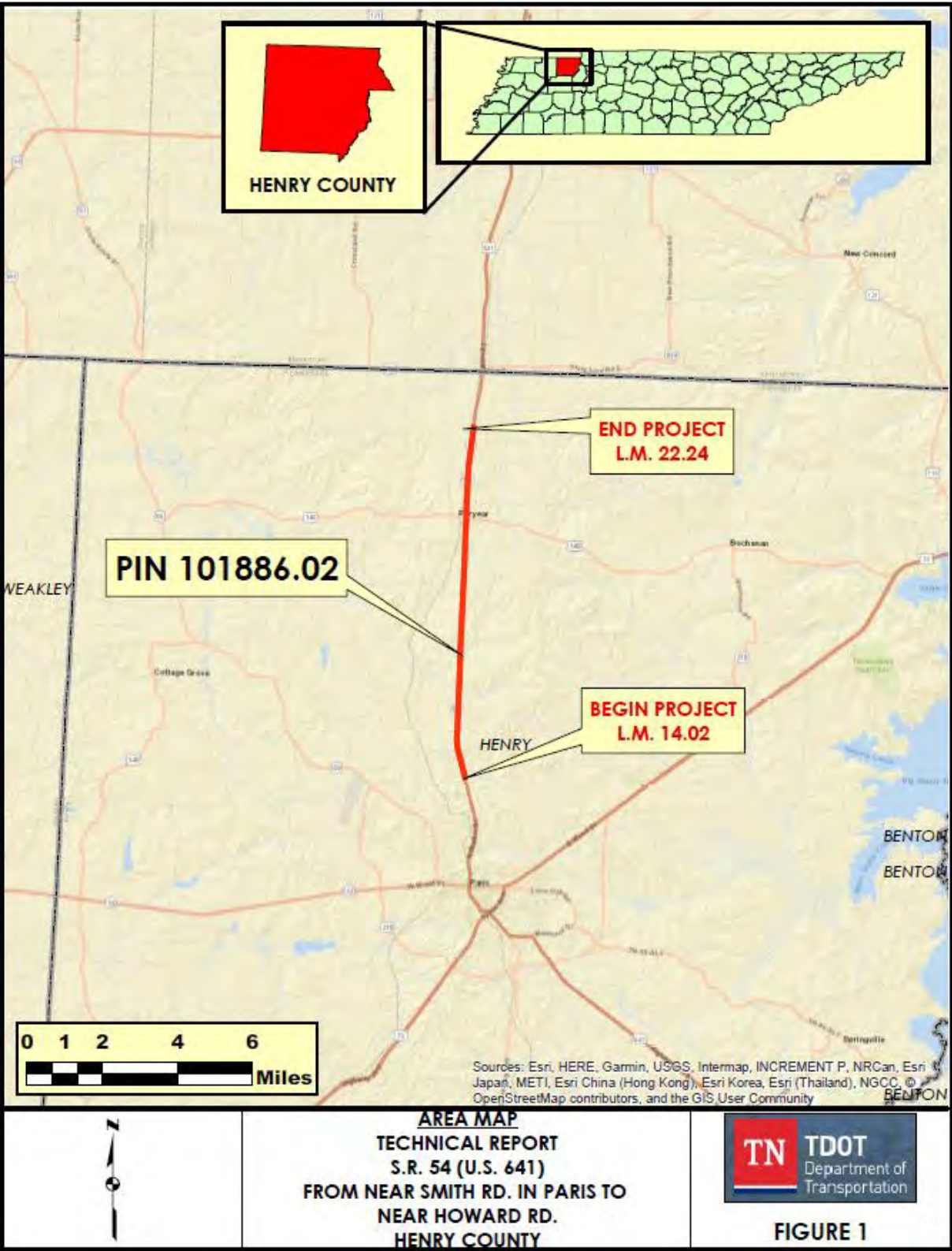


Figure 1: Area Map

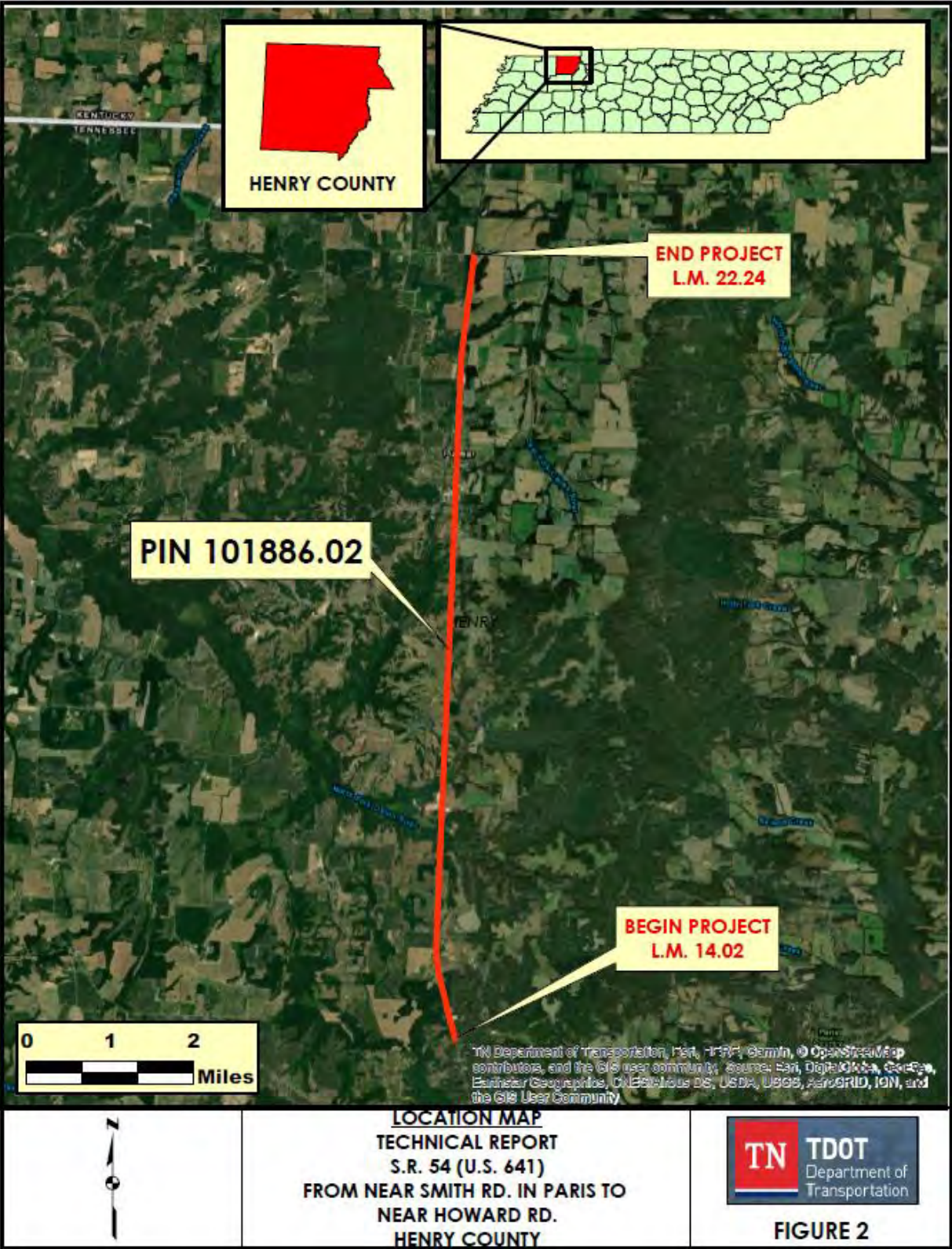


Figure 2: Location Map

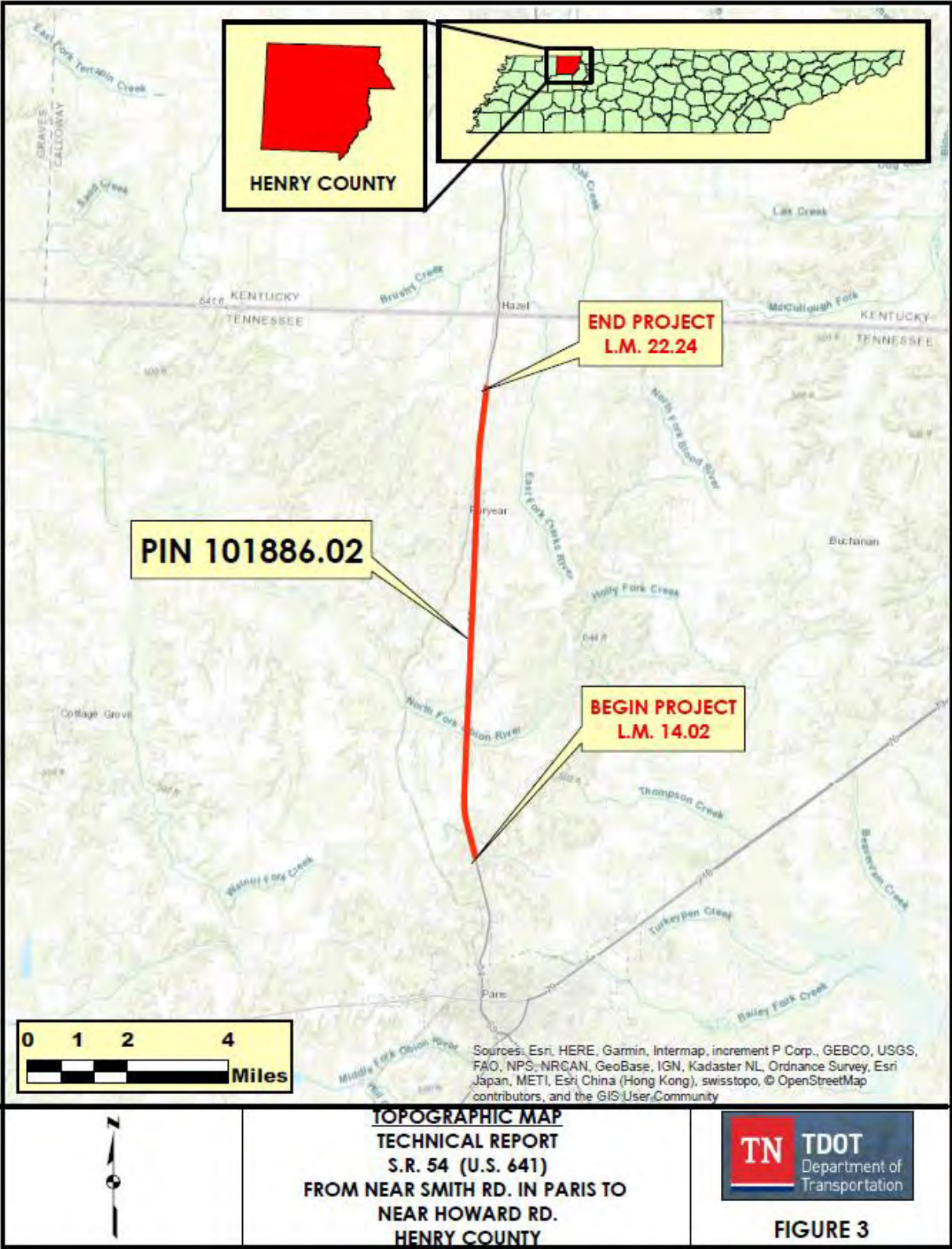


Figure 3: Topography Map

1.2 Demographics

The 2017 population of Henry County was estimated by the US Census Bureau as 32,358. This is a 0.09% increase from the 2010 population of 32,330. Select demographics are provided in Table 1, which compares Henry County to equivalent demographics for Tennessee and the United States.

Table 1: Demographics

Characteristic	Henry County	Tennessee	United States
Growth Rate (2010-2018)	0.01%	0.74%	0.66%
Unemployment (2017)	6.7%	6.6%	6.6%
Minority Population (2017)	10.6%	22.2%	27.0%
Median Household Income (2013-2017)	\$40,415	\$48,708	\$57,652
Persons Below Poverty Level (2013-2017)	19.7%	16.7%	14.6%
Median Age (2013-2017)	45.3	38.6	37.8

Sources: U.S. Census Bureau, American Fact Finder

As shown in Table 1, Henry County has a lower population growth rate than both Tennessee and the United States as a whole. Unemployment rates are slightly higher and there is a lower median household income in Henry County as compared to Tennessee and the United States.

1.3 Existing Land Use and Zoning

The existing roadway is a connector between Paris and Puryear to the north at the Tennessee-Kentucky State Line near Hazel, Kentucky. The adjacent land use primarily consists of residential housing, agricultural land use, and some service businesses along the corridor.

1.4 Existing Adjacent Projects

There are three active projects located along the corridor. The first is an active widening project in Henry County (101886.01) which is currently under construction from L.M. 11.39 to L.M. 14.18. The second is an active resurfacing project in Henry County (PIN 127392.00) from S.R. 218 (L.M. 14.86) to Kentucky State Line (L.M. 24.93). The third is an active realigning / widening project with KYTC from near Howard Road to the Kentucky State Line (PIN 101886.05). This project will tie into PIN 101886.02 with a three (3)-lane roadway on five (5)-lane ROW. PIN 101886.02 project end termini is contingent upon the adjacent KYTC project begin termini.

2.0 Existing Roadway Conditions

This section of S.R. 54 is functionally classified as a Rural Other Principal Arterial, and the typical section consists primarily of two (2) twelve (12) foot travel lanes in each direction, three (3) foot paved outside shoulders within sixty (60) feet of existing ROW. There are eight (8) structures along the project route, five (5) of which are culverts. The speed limit along the existing roadway in Henry County is posted as fifty-five (55) miles per hour (MPH) from L.M. 14.02 to L.M. 20.00 and forty (40) MPH throughout the City of Puryear from L.M. 20.00 to L.M. 22.24. Overall, the route is in rolling terrain. The existing route has narrow shoulders, limited turn lanes, and numerous driveway and local road connections. For a two (2) lane arterial, TDOT Standard RD11-TS-3 suggests a ten (10) foot paved outside shoulder.

2.1 Existing Structures

Eight (8) structures exist along the project limits as shown in Table 2.

Table 2: Structures

Crossing	Log Mile	Structure #	Type*	Length (ft)	Condition	Sufficiency Rating
BRANCH	14.54	40CULV020334	C	9.0	FAIR	N/A
NORTH FORK OBION RIVER	16.47	40SR05400231	C	79.5	FAIR	78.6
ROWE CREEK	17.13	40SR05400251	C	80.0	FAIR	80.4
BRANCH	19.56	40CULV020374	C	7.0	FAIR	N/A
BRANCH	20.9	40CULV020394	C	6.0	GOOD	N/A
BRANCH	21.61	40CULV020414	C	7.0	FAIR	N/A
MORMON BRANCH	22.41	40SR05400271	CC	35.0	FAIR	40.4
BRANCH	22.93	40CULV020434	C	4.0	GOOD	N/A
*Note: C = CONCRETE, CC = CONTINUOUS CONCRETE						

Of these eight (8) structures, there are five (5) culverts along the project, all of which are in good or fair condition but may be impacted. The following structures will need to be evaluated for widening:

- Bridge over Branch (40CULV020334) at L.M. 14.54
- Bridge over North Fork Obion River (40SR05400231) at L.M. 16.47
- Bridge over Rowe Creek (40SR05400251) at L.M. 17.13
- Bridge over Branch (40CULV020374) at L.M. 19.56

2.2 Existing Utility Infrastructure

Overhead distribution lines are present along S.R. 54 on one or both sides of the roadway throughout the project limits. Since the presence of underground gas, water, communication, and sewer lines were identified throughout project limits during the field review and could not be determined at this stage of project investigation, it was assumed these utilities were present and would need to be relocated for a portion of the project.

2.3 Preliminary Environmental Constraints

According to the National Wetlands Inventory Wetlands Mapper, the map shows ten (10) riverine crossings and one (1) freshwater forested/shrub wetland crossings throughout the project limits in Henry County that have the potential for small impact. Precautions should be taken around wetlands to avoid significant impacts.

Some notes regarding preliminary NEPA review:

- **Ecology:**
 - There are nine (9) streams / wet weather conveyances, nine (9) wetlands, and two (2) ponds within the project limits that may be impacted by this project. The wetlands and streams / wet weather conveyances would require a field visit for verification.
 - According to TDEC's natural heritage database, there are no federal species of concern and six (6) state listed species within a one (1) mile radius and nine (9) state listed species within a four (4) mile radius of the project area. Tables containing the relevant ecology species are provided in Section 7.4 of the appendix.
 - Aerial imagery suggests that there are some sizeable wooded areas within the project area that may contain suitable habitat for threatened or endangered bat species that may require a survey to obtain USFWS clearance if the proposed project requires removing any vegetation that is considered suitable habitat. Based on the species findings from this review and previous procedures from nearby projects, it is anticipated that TWRA will require species surveys / sweeps prior to beginning construction.
- **Historic Preservation:** No known historic properties in the proposed project area.
- **Archaeology:**
 - The subject project generally overlaps with a section of S.R. 54 that was surveyed for archaeological resources in 2003 – 2004 in support of TDOT's proposed improvements to S.R. 54 from Rison Street in Paris to the Kentucky State Line (PIN 101886.00 through

PIN 101886.06). The previous survey resulted in the identification of twenty-eight (28) cultural resource locations within or adjacent to the current project area. The cultural resource locations consist of seventeen (17) archaeological sites and eleven (11) isolated finds (no trinomial designations assigned). In consultation with the TN-SHPO, fifteen (15) of the archaeological sites and all eleven (11) isolated finds were determined not eligible for the National Register of Historic Places (NRHP) and two (2) of the sites were recommended for additional investigation (phase II testing) to evaluate NRHP eligibility. Following phase II testing in 2008, and in consultation with the SHPO, the two (2) tested sites were determined not eligible for the NRHP.

- To summarize, there are no known archaeological sites within the current project area that are eligible for or listed in the NRHP. However, all areas of proposed ROW and easements will need to be surveyed for heretofore unknown archaeological resources. Given the results of the previous TDOT survey along S.R. 54, there is a moderate to high likelihood of encountering additional archaeological resources within the project's area of potential effects (i.e., limits of proposed ROW and easements).
- **Hazardous Materials:** Several TDEC UST facilities and some commercial businesses exist along the corridor but nothing unusual to note. The bridges to be widened / replaced will require asbestos surveys.
- **Air Quality and Noise:** This is a Type I noise project that will create noise impacts due to the adding of capacity. A detailed noise study will be required. In order to conduct the noise study, Preliminary Plans will be needed. As part of the detailed noise study, abatement will be evaluated to mitigate the noise impacts.
- **Multimodal:** No response.
- **NEPA:** No Section 4(f) properties area within the location.

As the project progresses through the National Environmental Policy Act (NEPA) process, there will be a detailed ecological boundary report that will identify potential areas where impacts need to be minimized.

3.0 Existing Condition Analysis

3.1 Crash Analysis on Existing Route

The primary safety concern on the state route involves the number serious injury crashes. Utilizing the Enhanced Tennessee Roadway Information Management System (E-TRIMS) database from July 1, 2015

to June 30, 2018, and calculated vehicle miles traveled, a crash rate (crashes per one million vehicle miles) was calculated. Table 3 below shows the crash rates for the Rural Other Principal Arterial in Henry County.

Table 3: Crash Rates

Location	Total Crash Rate (A)	> or <	Statewide Average Total	Severe Crash Rate	> or <	Statewide Average Severe	Critical Crash Rate (C)	A/C Ratio
Henry S.R. 54 (L.M. 14.02 to L.M. 22.24)	0.663	<	1.596	0.095	<	0.137	2.01	0.33

The existing crash rates for the S.R. 54 segment under analysis in Henry County was compared to statewide average crash rates. The calculated 3-year crash rate was 0.663 which was lower than the statewide average of 1.596, and the 3-year severe crash rate was 0.095 which was also lower than the statewide average of 0.137. The Actual-to-Critical (A/C) crash ratio is 0.33. The crash rate calculation sheets are provided in Section 7.3 of the appendix.

To analyze crashes more in depth, Table 4 below shows distributions of crash severity, type of crash, weather conditions, and more for this segment in Henry County. The Crash Summary Report is provided in Section 7.3 of the appendix.

Table 4: Crash Distributions

CRASH STATISTICS - HENRY COUNTY		
Condition	7/1/2015 - 6/30/2018	
	Number of Crashes	Percentage of Total
Lighting Conditions		
Daylight	22	63%
Dark - Not Lighted	10	29%
Dark - Lighted	1	3%
Dusk/Dawn	2	6%
Not Indicated	0	0%
Crash Severity		
Property Damage	21	60%
Non-Incap Injury	9	26%
Incap Injury	5	14%
Fatality	0	0%
Manner of Collision		
Rear-End	13	37%
Lane Departure	11	31%
Angle	7	20%
Sideswipe	1	3%
Head On	0	0%
Overturn	1	3%
Animal	1	3%
Other	1	3%
Weather Conditions		
Clear	31	89%
Rain	4	11%
Snow	0	0%
Sleet/Hail	0	0%
Foggy	0	0%
Ice	0	0%
Unknown	0	0%
Total Crashes	35	
Crash Rates		
L.M. 14.02 to L.M. 22.24		
Type	Crash Rate	SW Average
Total	0.663	1.596
Severe (Fatal + Incap)	0.095	0.137

During the study period, 35 crashes were identified on S.R. 54 in Henry County from L.M. 14.02 to L.M. 22.24. The majority of the crashes that occurred were rear-end and lane departures. Furthermore, a large percentage of crashes occurred when weather conditions were clear. The narrow roadway typical (i.e., inadequate shoulder widths) of this segment of S.R. 54 may contribute to the number of lane departure crashes and crashes that occur in daylight and clear weather conditions. Contributing roadway factors could be rolling terrain, narrow shoulder widths, and obstructions in the clear zone. The segment under study does not demonstrate a deficiency in the network. All of the crash rates were lower than the statewide averages. There were no fatalities along this section of roadway; however, there were five (5) incapacitating injury crashes.

3.2 Traffic Analysis on Existing Route

The base year (2023) annual average daily traffic (AADT) for the section of S.R. 54 under study is 5,630 vehicles per day. The design year (2043) AADT is projected to be 6,760 vehicles per day. The facility was analyzed with uninterrupted flow methodologies from the Highway Capacity Manual (HCM). LOS is based on speed of traffic, the freedom to maneuver, or the percent of free-flow speed and Table 5 below shows the HCM definitions of LOS for two-lane highways.

Table 5: Two-Lane Highways Level of Service

Level of Service	Class I Highways		Class II Highways	Class III Highways
	ATS* (mi/h)	PTSF** (%)	PTSF** (%)	PFFS*** (%)
A	>55	<=35	<=40	>97.7
B	>50-55	>35-50	>40-55	>83.3-91.7
C	>45-50	>50-65	>55-70	>75.0-83.3
D	>40-45	>65-80	>70-85	>66.7-75.0
E	<=40	>80	>85	>=66.7

*Average Travel Speed

**Percent Time Spent Following

***Percent Free Flow Speed

The three classes of two-lane highways are defined as follows:

- *Class I two-lane highways* are highways where motorists expect to travel at relatively high speeds. Two lane highways that are major intercity routes, primary connectors of major traffic

generators, daily commuter routes, or major links in state or national highway networks are generally assigned to Class I.

- *Class II two-lane highways* are highways where motorists do not necessarily expect to travel at high speeds. Two-lane highways functioning as access routes to Class I facilities, serving as scenic or recreational routes (and not primary arterials), or passing through rugged terrain (where high-speed operation would be impossible) are assigned to Class II.
- *Class III two-lane highways* are highways serving moderately developed areas. They may be portions of a Class I or Class II highway that pass through small towns or developed recreational areas.

For the No Build Alternative of Segment 1 (L.M. 14.02 to L.M. 14.87), the projected traffic volumes result in a level of service (LOS) B and C for 2023 and 2043, respectively, with the LOS improving to LOS A for the Build Alternative base year and design year. For the No Build Alternative and Build Alternative, the projected traffic volumes result in a LOS B for Segment 2 (L.M. 14.87 to L.M. 20.00) and LOS C for Segment 3 (20.00 to 22.24) as shown in Table 6.

Table 6. Existing Traffic Conditions

LOS Analysis			
Segment	Segment Length (miles)	No Build Alternative (2023 / 2043)	Build Alternative (2023 / 2043)
1) 5-Lane From Near Smith Rd to Paris Bypass (L.M. 14.02 to L.M. 14.87)	0.85	B / C	A / A
2) 3-Lane From Paris Bypass to Puryear (L.M. 14.87 to L.M. 20.00)	5.13	B / C	B / B
3) 3-Lane From Puryear to Near Howard Rd (L.M. 20.00 to L.M. 22.24)	2.24	C / C	C / C

According to the HCM, there is no formal way of evaluating the traffic operations effectiveness of a two-way left-turn lane (TWLTL). However, previous research (Maryland State Highway Administration and Alabama Department of Transportation) involving comparisons with the daily service volumes in relation to the LOS consistently shows that the daily traffic throughput efficiency will be improved by approximately 20% with the addition of a TWLTL on a rural arterial. It should be noted that, per the HCM, the addition of a TWLTL is expected to result in an approximate 15 second reduction in delay per

left-turning vehicle under the future design year conditions. The passing lane LOS was analyzed for Segment 2, resulting in LOS B for the 2023 and 2043 Build Alternative.

3.3 Identified Locations

There are a several existing geometric deficiencies along the study portion of S.R. 54. Narrow shoulder widths are prevalent and approximately thirty-one (31) percent of all crashes recorded along the section under study were roadway departures. There are also thirty-seven (37) percent crashes that are rear-end crashes. While most of the route does not meet the current design standards, specific locations have also been identified based on crash data, crash potential, and field review observations. The critical locations in need of improvements include the following:

- **L.M. 14.02 to L.M. 22.24** – Currently, the existing roadway is insufficient and only provides three (3) feet of paved outside shoulder. A high percentage of roadway departure crashes could result from the insufficient shoulder width (i.e., 31 percent of crashes are lane departures). For a two (2) lane arterial, TDOT Standard RD11-TS-3 suggests a ten (10) foot paved outside shoulder using a design speed of sixty (60) MPH. The standard requirement allows for more driver error to occur before departing paved roadway.
- **L.M. 17.87 to L.M. 19.83** – The existing vertical geometries consist of rolling hills, making it difficult for heavy vehicles to accelerate in this section of roadway along S.R. 54. Based on traffic flow and the existing grade, a passing lane is recommended in the southbound direction from L.M. 17.87 to L.M. 18.84 and in the northbound direction from L.M. 18.93 to L.M. 19.83.

4.0 Recommended Improvements

After evaluating the safety, operational, and geometric conditions on existing S.R. 54 within the study limits, two options were considered to address the deficiencies: The No Build Alternative and the Build Alternative. The No Build Alternative denotes that only routine maintenance would be made to the existing corridor. No improvements or substantial modifications would be made with the No Build Alternative. The Build Alternative includes roadway and shoulder widening including a two way left turn lane (TWLTL) and passing lanes in both the northbound and southbound direction. The options for improvement, as detailed by the following locations, are needed to provide a safer facility for all users and to provide a regional route which fits the needs of the community. Roadway improvements have been identified within this report and are listed as follows:

- **Near Smith Road to S.R. 218 (L.M. 14.02 to L.M. 14.87)** – Widen existing S.R. 54 to an improved rural five (5) lane typical section consisting of four (4) twelve (12) foot travel lanes, a twelve (12) foot TWLTL, and six (6) foot paved shoulders using a design speed of fifty (50) MPH. Curb and gutter is to be constructed on both sides of the roadway. The roadway alignment is shifted to the east from L.M. 14.70 to L.M. 15.14 to reduce residential and commercial impact.
- **From S.R. 218 to South of Puryear (L.M. 14.87 to L.M. 20.00)** – Widen existing S.R. 54 to an improved rural three (3) lane typical section consisting of two (2) twelve (12) foot travel lanes, a twelve (12) foot TWLTL, and ten (10) foot paved shoulders using a design speed of sixty (60) MPH. The bridge over North Folk Obion River at L.M. 16.47 and the bridge over Rowe Creek at L.M. 17.13 are to be widened. The roadway alignment is shifted to the east from L.M. 14.70 to L.M. 15.14 and from L.M. 16.76 to L.M. 16.97 to reduce residential and commercial impact.
- **From South of Puryear to North of Puryear (L.M. 20.00 to L.M. 22.24)** – Widen existing S.R. 54 throughout the City of Puryear to an improved rural three (3) lane typical section consisting of two (2) twelve (12) foot travel lanes, a twelve (12) foot TWLTL, and four (4) foot paved shoulders using a design speed of forty-five (45) MPH.
- **L.M. 17.87 to L.M. 19.83** – A passing lane in each direction was proposed in order to provide an adequate distance for vehicles, particularly heavy vehicles, to pass slower-moving vehicles. The southbound passing lane is from L.M. 17.87 to L.M. 18.84 and the northbound passing lane is from L.M. 18.93 to L.M. 19.83. The acceleration lanes are expected to reduce the percent time spent following, therefore, improving travel time along S.R. 54 and providing a safe option for passing.

It is estimated that ROW is to be acquired and that overhead and underground utilities will need to be relocated. During construction, two (2) lanes, one (1) in each direction, are to be maintained but may require temporary lane closures. Figure 4 below shows the proposed typical sections throughout the project limits, and the proposed layouts, Figures 1 through 19, typical sections, Figures 20 through 23, and Environmental Technical Study Area (ETSA) layouts, Figures 24 through 44, are as follows:

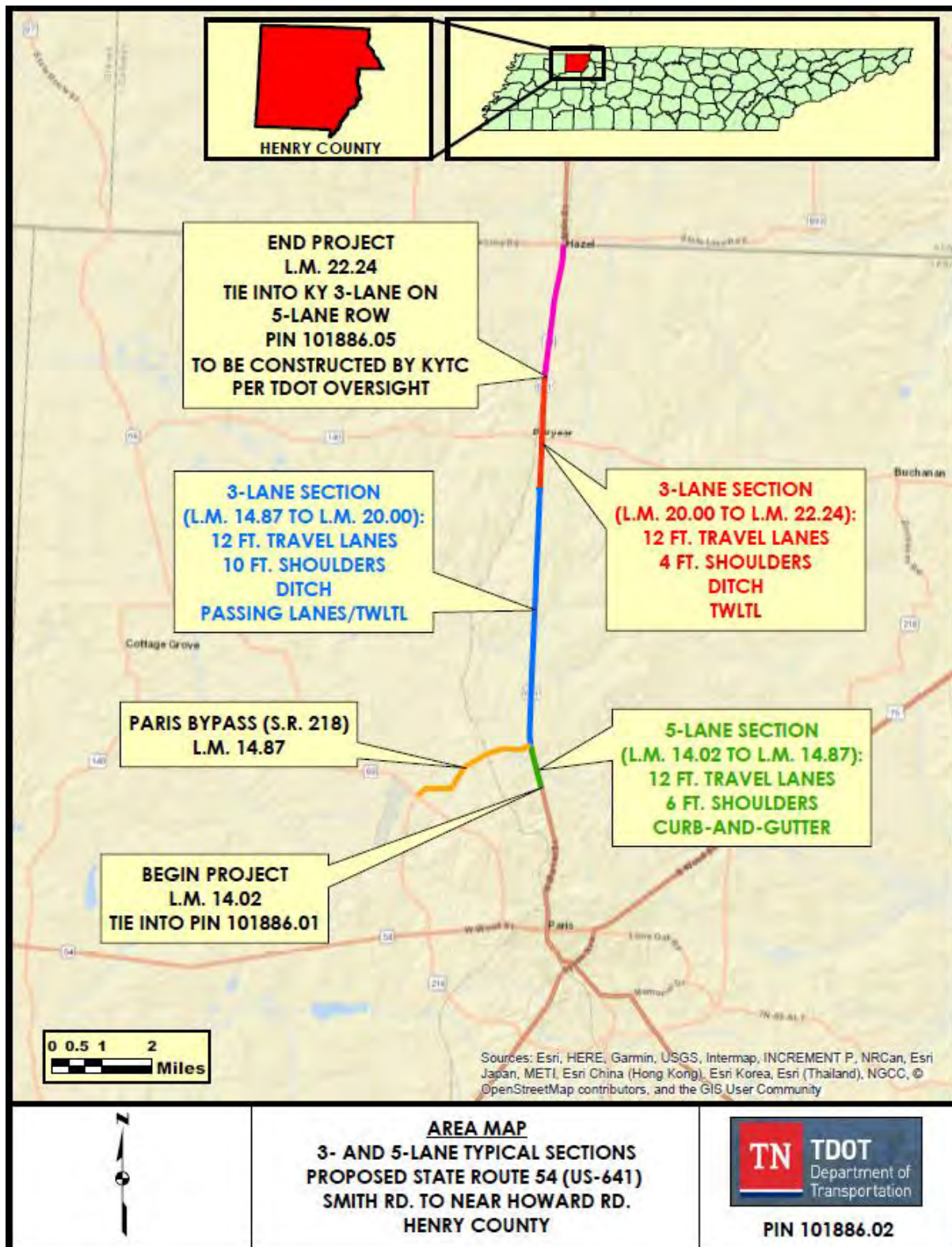
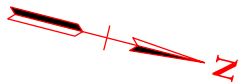
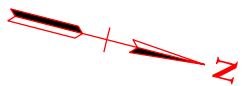


Figure 4. Area Map of Proposed S.R. 54 Typical Sections



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

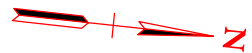


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

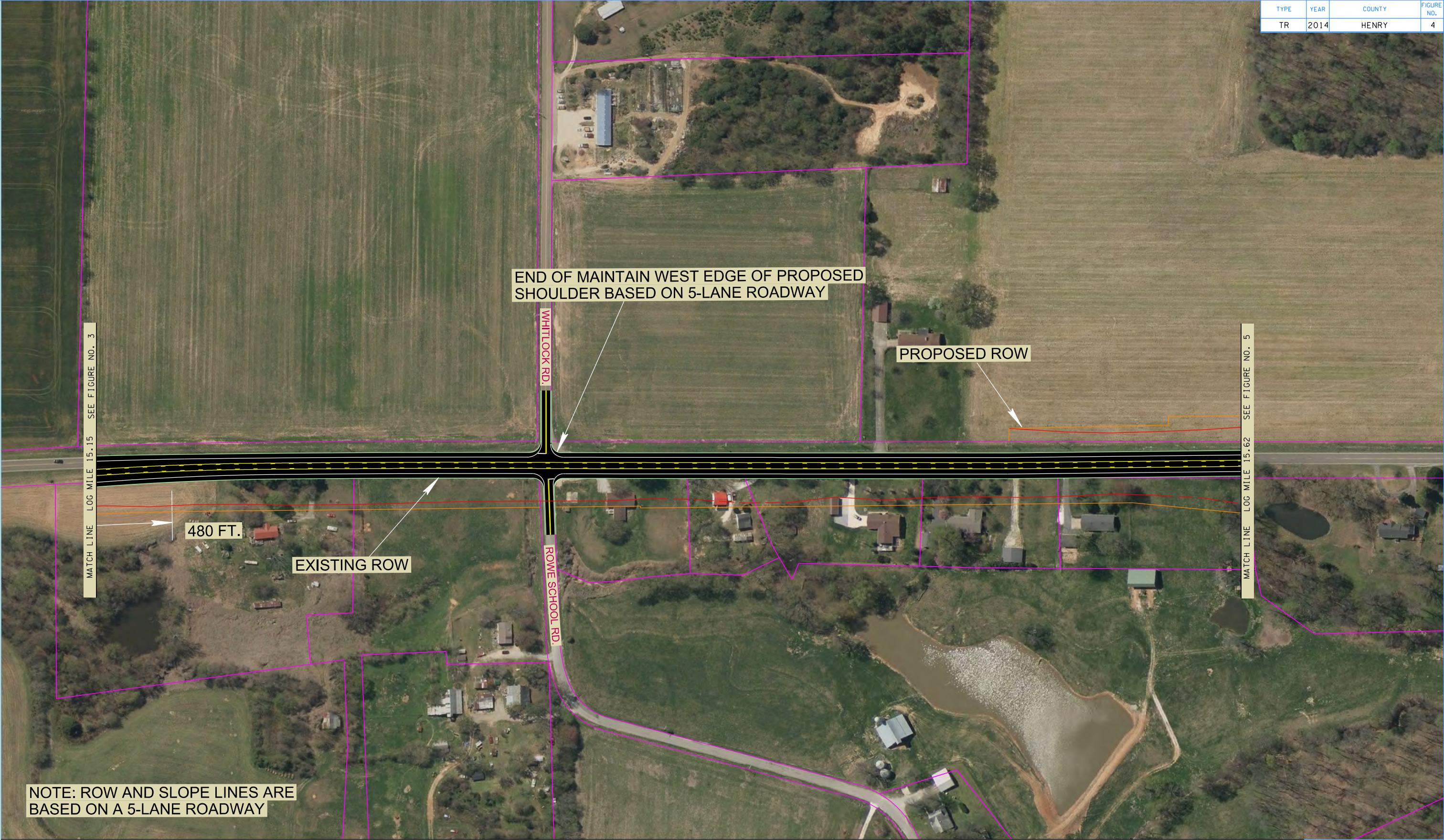


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TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

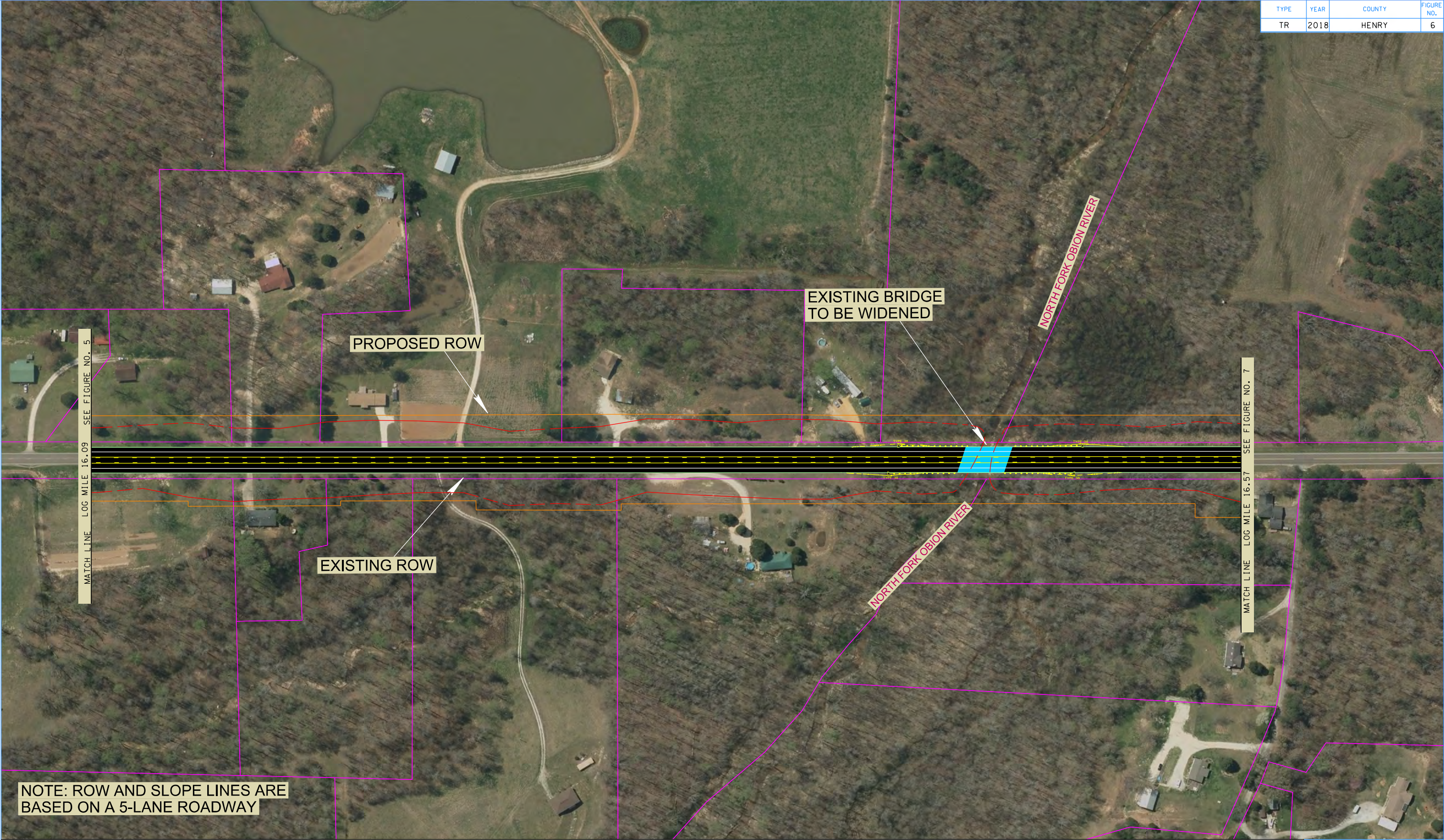


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HENRY COUNTY



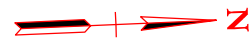
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 6
S.R. 54
L.M. 16.09 to
L.M. 16.57

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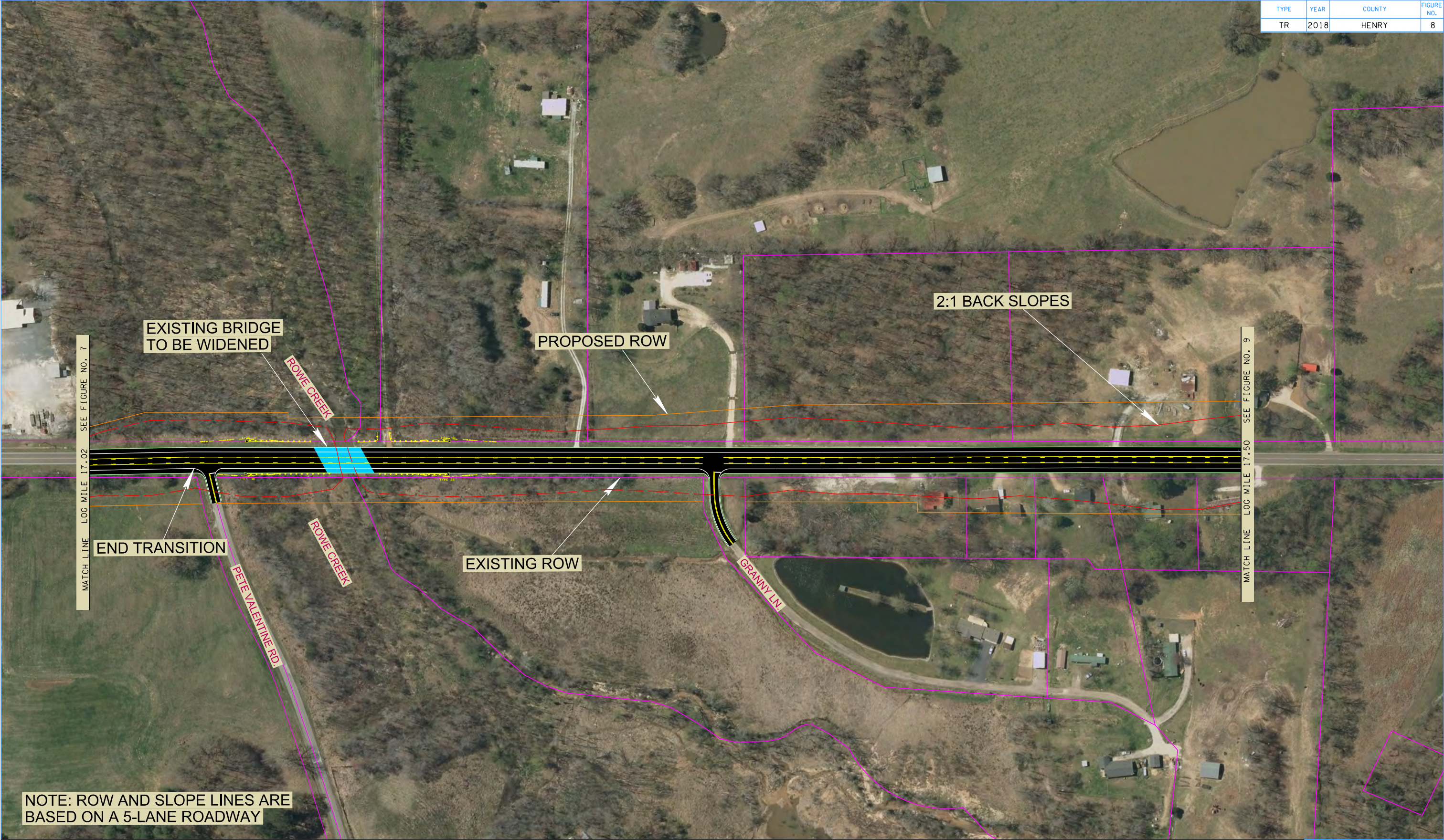


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 7
S.R. 54
L.M. 16.57 to
L.M. 17.02



NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY

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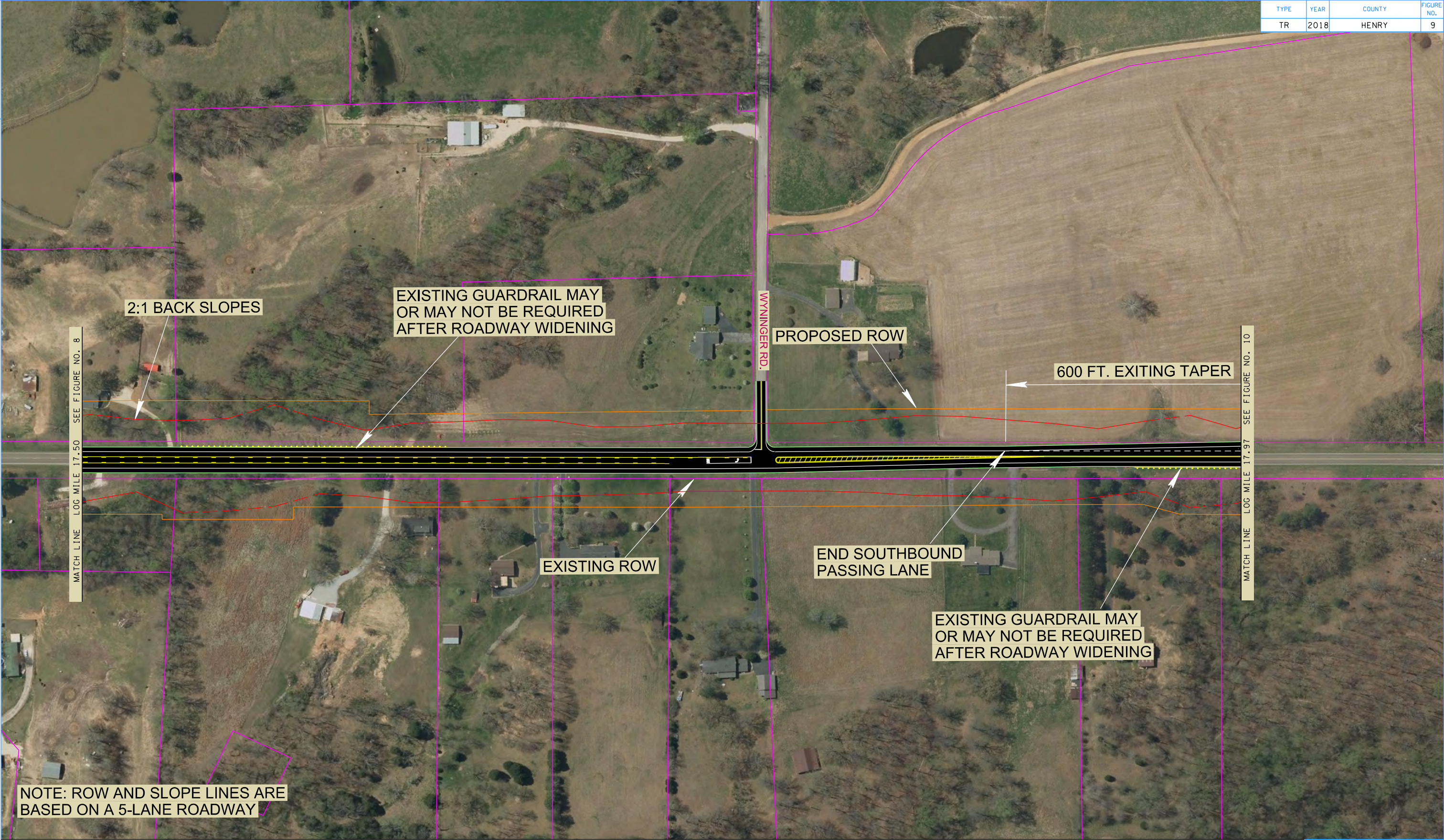
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
S.R. 54
L.M. 17.02 to
L.M. 17.50

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TECHNICAL REPORT

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L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



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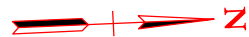
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 10
S.R. 54
L.M. 17.97 to
L.M. 18.45



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TECHNICAL REPORT

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HENRY COUNTY



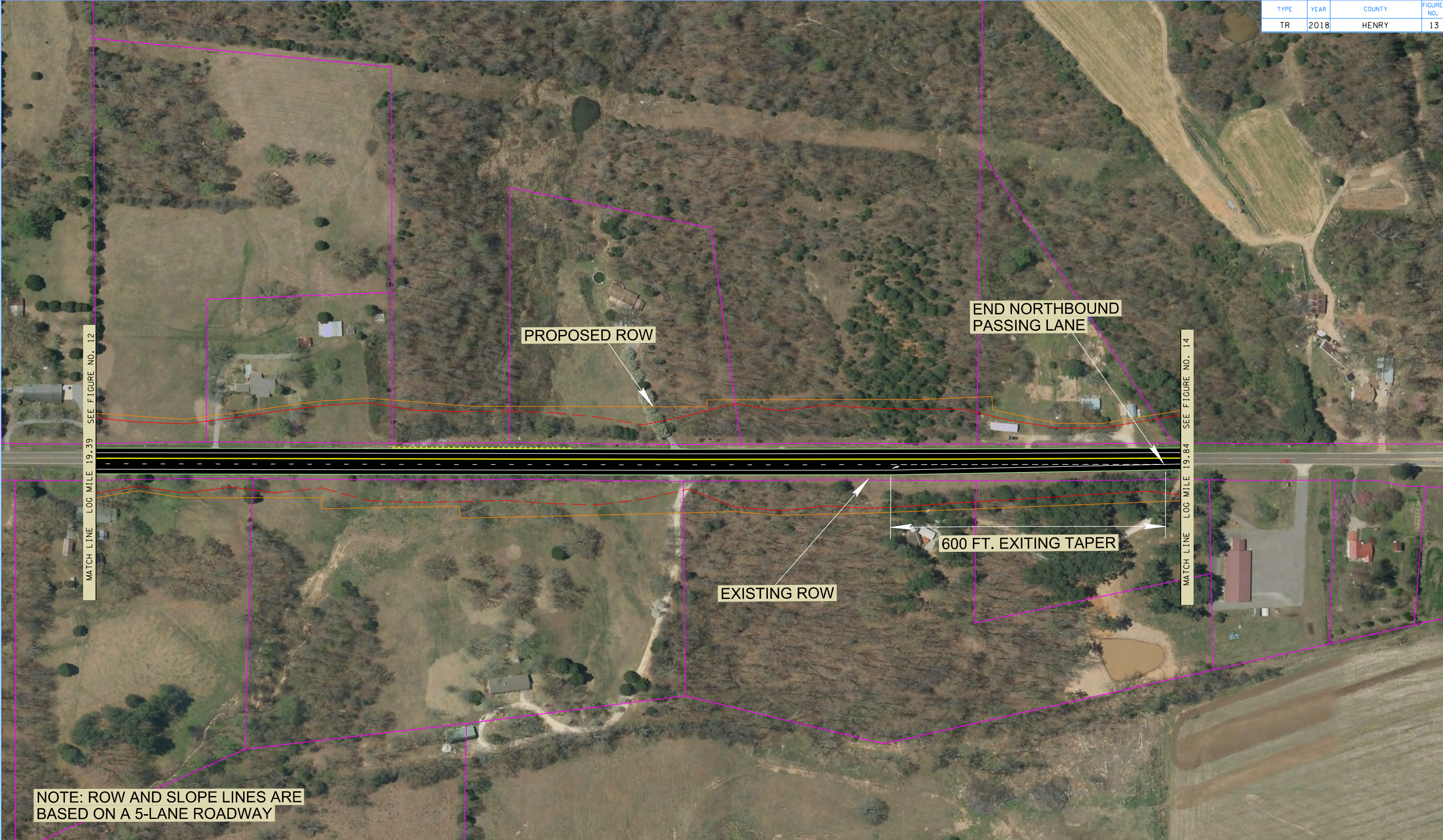
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

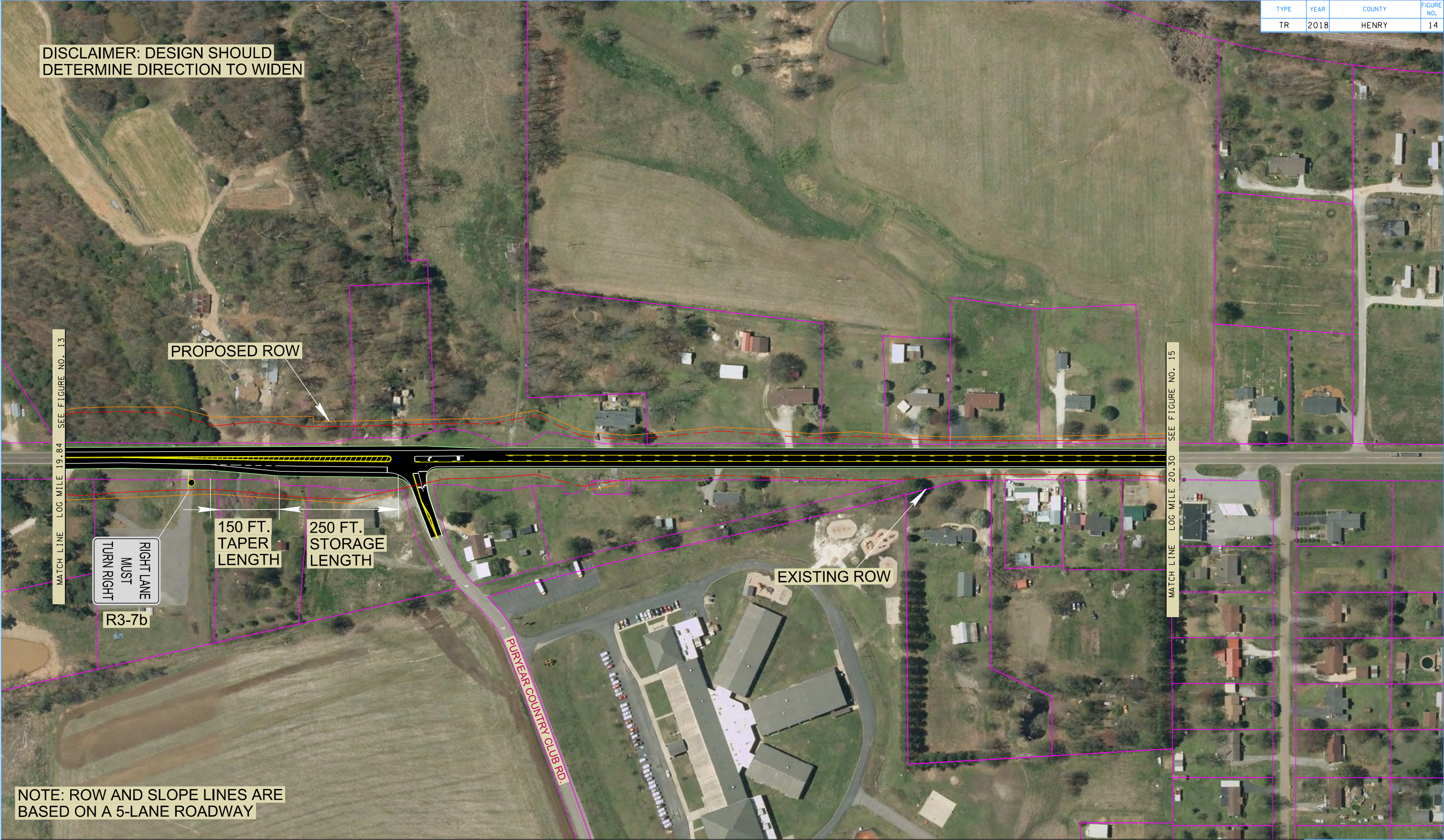
FIGURE 12
S.R. 54
L.M. 18.92 to
L.M. 19.39

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TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 14
S.R. 54
L.M. 19.84 to
L.M. 20.30

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

MATCH LINE LOG MILE 20.30 SEE FIGURE NO. 14

MC LAIN ST.

PROPOSED ROW

LAIRD RD.

MATCH LINE LOG MILE 20.79 SEE FIGURE NO. 16

NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY

SMITH ST.

JONES ST.

EXISTING ROW

WALL ST.

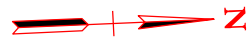
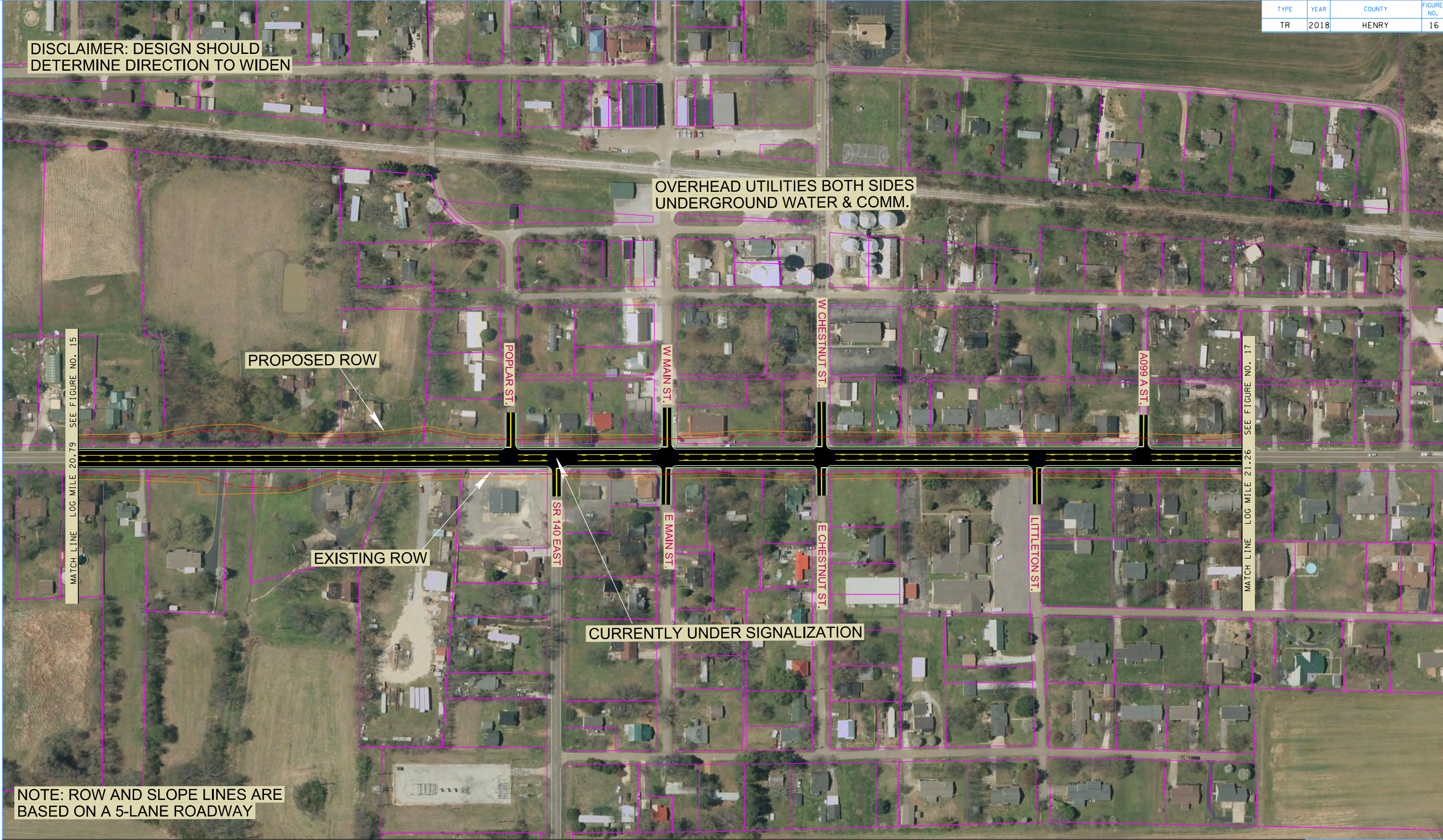


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 15
S.R. 54
L.M. 20.30 to
L.M. 20.79



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 16
S.R. 54
L.M. 20.79 to
L.M. 21.26



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

MATCH LINE LOG MILE 21.76 SEE FIGURE NO. 17

MATCH LINE LOG MILE 22.19 SEE FIGURE NO. 19

PROPOSED ROW

EXISTING ROW

NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY

HOWARD RD.

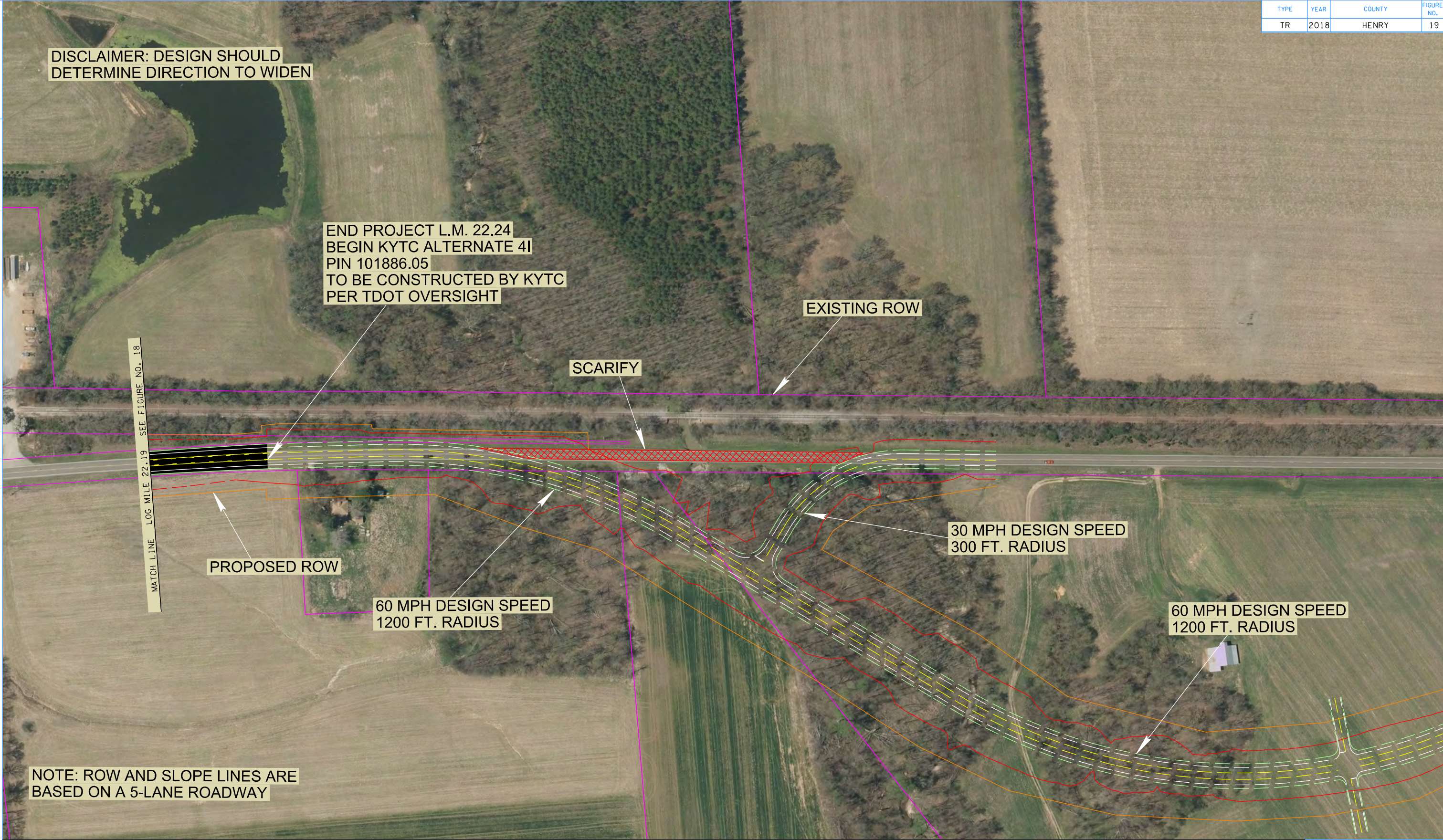


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 18
S.R. 54
L.M. 21.76 to
L.M. 22.19

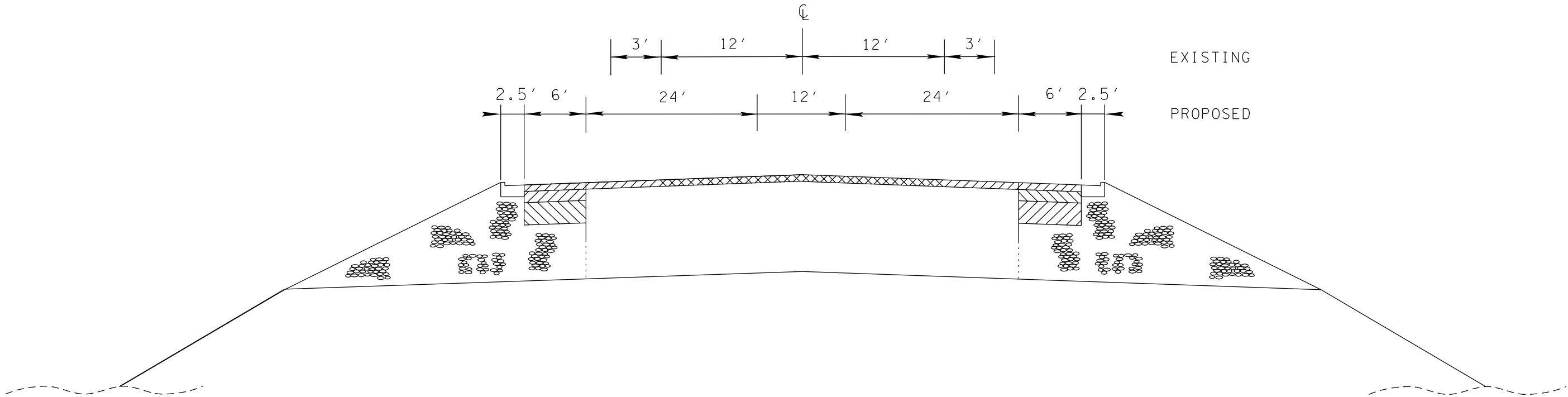


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 19
S.R. 54
L.M. 22.19 to
L.M. 22.24



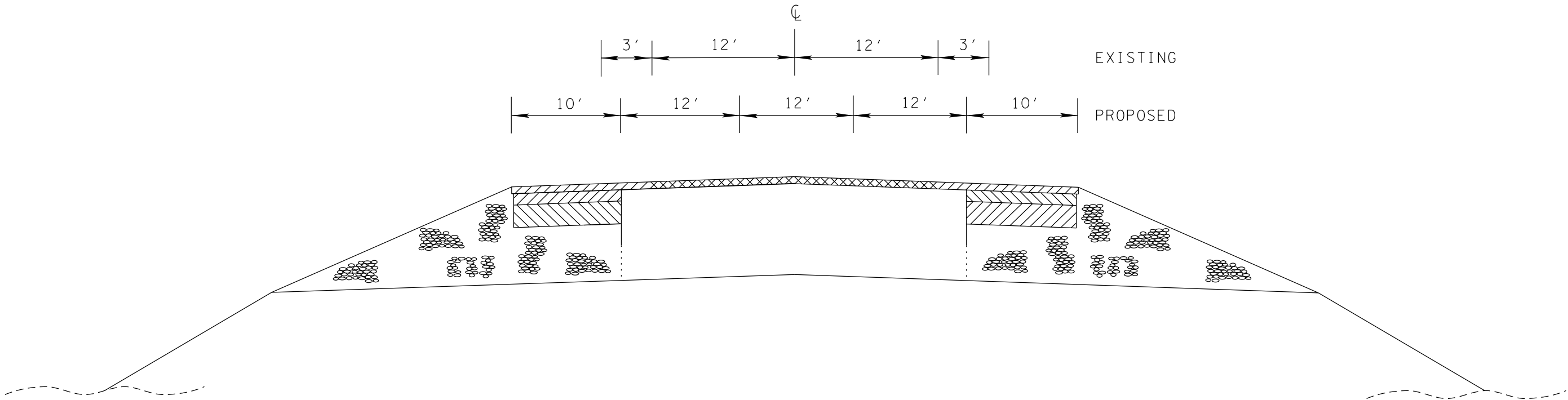
STATE ROUTE 54
L.M. 14.02 TO L.M. 14.87

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FIGURE 20
TYPICAL SECTION



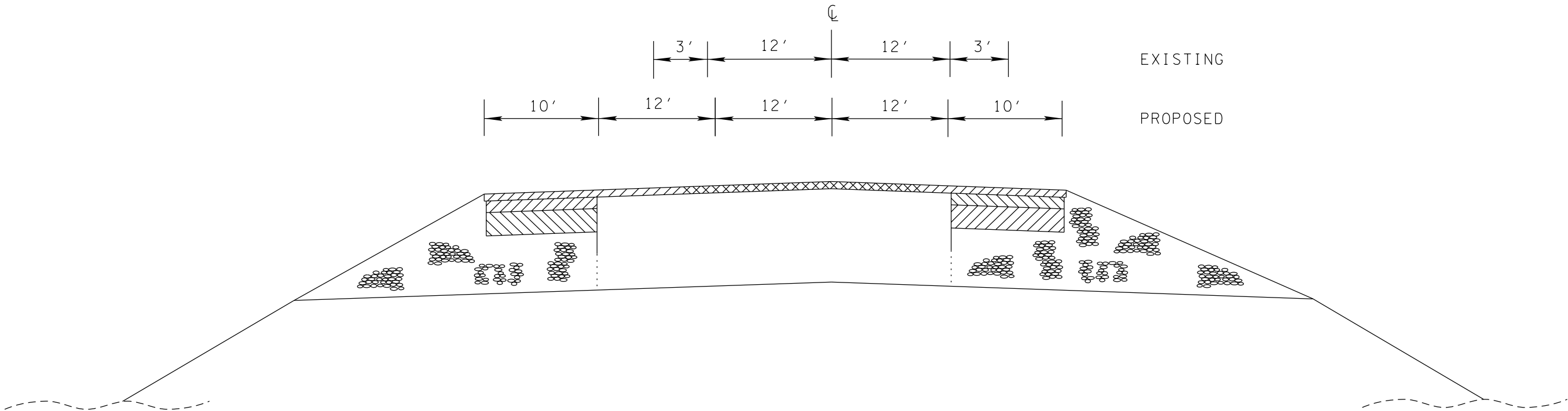
STATE ROUTE 54
L.M. 14.87 TO L.M. 20.00

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

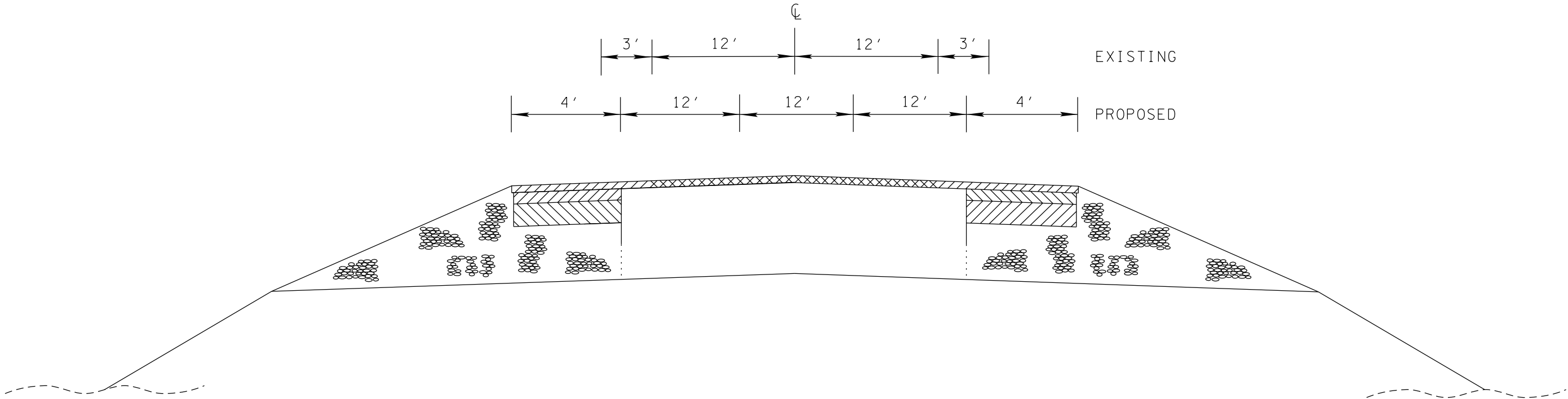
FIGURE 21
TYPICAL SECTION



STATE ROUTE 54
SOUTHBOUND PASSING LANE L.M. 17.87 TO L.M. 18.84
NORTHBOUND PASSING LANE L.M. 18.93 TO L.M. 19.83

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



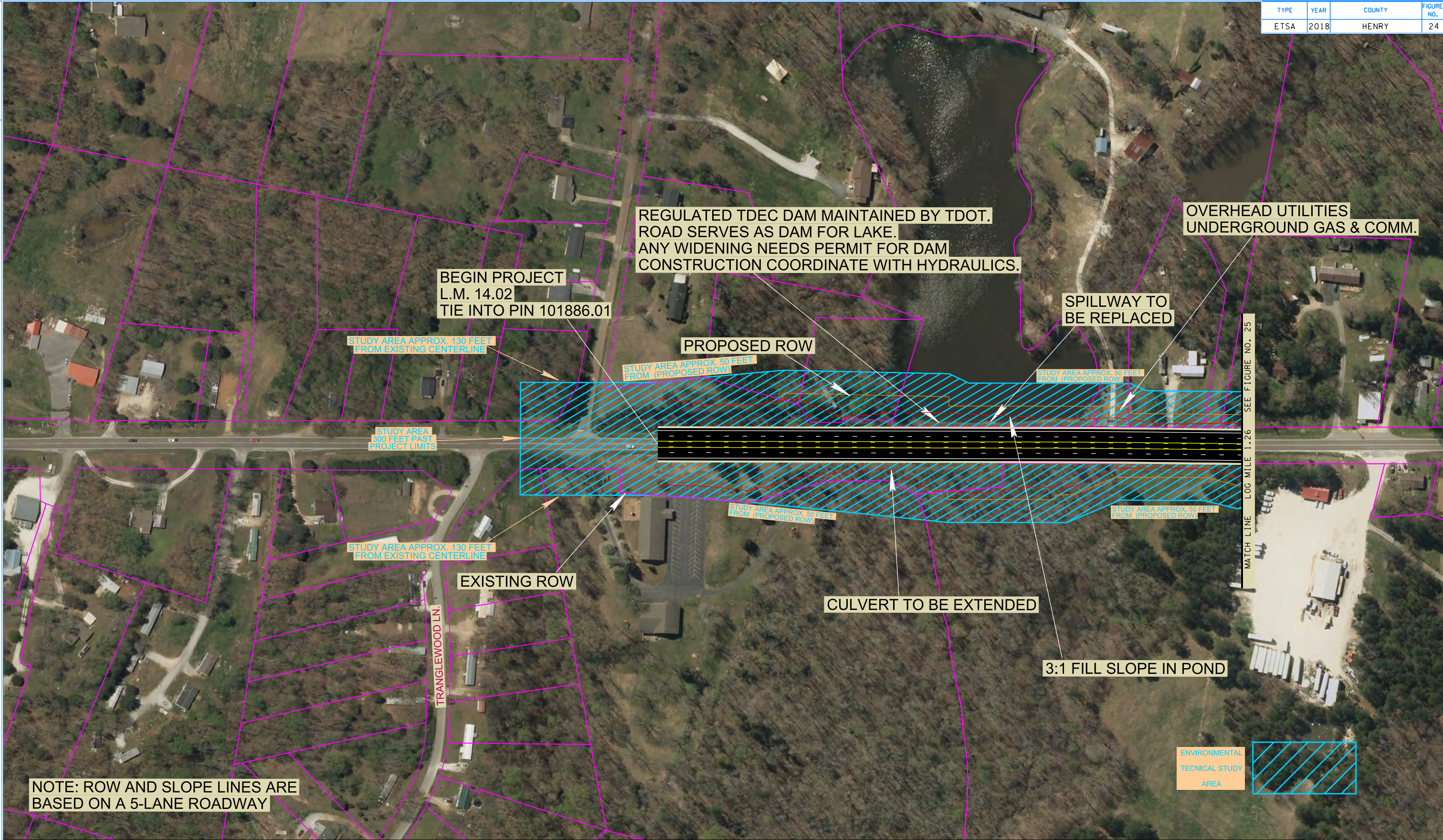
TECHNICAL REPORT

STATE ROUTE 54

L.M. 14.02 TO L.M. 22.24

HENRY COUNTY

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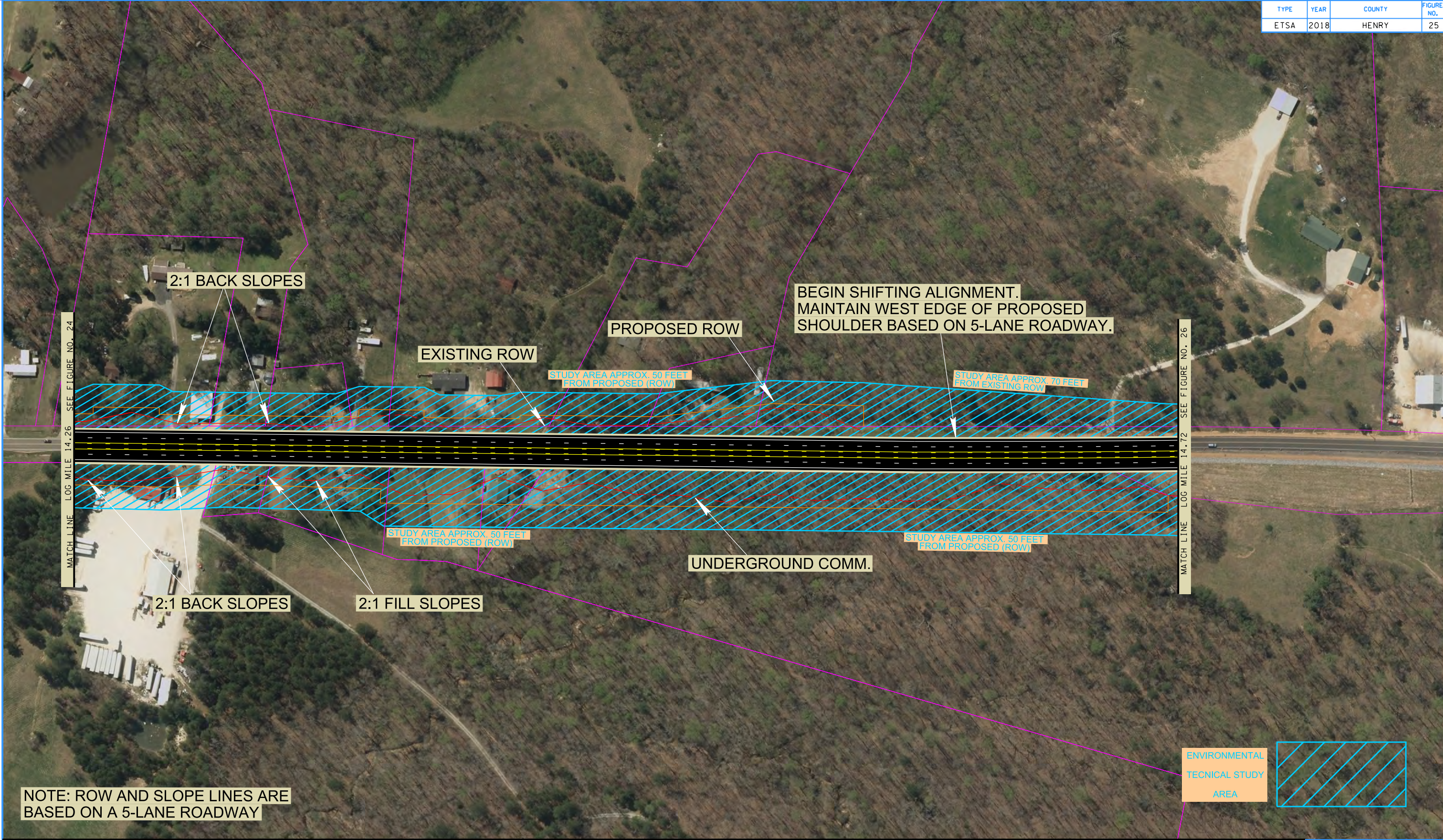
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 24
S.R. 54
L.M. 14.02 to
L.M. 14.36

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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 25
S.R. 54
L.M. 14.26 to
L.M. 14.72

3/25/2020 6:54:08 AM
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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 26
S.R. 54
L.M. 14.72 to
L.M. 15.15

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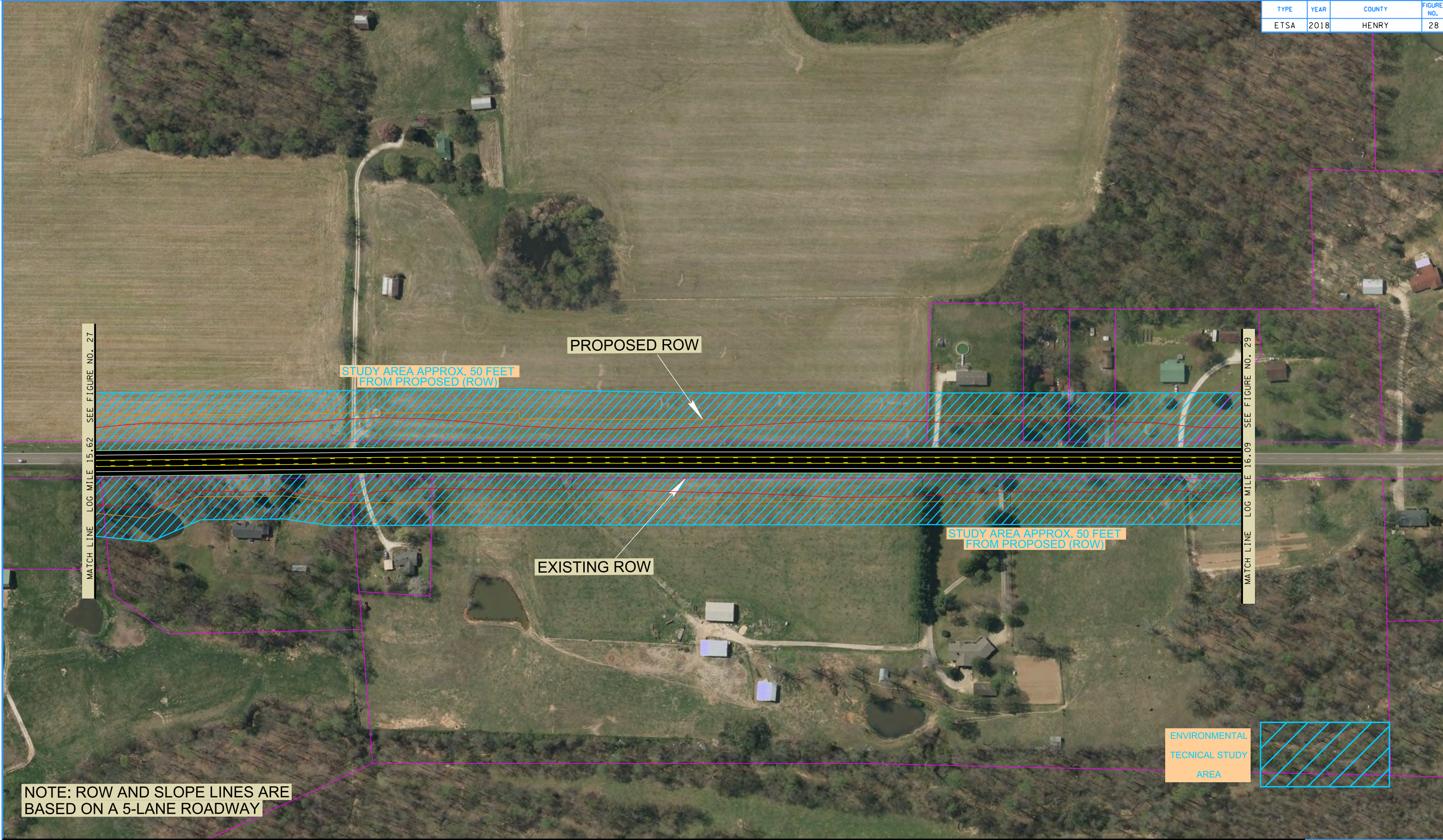
ENVIRONMENTAL TECNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 27
S.R. 54
L.M. 15.15 to
L.M. 15.62

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X:\Projects\HenrySR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 28 SR 54.dgn



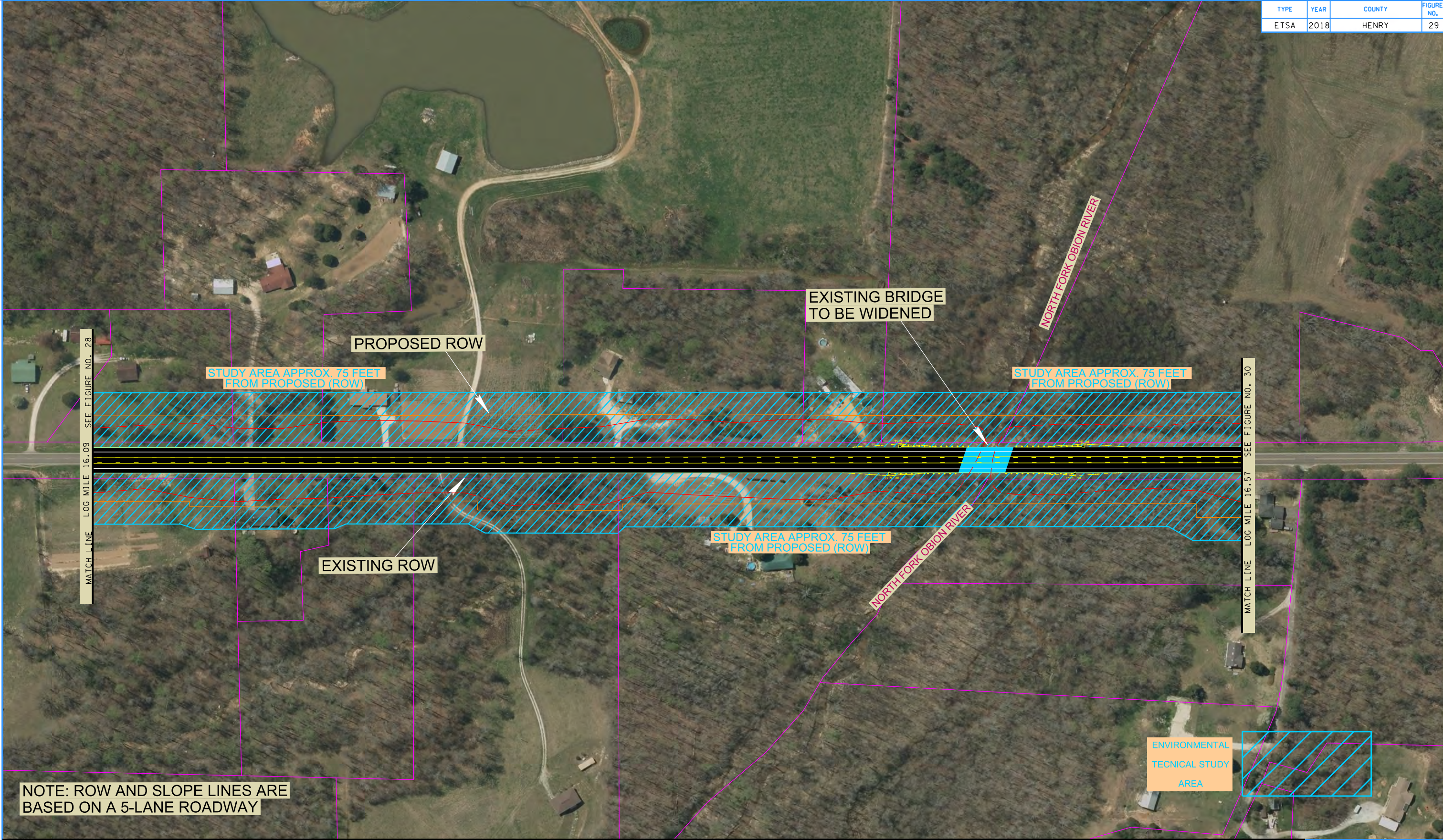
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 28
S.R. 54
L.M. 15.62 to
L.M. 16.09

3/25/2020 9:58:35 AM
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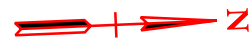
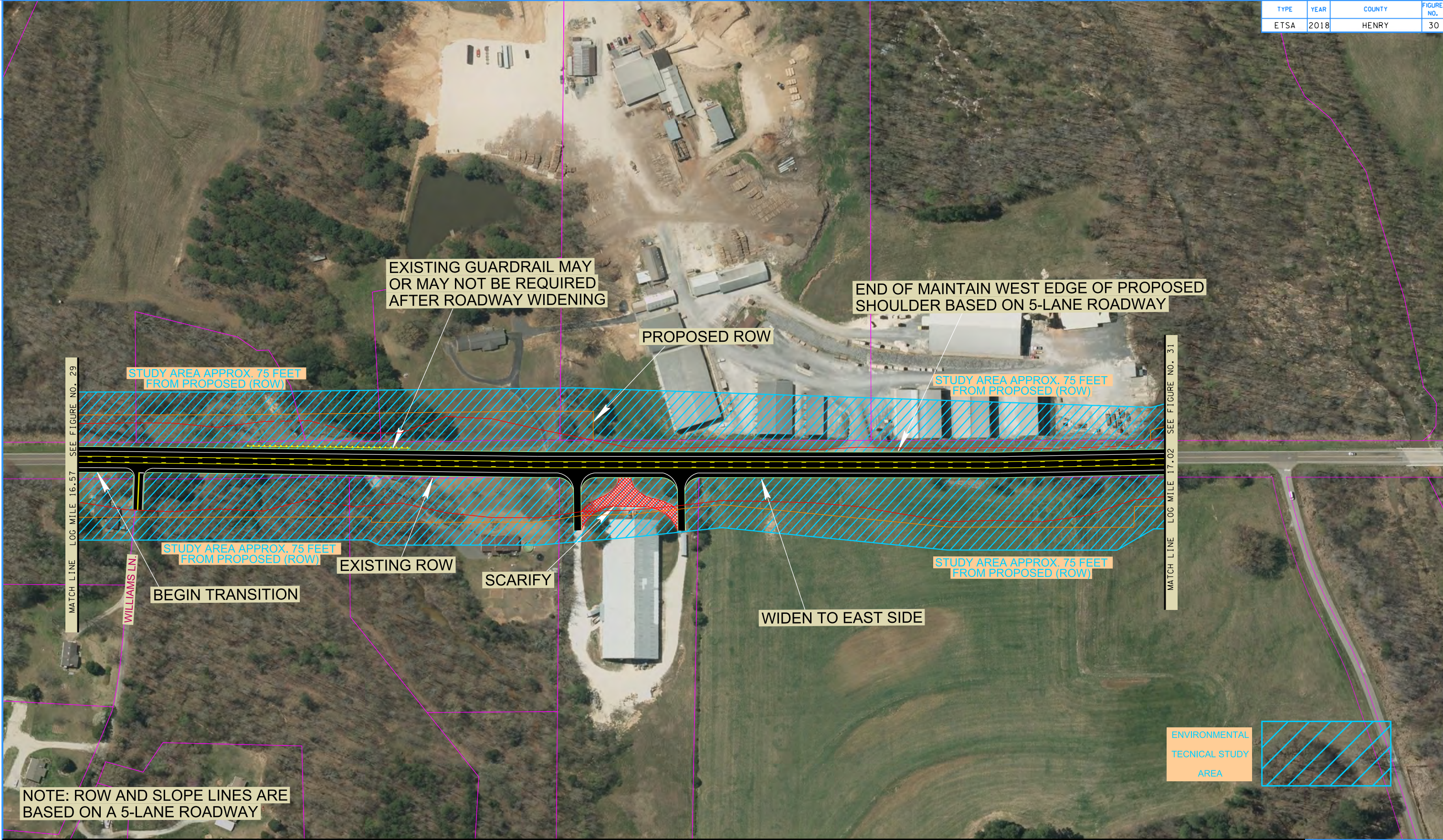
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 29
S.R. 54
L.M. 16.09 to
L.M. 16.57

3/25/2020 11:56:45 AM
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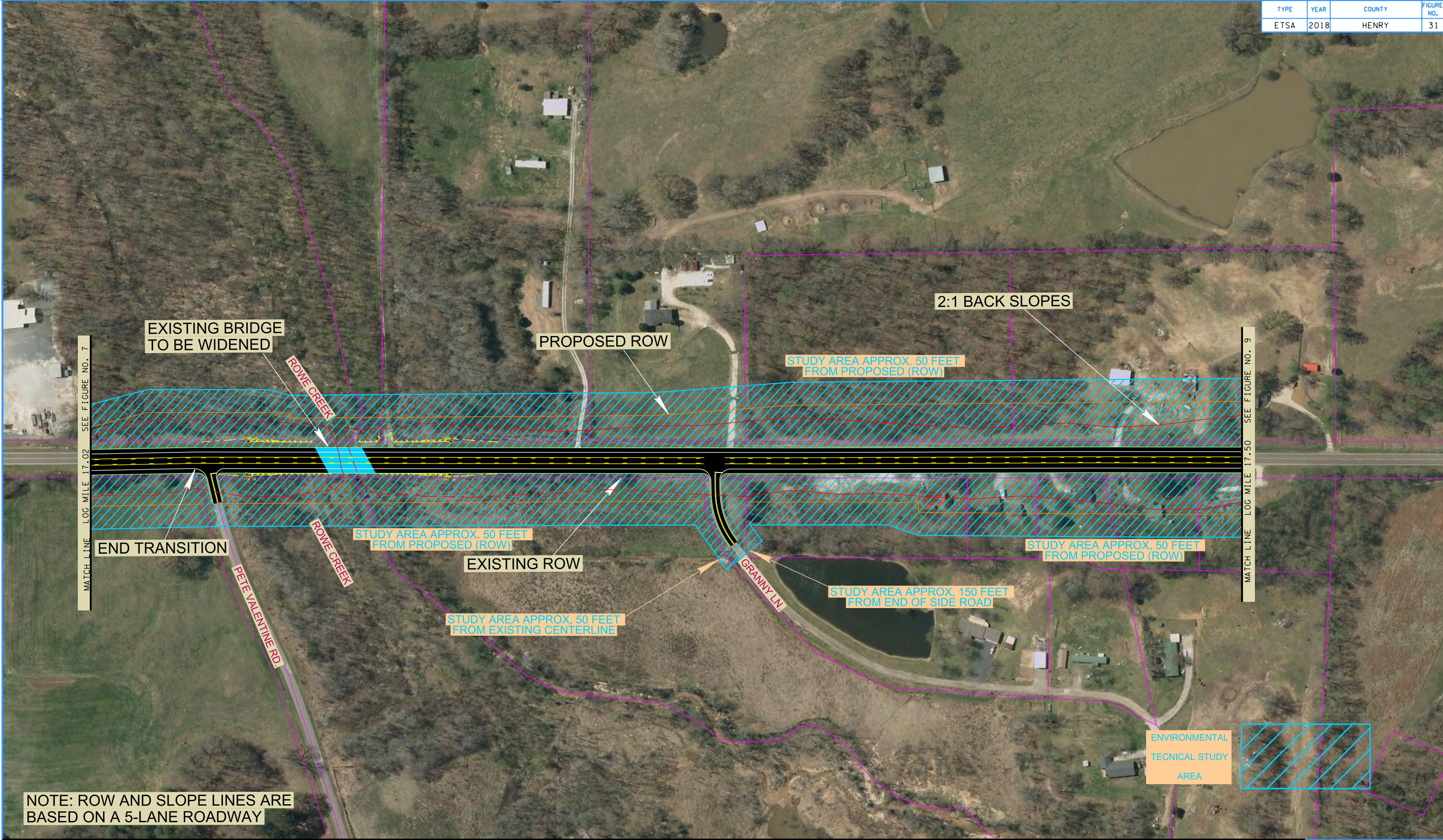
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 30
S.R. 54
L.M. 16.57 to
L.M. 17.02

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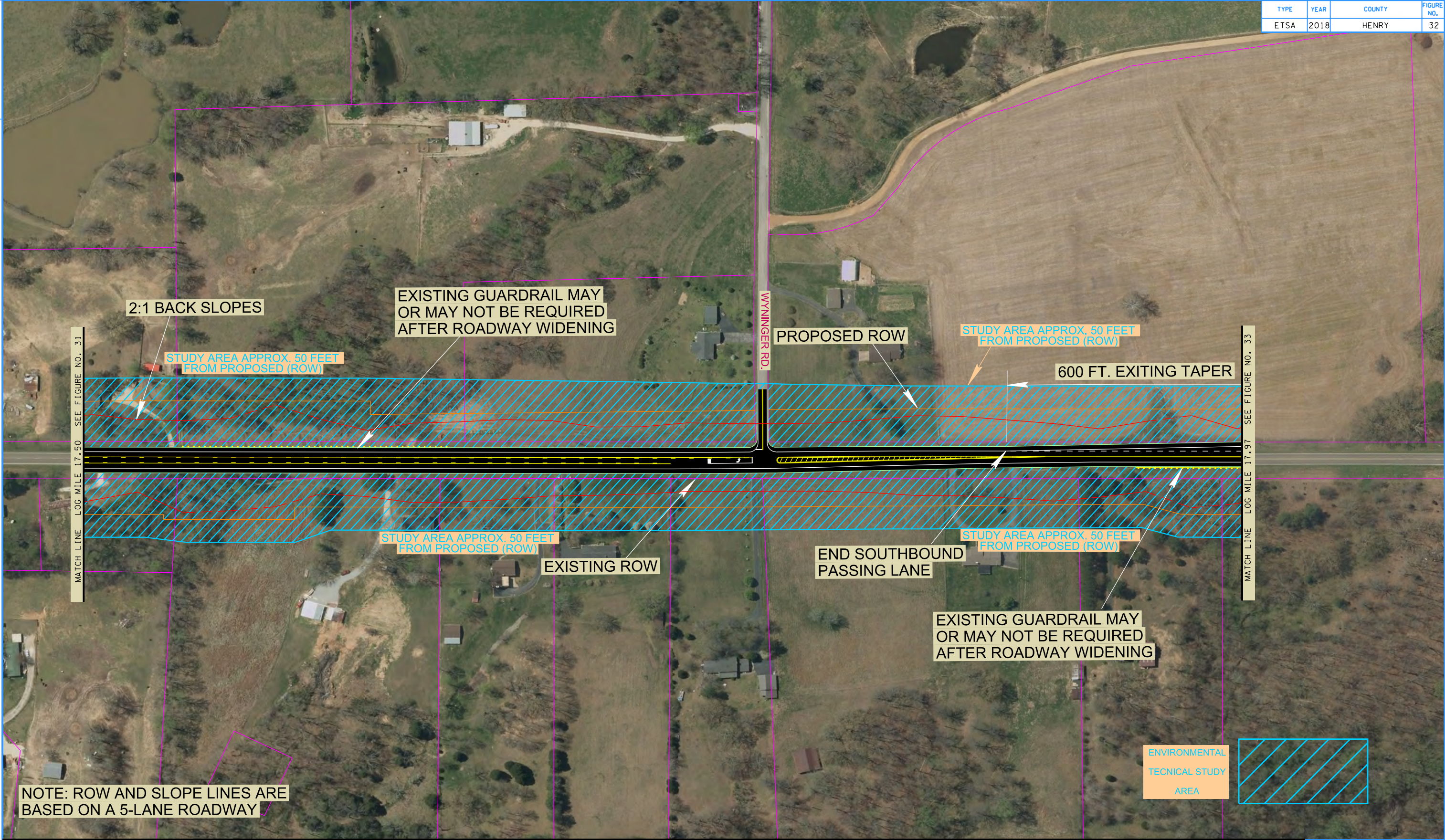
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

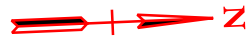
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 31
S.R. 54
L.M. 17.02 to
L.M. 17.50

3/25/2020 2:24:11 PM X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 32 SR 54.dgn



NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 32
S.R. 54
L.M. 17.50 to
L.M. 17.97

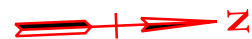
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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

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X:\Projects\HenrySR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 34 SR 54.dgn



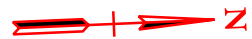
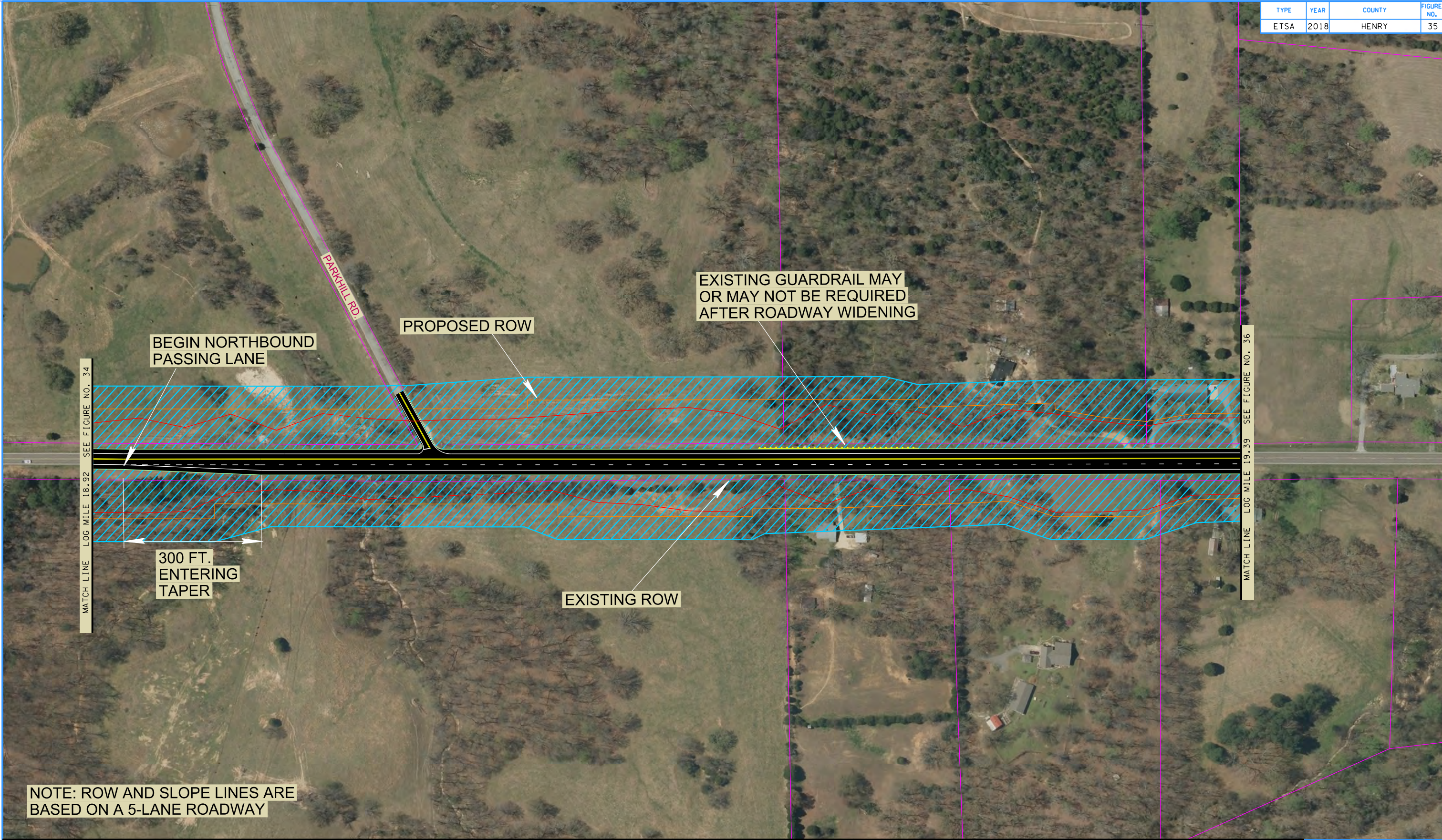
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 34
S.R. 54
L.M. 18.45 to
L.M. 18.92

3/26/2020 8:37:22 AM
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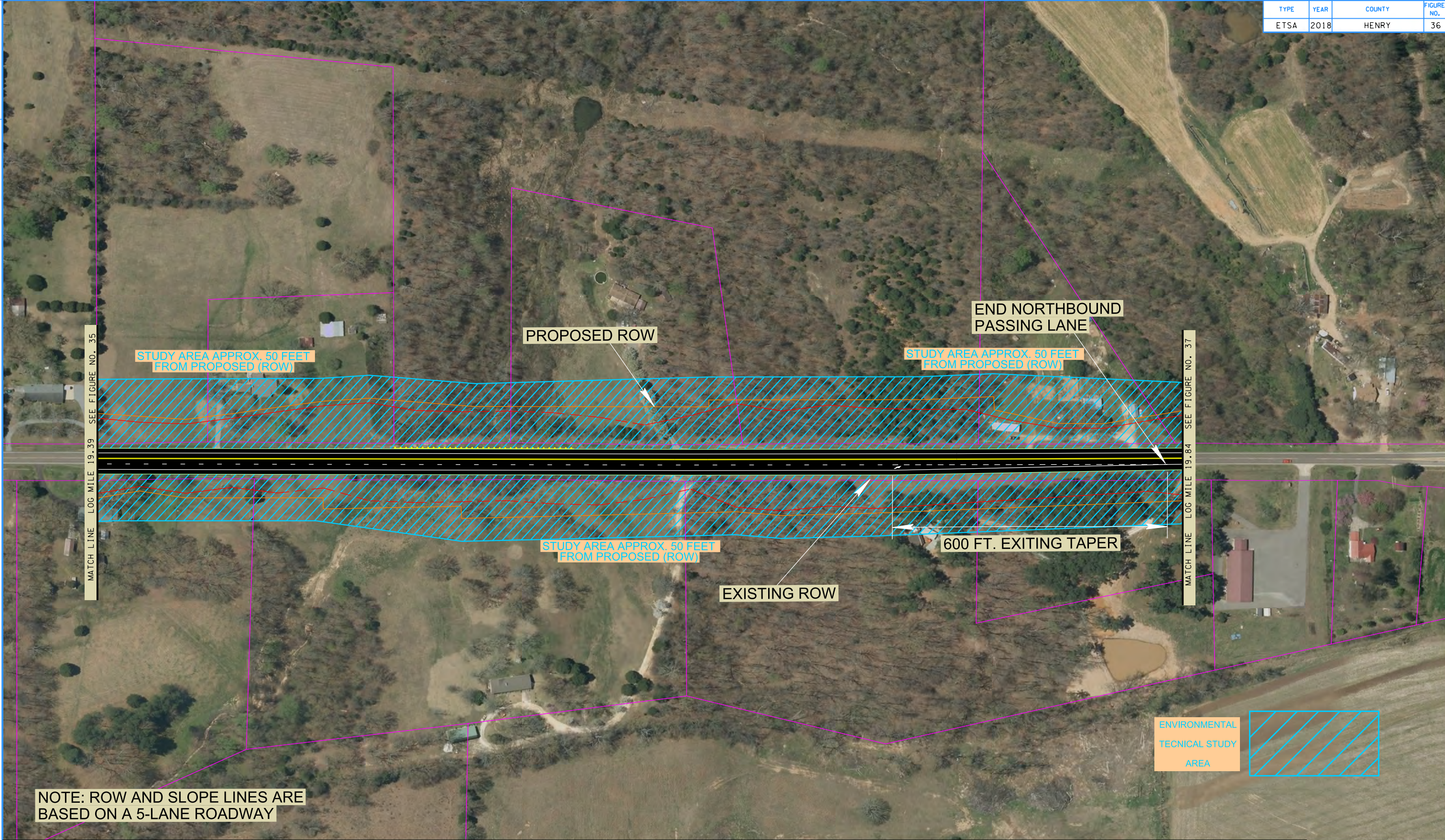
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 35
S.R. 54
L.M. 18.92 to
L.M. 19.39

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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 36
S.R. 54
L.M. 19.39 to
L.M. 19.84

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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

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X:\Projects\Henry\SR 54\From Near Smith Rd. to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 38 SR 54.dgn

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

MATCH LINE LOG MILE 20.30 SEE FIGURE NO. 37

STUDY AREA APPROX. 50 FEET FROM PROPOSED (ROW)

MC LAIN ST.

SMITH ST.

STUDY AREA APPROX. 50 FEET FROM PROPOSED (ROW)

JONES ST.

PROPOSED ROW

LAIRD RD.

STUDY AREA APPROX. 50 FEET FROM PROPOSED (ROW)

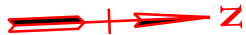
MATCH LINE LOG MILE 20.79 SEE FIGURE NO. 39

WALL ST.

EXISTING ROW

ENVIRONMENTAL
TECNICAL STUDY
AREA

NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 38
S.R. 54
L.M. 20.30 to
L.M. 20.79

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

OVERHEAD UTILITIES BOTH SIDES
UNDERGROUND WATER & COMM.

PROPOSED ROW

STUDY AREA APPROX. 50 FEET FROM PROPOSED (ROW)

POPLAR ST.

W MAIN ST.

W CHESTNUT ST.

A099 A ST.

STUDY AREA APPROX. 50 FEET
FROM PROPOSED (ROW)

STUDY AREA APPROX. 50 FEET
FROM PROPOSED (ROW)

EXISTING ROW

SR 140 EAST

THE MAIN ST.

E CHESTNUT ST.

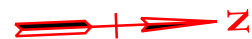
LITTLETON ST.

STUDY AREA APPROX. 50 FEET FROM PROPOSED (ROW)

CURRENTLY UNDER SIGNALIZATION

ENVIRONMENTAL
TECHNICAL STUDY
AREA

NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 39
S.R. 54
L.M. 20.79 to
L.M. 21.26

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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 40
S.R. 54
L.M. 21.26 to
L.M. 21.76

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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 41
S.R. 54
L.M. 21.76 to
L.M. 22.19



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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

Traffic shall be maintained throughout construction. Lane shifts shall allow for construction to occur in conjunction with regular traffic flow.

4.1 Proposed Cost

Table 7 below shows the cost estimates for the project included in this proposal based on the most recent 2019 unit price projections. The totals found in Tables 8 and 9 are inflated to the five (5) and ten (10) year cost at a rate of 5% per year for the number of years from the 2019 unit price projections.

Table 7. Cost Estimate Summary

COST ESTIMATE SUMMARY (2019)						
Project Location	Project Type of Work	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Project Cost (2019):
From Near Smith Rd. to Puryear (L.M. 14.02 to L.M. 20.00)	Widen	\$2,090,000	\$3,680,000	\$10,000,000	\$32,950,000	\$46,000,000
From Puryear to Near Howard Rd. (L.M. 20.00 to L.M. 22.24)	Widen	\$824,000	\$5,250,000	\$4,590,000	\$10,396,000	\$20,200,000
Total		\$2,914,000	\$8,930,000	\$14,590,000	\$43,346,000	\$66,200,000

Table 8. 5-Year Inflated Cost Estimate Summary

5-YEAR INFLATED COST ESTIMATE SUMMARY						
Project Location	Project Type of Work	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Project Cost (2019):
From Near Smith Rd. to Puryear (L.M. 14.02 to L.M. 20.00)	Widen	\$2,670,000	\$4,700,000	\$12,800,000	\$42,100,000	\$58,700,000
From Puryear to Near Howard Rd. (L.M. 20.00 to L.M. 22.24)	Widen	\$1,050,000	\$6,700,000	\$5,860,000	\$13,300,000	\$25,800,000
5-Year Projected Total		\$3,720,000	\$11,400,000	\$18,660,000	\$55,400,000	\$84,500,000

Table 9. 10-Year Inflated Cost Estimate Summary

10-YEAR INFLATED COST ESTIMATE SUMMARY						
Project Location	Project Type of Work	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Project Cost (2019):
From Near Smith Rd. to Puryear (L.M. 14.02 to L.M. 20.00)	Widen	\$3,400,000	\$5,990,000	\$16,300,000	\$53,700,000	\$74,900,000
From Puryear to Near Howard Rd. (L.M. 20.00 to L.M. 22.24)	Widen	\$1,340,000	\$8,550,000	\$7,480,000	\$16,900,000	\$32,900,000
10-Year Projected Total		\$4,740,000	\$14,540,000	\$23,780,000	\$70,600,000	\$107,800,000

The total estimated cost for the improvements along S.R. 54 is \$66,200,000. See Appendix 7.1 for detailed itemization of cost estimates.

4.2 Proposed Alternative Safety Implications

HSM Part C Predictive Method Considerations For Rural Two-Lane, Two-Way Roads

Highway Safety Manual (HSM) methodology for intersection geometry and shoulder treatments was reviewed to help better understand the safety implications of the recommended improvements and to help mitigate overall crash risk and crash severity.

The HSM is a resource that provides safety knowledge and tools in a useful form to facilitate improved decision making based on safety performance. The focus of the HSM is to provide quantitative information for decision making. The HSM assembles currently available information and methodologies on measuring, estimating and evaluating roadways in terms of crash frequency (number of crashes per year) and crash severity (level of injuries due to crashes). [HSM - Preface to the Highway Safety Manual, pg. xxiii]

A preliminary investigation to the number of crashes and severity distribution was investigated for rural two-lane, two-way roadways to help understand the safety implications for the proposed alternatives. Crash Modification Factors (CMF's) are defined as *“an index of how much crash experience is expected to change following a modification in design or traffic control. CMF is the ratio between the number of crashes per unit of time expected after a modification or measure is implemented and the number of crashes per unit of time estimated if the change does not take place.”*

The CMF Clearinghouse (www.cmfclearinghouse.org) provides a quantitative basis for estimating how a given CMF might improve safety. The CMF Clearinghouse is a website funded by the U.S. Department of Transportation Federal Highway Administration and is maintained by the University of North Carolina Highway Safety Research Center. The website provides a database of CMFs to assist in selecting appropriate improvements based on safety. CMF values can be converted into crash reduction factors (CRF's) by simply taking one and subtracting the CMF and then changing it into a percentage.

According to the CMF Clearinghouse, there are six (6) CRFs applicable to this project. It involves widening the shoulder from three (3) feet to four (4) feet, six (6) feet, and ten (10) feet throughout the project limits, having CRFs of 18%, 22.9%, and 6%, respectively. This predicts that the widening of shoulders along S.R. 54 may reduce crashes on the roadway by approximately 18%, 22.9%, and 6%,

respectively. Another CMF applicable to this project is the addition of passing lanes that are installed periodically throughout the project limits, having a CRF of 42%. This predicts that adding passing lanes periodically on S.R. 54 may reduce crashes on the roadway by approximately 42%. The proposed TWLTL along the project route has a CRF of 36%, which predicts that the installation of a TWLTL on S.R. 54 may reduce crashes by approximately 36%. Lastly, the installation of a right-turn lane has a CRF of 30%, which may reduce crashes by approximately 30%, as shown in Table 10.

Table 10: Crash Reduction Factors

Crash Reduction Factors									
Source	Location	Treatment	Star Rating	Crash Type	Crash Severity	Area Type	CMF	CRF	Std. Error
CMF Clearinghouse	Widen paved shoulder from 3 ft. to 6 ft. (L.M. 14.02 to L.M. 14.87)	Widen paved shoulder from 3 ft. to 6 ft.	4-Star	All	All	Not specified	0.82	18.0%	N/A
CMF Clearinghouse	Widen paved shoulder from 3 ft. to 10 ft. (L.M. 14.87 to L.M. 20.00)	Widen shoulder (shoulder width of 8 ft. or more)	4-Star	All	All	Rural	0.771	22.9%	N/A
CMF Clearinghouse	Widen paved shoulder from 3 ft. to 4 ft. (L.M. 20.00 to L.M. 22.24)	Widen paved shoulder from 3 ft. to 4 ft.	4-Star	All	All	Not specified	0.94	6.0%	N/A
CMF Clearinghouse	Passing lanes (L.M. 27.24 to L.M. 28.43)	Install periodic passing lanes on rural two-lane highways	4-Star	All	All	Rural	0.58	42.0%	0.09
CMF Clearinghouse	Install TWLTL (L.M. 14.02 to L.M. 17.87 and L.M. 19.83 to L.M. 22.24)	Install TWLTL on rural two lane roads	5-Star	All	All	Rural	0.64	36.0%	0.09
CMF Clearinghouse	Right-turn lane (L.M. 28.43)	Install right turn lane	3-Star	Rear end	All	All	0.7	30.0%	N/A

A CRF is a way to represent the expected effect of a countermeasure in terms of percentage decrease in crashes based on the CMF. The CRFs shown in Table 10, which were obtained using the CMF Clearinghouse, had a three (3) / four (4) star rating with one (1) CRF having an unadjusted standard error less than 0.1. See Figure 5 below for an explanation on the CMF clearinghouse star ratings.

Relative Rating	Excellent	Fair	Poor
Study Design	Statistically rigorous study design with reference group or randomized experiment and control	Cross sectional study or other coefficient based analysis	Simple before / after study
Sample Size	Large sample, multiple years, diversity of sites	Moderate sample size, limited years, and limited diversity of sites	Limited homogeneous sample
Standard Error	Small compared to CRF	Relatively large SE, but confidence interval does not include zero	Large SE and confidence interval includes zero
Potential Bias	Controls for all sources of known potential bias See below for a list of potential biases	Controls for some sources of potential bias	No consideration of potential bias
Data Source	Diversity in States representing different geographies	Limited to one State, but diversity in geography within State (e.g., CA)	Limited to one jurisdiction in one State

To provide a more quantitative translation from these categories to the star rating, a point-based system was developed. Points are assigned to each CMF characteristic based on the level of rigor (excellent = 2 points, fair = 1 point, or poor = 0 points). While the points decrease from excellent to poor, not all characteristics receive equal weight. For example, the study design is more important than the data source. Therefore, the final quality rating is based on a weighted score. Study design and sample size categories receive twice the weight of the other characteristics (see equation below).

Score = (2 * study design) + (2 * sample size) + standard error + potential bias + data source

The star rating is assigned based on the score and the ranges in the table below. It should be noted that information may be missing from a study report for specific characteristics such as sample size. In these cases, the rating is based on available information and the CMF will likely receive a lower rating due to the lack of information.

Score	Star Rating
14 (max possible)	5 Stars
11 – 13	4 Stars
7 – 10	3 Stars
3 – 6	2 Stars
1 – 2	1 Star
0	0 Stars

Figure 5: Crash Modification Star Ratings

5.0 Preliminary Purpose and Need

Current deficiencies that need to be addressed include narrow shoulder widths with an increased probability of rear-end and lane departure crashes and the unsafe conditions along the corridor experiencing crashes. The purpose of providing the proposed geometric improvements along this 8.22-mile section of S.R. 54 is to provide better safety, operational performance, and comfort to vehicular users. Based on the safety analysis, increasing the shoulder width from three (3) feet to four (4) feet, six (6), and eight (8) feet or greater results in a predicted 6%, 18%, and 22.9% reduction in crashes per year,

respectively. The addition of passing lanes in the northbound and southbound direction on S.R. 54 may reduce crashes on the roadway by approximately 42%. Any modifications to the existing improvements strive to provide a safer facility for all users and a regional route which fits the needs of the community. Addressing these deficiencies would improve safety, including the number of rear-end and roadway departure crashes, result in improvements to existing geometries, and reduce all crashes.

6.0 Recommendations

Future improvements to existing S.R. 54 are recommended in order to address the local and regional needs of the area by providing a safer facility. The Build Alternative will improve safety and operations by:

- Providing sufficient shoulder width along the corridor by widening the shoulder from three (3) feet to four (4) feet, six (6) feet, and ten (10) feet throughout the project limits
- Providing passing lanes in both the northbound and southbound direction, with the northbound passing lane ending as a right turn lane at the intersection with Puryear Country Club Road
- Providing increased capacity along S.R. 54 for future traffic demand along with a TWLTL
- Predicted to reduce crashes by approximately 22.9% from S.R. 218 to Puryear and 6% from Puryear to near Howard Road based on the CMF Clearinghouse for widening the shoulder from three (3) feet to six (6) feet and ten (10) feet, respectively, throughout the project limits
- Predicted to reduce crashes by approximately 42% by the addition of passing lanes
- Predicted to reduce crashes by approximately 36% by the addition of a TWLTL

The table below summarizes the estimated cost of the Build Alternative.

Table 11. Cost Estimate Summary


COST ESTIMATE SUMMARY						
Year	Project Type of Work	Preliminary Engineering:	Right-of-Way:	Utilities:	Construction:	Total Project Cost (2019):
2019	From Near Smith Rd. to Puryear	\$2,090,000	\$3,680,000	\$10,000,000	\$32,950,000	\$46,000,000
	From Puryear to Near Howard Rd.	\$824,000	\$5,250,000	\$4,590,000	\$10,396,000	\$20,200,000
	Total	\$2,914,000	\$8,930,000	\$14,590,000	\$43,346,000	\$66,200,000
2024 (Inflated 5 Years)	From Near Smith Rd. to Puryear	\$2,670,000	\$4,700,000	\$12,800,000	\$42,100,000	\$58,700,000
	From Puryear to Near Howard Rd.	\$1,050,000	\$6,700,000	\$5,860,000	\$13,300,000	\$25,800,000
	Total	\$3,720,000	\$11,400,000	\$18,660,000	\$55,400,000	\$84,500,000
2029 (Inflated 10 Years)	From Near Smith Rd. to Puryear	\$3,400,000	\$5,990,000	\$16,300,000	\$53,700,000	\$74,900,000
	From Puryear to Near Howard Rd.	\$1,340,000	\$8,550,000	\$7,480,000	\$16,900,000	\$32,900,000
	Total	\$4,740,000	\$14,540,000	\$23,780,000	\$70,600,000	\$107,800,000

The construction of the proposed improvements is predicted to improve the overall safety and operations of S.R. 54. Based on the information and analyses contained in this report, it is recommended to complete the identified improvements in accordance with TDOT Standards.

7.0 Appendix

7.1 Cost Estimates

COST ESTIMATE SUMMARY


Route:	S.R. 54			
Description:	From Near Smith Rd. to Puryear			
Project Type of Work:	Widen			
County:	Henry			
Length:	5.98 Miles			
Date:	March 23, 2020			
Estimate Type:	Concept			

DESCRIPTION	LOCAL	STATE	FEDERAL	TOTAL
	0%	0%	0%	
Construction Items				
Removal Items	\$0	\$0	\$0	\$204,000
Asphalt Paving	\$0	\$0	\$0	\$7,840,000
Concrete Pavement	\$0	\$0	\$0	\$0
Drainage	\$0	\$0	\$0	\$1,340,000
Appurtenances	\$0	\$0	\$0	\$626,000
Structures	\$0	\$0	\$0	\$861,000
Fencing	\$0	\$0	\$0	\$0
Signalization & Lighting	\$0	\$0	\$0	\$0
Railroad Crossing	\$0	\$0	\$0	\$0
Earthwork	\$0	\$0	\$0	\$6,730,000
Clearing and Grubbing	\$0	\$0	\$0	\$0
Seeding & Sodding	\$0	\$0	\$0	\$146,000
Rip-Rap or Slope Protection	\$0	\$0	\$0	\$128,000
Guardrail	\$0	\$0	\$0	\$208,000
Signing	\$0	\$0	\$0	\$18,100
Pavement Markings	\$0	\$0	\$0	\$100,000
Maintenance of Traffic	\$0	\$0	\$0	\$250,000
Mobilization 5%	\$0	\$0	\$0	\$923,000
Other Items 10%	\$0	\$0	\$0	\$1,940,000
Const. Contingency 30%	\$0	\$0	\$0	\$6,140,000
Const. Eng. & Inspec. 10%	\$0	\$0	\$0	\$2,750,000
Construction Estimate	\$0	\$0	\$0	\$30,200,000
Interchanges & Unique Intersections				
Roundabouts	\$0	\$0	\$0	\$0
Interchanges	\$0	\$0	\$0	\$0
Right-of-Way & Utilities				
	LOCAL	STATE	FEDERAL	TOTAL
	0%	0%	0%	
Right-of-Way	\$0	\$0	\$0	\$3,680,000
Utilities	\$0	\$0	\$0	\$10,000,000
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 7%	\$0	\$0	\$0	\$2,090,000
Total Project Cost (2018)	\$0	\$0	\$0	\$ 46,000,000

PAY ITEM SUMMARY

TDOT PAY ITEM		TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
								-- Unit Cost Trends with Quantities
Pavement Removal								
415-01.02		COLD PLANING BITUMINOUS PAVEMENT	SY	84198		84198	\$ 2.42	\$ 203,760.13
PAVEMENT REMOVAL TOTAL (ROUNDED)								\$ 203,800
Asphalt Roads								
303-01		MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	167396		167396	\$ 21.20	\$ 3,548,784.91
307-02.01		ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	11654		11654	\$ 99.41	\$ 1,158,513.05
307-01.21		AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	7818		7818	\$ 97.57	\$ 762,754.96
307-02.08		ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	6544		6544	\$ 99.60	\$ 651,737.56
402-01		BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	172		172	\$ 570.81	\$ 98,169.57
402-02		AGGREGATE FOR COVER MATERIAL (PC)	TON	621		621	\$ 40.02	\$ 24,842.57
403-01		BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	98		98	\$ 657.80	\$ 64,616.37
411-01.07		ACS MIX (PG64-22) GRADING E SHOULDER	TON	5341		5341	\$ 94.68	\$ 505,661.04
411-02.10		ACS MIX (PG70-22) GRADING D	TON	10214		10214	\$ 100.50	\$ 1,026,493.23
PAVING TOTAL (ROUNDED)								\$ 7,841,600
Concrete Roads								
CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)								\$ -
Drainage								
607-05.02		24" CONCRETE PIPE CULVERT (CLASS III)	LF	9346		9346	\$ 75.01	\$ 701,061.79
611-07.01		CLASS A CONCRETE (PIPE ENDWALLS)	CY	166		166	\$ 1,338.21	\$ 221,656.82
611-07.02		STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB	15741		15741	\$ 2.87	\$ 45,175.64
611-12.02		CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EA	2		2	\$ 4,082.39	\$ 8,397.28
611-14.02		CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EA	1		1	\$ 6,847.88	\$ 7,042.88
611-42.02		CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EA	0		0	\$ 5,435.85	\$ 2,541.20
710-02		Aggregate Underdrains (with pipe)	LF	57758		57758	\$ 6.07	\$ 350,590.57
DRAINAGE TOTAL (ROUNDED)								\$ 1,336,500
Appurtenances								
701-01.01		CONCRETE SIDEWALK (4")	SF	44141		44141	\$ 7.97	\$ 351,802.18
702-03		CONCRETE COMBINED CURB & GUTTER	CY	634		634	\$ 432.38	\$ 274,107.37
ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)								\$ 626,000
Earthwork & Mineral								
105-01		CONSTRUCTION STAKES, LINES AND GRADES	LS	1		1	\$ 169,250.45	\$ 169,250.45
203-01		ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	CY	542549		542549	\$ 7.40	\$ 4,014,865.53
203-02.01		BORROW EXCAVATION (GRADED SOLID ROCK)	TON	45146		45146	\$ 32.33	\$ 1,459,570.88
203-03		BORROW EXCAVATION (UNCLASSIFIED)	CY	121853		121853	\$ 8.88	\$ 1,081,745.39
EARTHWORK & MINERAL TOTAL (ROUNDED)								\$ 6,725,500
Structures								
N/A		Widen Existing Bridge (Concrete Girder):	SF	6222		6222	\$ 48.00	\$ 298,656.00
N/A		New Bridge (Concrete Girder):	SF	3750		3750	\$ 150.00	\$ 562,500.00
STRUCTURES TOTAL (ROUNDED)								\$ 861,200
Interchanges and Unique Intersections								
INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)								\$ -
Lighting & Signalization								
LIGHTING & SIGNALIZATION TOTAL (ROUNDED)								\$ -
Guardrail								
705-01.01		GUARDRAIL AT BRIDGE ENDS	LF	400		400	\$ 66.52	\$ 26,607.36
705-06.01		W Beam GR (Type 2) Mash TL3	LF	17366	-13565.92	3800	\$ 20.07	\$ 76,266.00
705-06.20		Tangent Energy Absorbing Term Mash TL-3	EA	28		28	\$ 2,626.00	\$ 73,528.00
705-04.09		EARTH PAD FOR TYPE 38 GR END TREATMENT	EA	28		28	\$ 1,122.29	\$ 31,424.12
GUARDRAIL TOTAL (ROUNDED)								\$ 207,900
Seeding and Sodding								
801-01		SEEDING (WITH MULCH)	UNIT	2542		2542	\$ 27.26	\$ 69,296.45
801-01.07		TEMPORARY SEEDING (WITH MULCH)	UNIT	1907		1907	\$ 22.31	\$ 42,534.95
801-02		SEEDING (WITHOUT MULCH)	UNIT	1907		1907	\$ 17.70	\$ 33,745.79
SODDING TOTAL (ROUNDED)								\$ 145,600
Maintenance of Traffic								
N/A		Traffic Control	LS	1		1		\$ 201,968.58
712-02.02		INTERCONNECTED PORTABLE BARRIER RAIL	LF	1579		1579	\$ 30.18	\$ 47,645.77
MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)								\$ 249,700
Signs								
Not Listed		Signs (Construction)	LS	1		1	\$ -	\$ 18,100
SIGNING TOTAL (ROUNDED)								\$ 18,100
Pavement Markings								
716-13.06		Spray Thermo P.M. (40 mil 4")	LM	60.4		60.4	\$ 1,654.23	\$ 99,923.94
PAVEMENT MARKINGS TOTAL (ROUNDED)								\$ 100,000
Fencing								
FENCE TOTAL (ROUNDED)								\$ -
Rip-Rap								
709-05.05		Machined Rip-Rap (Class A-3)	TON	3200		3200	\$ 39.85	\$ 127,520.00
RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)								\$ 127,600.00
Clearing and Grubbing								
CLEAR AND GRUBBING TOTAL (ROUNDED)								\$ -
Railroad At-Grade Crossing								
RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)								\$ -
Utilities								
N/A		Overhead Distribution	LM	5.98		5.98	\$ 375,000	\$ 2,242,500
N/A		Underground Communication	LM	5.98		5.98	\$ 500,000	\$ 2,990,000
N/A		Underground Gas	LM	5.98		5.98	\$ 250,000	\$ 1,495,000
N/A		Underground Water	LM	5.98		5.98	\$ 237,600	\$ 1,420,848
N/A		Underground Sewer	LM	5.98		5.98	\$ 310,200	\$ 1,854,996
UTILITIES TOTAL (ROUNDED)								\$ 10,003,400.00
Right-of-Way								
N/A		Right-of-Way	LS	1		1	\$ 1,176,000.00	\$ 1,176,000.00
RIGHT-OF-WAY TOTAL (ROUNDED)								\$ 1,176,000.00

COST ESTIMATE SUMMARY

Route:	S.R. 54			
Description:	From Puryear to Near Howard Rd.			
Project Type of Work:	Widen			
County:	Henry			
Length:	2.24 Miles			
Date:	November 22, 2019			
Estimate Type:	Concept			

DESCRIPTION	LOCAL	STATE	FEDERAL	TOTAL
	0%	0%	0%	
Construction Items				
Removal Items	\$0	\$0	\$0	\$76,400
Asphalt Paving	\$0	\$0	\$0	\$2,100,000
Concrete Pavement	\$0	\$0	\$0	\$0
Drainage	\$0	\$0	\$0	\$379,000
Appurtenances	\$0	\$0	\$0	\$0
Structures	\$0	\$0	\$0	\$184,000
Fencing	\$0	\$0	\$0	\$0
Signalization & Lighting	\$0	\$0	\$0	\$0
Railroad Crossing	\$0	\$0	\$0	\$0
Earthwork	\$0	\$0	\$0	\$2,480,000
Clearing and Grubbing	\$0	\$0	\$0	\$0
Seeding & Sodding	\$0	\$0	\$0	\$59,300
Rip-Rap or Slope Protection	\$0	\$0	\$0	\$128,000
Guardrail	\$0	\$0	\$0	\$236,000
Signing	\$0	\$0	\$0	\$5,600
Pavement Markings	\$0	\$0	\$0	\$34,100
Maintenance of Traffic	\$0	\$0	\$0	\$122,000
Mobilization 5%	\$0	\$0	\$0	\$290,000
Other Items 10%	\$0	\$0	\$0	\$609,000
Const. Contingency 30%	\$0	\$0	\$0	\$1,960,000
Const. Eng. & Inspec. 10%	\$0	\$0	\$0	\$866,000
Construction Estimate	\$0	\$0	\$0	\$9,530,000
Interchanges & Unique Intersections				
Roundabouts	\$0	\$0	\$0	\$0
Interchanges	\$0	\$0	\$0	\$0
Right-of-Way & Utilities	LOCAL	STATE	FEDERAL	TOTAL
	0%	0%	0%	
Right-of-Way	\$0	\$0	\$0	\$5,250,000
Utilities	\$0	\$0	\$0	\$4,590,000
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 9%	\$0	\$0	\$0	\$824,000
Total Project Cost (2018)	\$0	\$0	\$0	\$ 20,200,000

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
							<-- Unit Cost Trends with Quantities
Pavment Removal							
415-01.02	COLD PLANING BITUMINOUS PAVEMENT	SY	31539		31539	\$ 2.42	\$ 76,324.86
						PAVEMENT REMOVAL TOTAL (ROUNDED)	\$ 76,400
Asphalt Roads							
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	43871		43871	\$ 21.20	\$ 930,065.34
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	3174		3174	\$ 99.41	\$ 315,490.76
307-01.21	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	2129		2129	\$ 97.57	\$ 207,716.38
307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	1782		1782	\$ 99.60	\$ 177,483.69
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	36		36	\$ 570.81	\$ 20,782.71
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	131		131	\$ 44.00	\$ 5,782.52
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	27		27	\$ 657.80	\$ 17,812.62
411-01.07	ACS MIX (PG64-22) GRADING E SHOULDER	TON	848		848	\$ 96.02	\$ 81,385.17
411-02.10	ACS MIX(PG70-22) GRADING D	TON	3400		3400	\$ 100.50	\$ 341,732.16
						PAVING TOTAL (ROUNDED)	\$ 2,098,300
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	\$ -
Drainage							
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	LF	1590		1590	\$ 75.01	\$ 119,295.90
611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	CY	72		72	\$ 1,338.21	\$ 96,522.41
611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB	6854		6854	\$ 2.87	\$ 19,672.13
710-02	Aggregate Underdrains (with pipe)	LF	23654		23654	\$ 6.07	\$ 143,582.21
						DRAINAGE TOTAL (ROUNDED)	\$ 379,100
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	\$ -
Earthwork & Mineral							
105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1		1	\$ 54,053.88	\$ 54,053.88
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	CY	181864		181864	\$ 8.33	\$ 1,514,702.40
203-02.01	BORROW EXCAVATION (GRADED SOLID ROCK)	TON	15133		15133	\$ 32.33	\$ 489,251.09
203-03	BORROW EXCAVATION (UNCLASSIFIED)	CY	40845		40845	\$ 10.44	\$ 426,534.70
						EARTHWORK & MINERAL TOTAL (ROUNDED)	\$ 2,484,600
Structures							
N/A	Widen Existing Bridge (Concrete Girder)	SF	1560		1560	\$ 48.00	\$ 74,880.00
N/A	New Bridge (Concrete Girder)	SF	728		728	\$ 150.00	\$ 109,200.00
						STRUCTURES TOTAL (ROUNDED)	\$ 184,100
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	\$ -
Lighting & Signalization							
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	\$ -
Guardrail							
705-01.01	GUARDRAIL AT BRIDGE ENDS	LF	400		400	\$ 66.52	\$ 26,607.36
705-06.01	W Beam GR (Type 2) Mash TL3	LF	6505		6504.96	\$ 20.07	\$ 130,554.55
705-06.20	Tangent Energy Absorbing Term Mash TL-3	EA	21		21	\$ 2,626.00	\$ 55,146.00
705-04.09	EARTH PAD FOR TYPE 38 GR END TREATMENT	EA	21		21	\$ 1,122.29	\$ 23,568.09
						GUARDRAIL TOTAL (ROUNDED)	\$ 235,900
Seeding and Sodding							
801-01	SEEDING (WITH MULCH)	UNIT	1035		1035	\$ 27.26	\$ 28,210.83
801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	776		776	\$ 22.31	\$ 17,316.13
801-02	SEEDING (WITHOUT MULCH)	UNIT	776		776	\$ 17.70	\$ 13,738.03
						SODDING TOTAL (ROUNDED)	\$ 59,300
Maintenance of Traffic							
N/A	Traffic Control	LS	1		1		\$ 104,322.72
712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	LF	591		591	\$ 30.18	\$ 17,847.24
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	\$ 122,200
Signs							
Not Listed	Signs (Construction)	LS	1		1	\$ -	\$ 5,600
						SIGNING TOTAL (ROUNDED)	\$ 5,600
Pavement Markings							
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	20.6		20.6	\$ 1,654.23	\$ 34,090.32
						PAVEMENT MARKINGS TOTAL (ROUNDED)	\$ 34,100
Fencing							
						FENCE TOTAL (ROUNDED)	\$ -
Rip-Rap							
709-05.05	Machined Rip-Rap (Class A-3)	TON	3200		3200	\$ 39.85	\$ 127,520.00
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	\$ 127,600.00
Clearing and Grubing							
						CLEAR AND GRUBBING TOTAL (ROUNDED)	\$ -
Railroad At-Grade Crossing							
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	\$ -
Utilities							
N/A	Overhead Distribution	LM	4.48		4.48	\$ 375,000	\$ 1,680,000
N/A	Underground Communication	LM	2.24		2.24	\$ 500,000	\$ 1,120,000
N/A	Underground Gas	LM	2.24		2.24	\$ 250,000	\$ 560,000
N/A	Underground Water	LM	2.24		2.24	\$ 237,600	\$ 532,224
N/A	Underground Sewer	LM	2.24		2.24	\$ 310,200	\$ 694,848
						UTILITIES TOTAL (ROUNDED)	\$ 4,587,100.00
Right-of-Way							
N/A	Right-of-Way	LS	1		1	\$ 4,520,727.27	\$ 4,520,727.27
						RIGHT-OF-WAY TOTAL (ROUNDED)	\$ 4,520,800.00

7.2 Traffic Analysis

**TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**

PROJECT NO.: 40003-0221-04 ROUTE: S.R. 54
COUNTY: HENRY CITY: PARIS
PROJECT PIN NUMBER: 101886.02
PROJECT DESCRIPTION: FROM NEAR SMITH ROAD TO CROSSLAND ROAD & BRANNON LANE.

DIVISION REQUESTING:

MAINTENANCE <input type="checkbox"/> S.T.I.D. <input checked="" type="checkbox"/> PROG. DEVELOPMENT & ADM. <input type="checkbox"/> PUBLIC TRANS. & AERO. <input type="checkbox"/> YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: _____ PROJECTED LETTING DATE: _____	PAVEMENT DESIGN <input type="checkbox"/> STRUCTURES <input type="checkbox"/> SURVEY & ROADWAY DESIGN <input type="checkbox"/> TRAFFIC SIGNAL DESIGN <input type="checkbox"/> OTHER <input type="checkbox"/>
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TRAFFIC ASSIGNMENT:

BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
5,630	2023	6,760	676	10	2043	60-40	7	10		

REQUESTED BY: NAME MICHELLE HUNT DATE 7/18/18
DIVISION S.T.I.D.
ADDRESS 1000 J. K. POLK BUILDING
NASHVILLE TN 37243

REVIEWED BY: DEBBI HOWARD DATE 7/20/18
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: TONY ARMSTRONG DATE 7-20-18
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

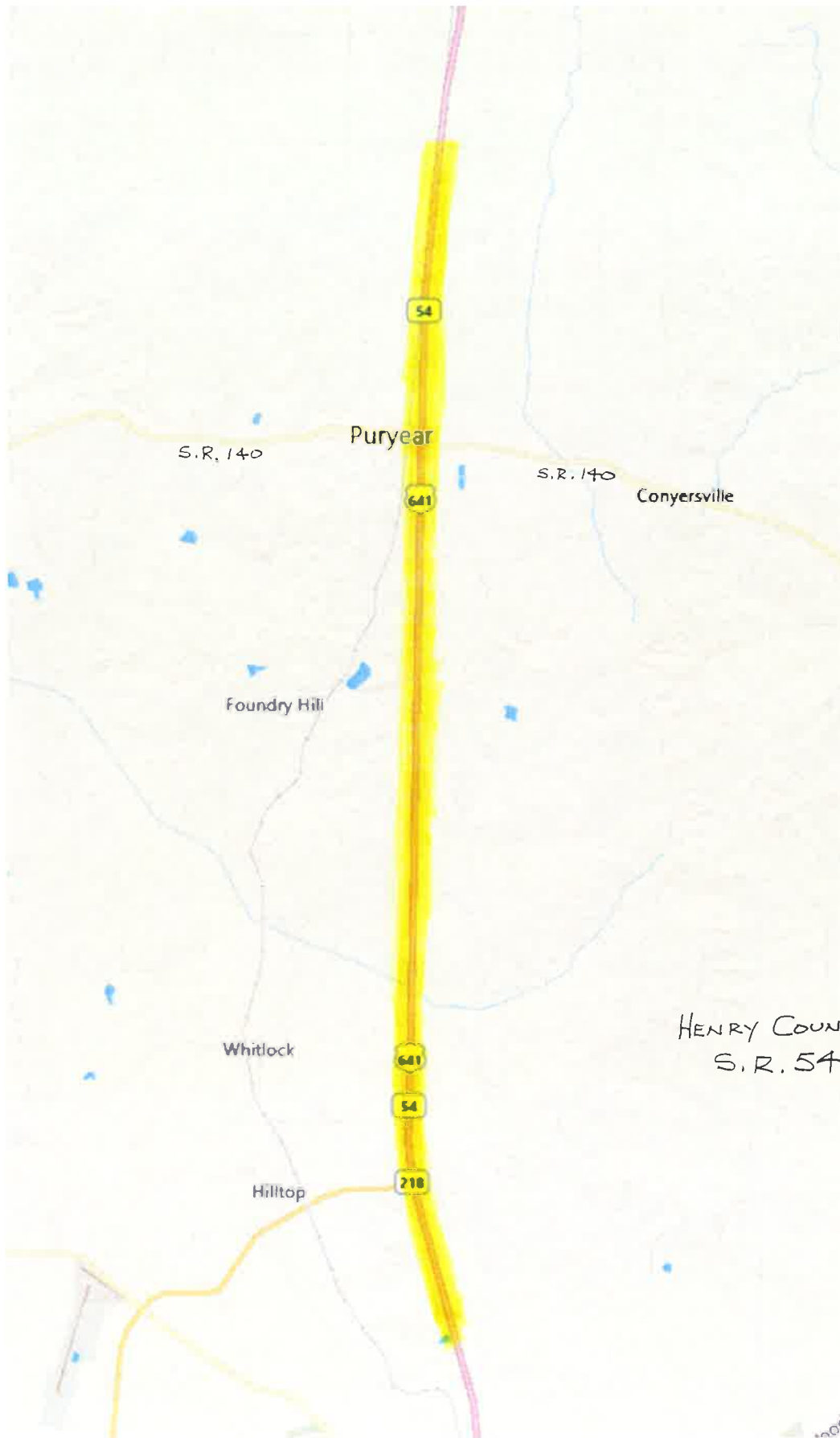
COMMENTS:

THIS TRAFFIC IS BASED ON 2017 CYCLE COUNTS. THE DESIGN YEAR TRAFFIC IS BASED ON GROWTH RATE FROM THE ADAM COMPUTER PROGRAM. AADT's ARE INCLUDED.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS.

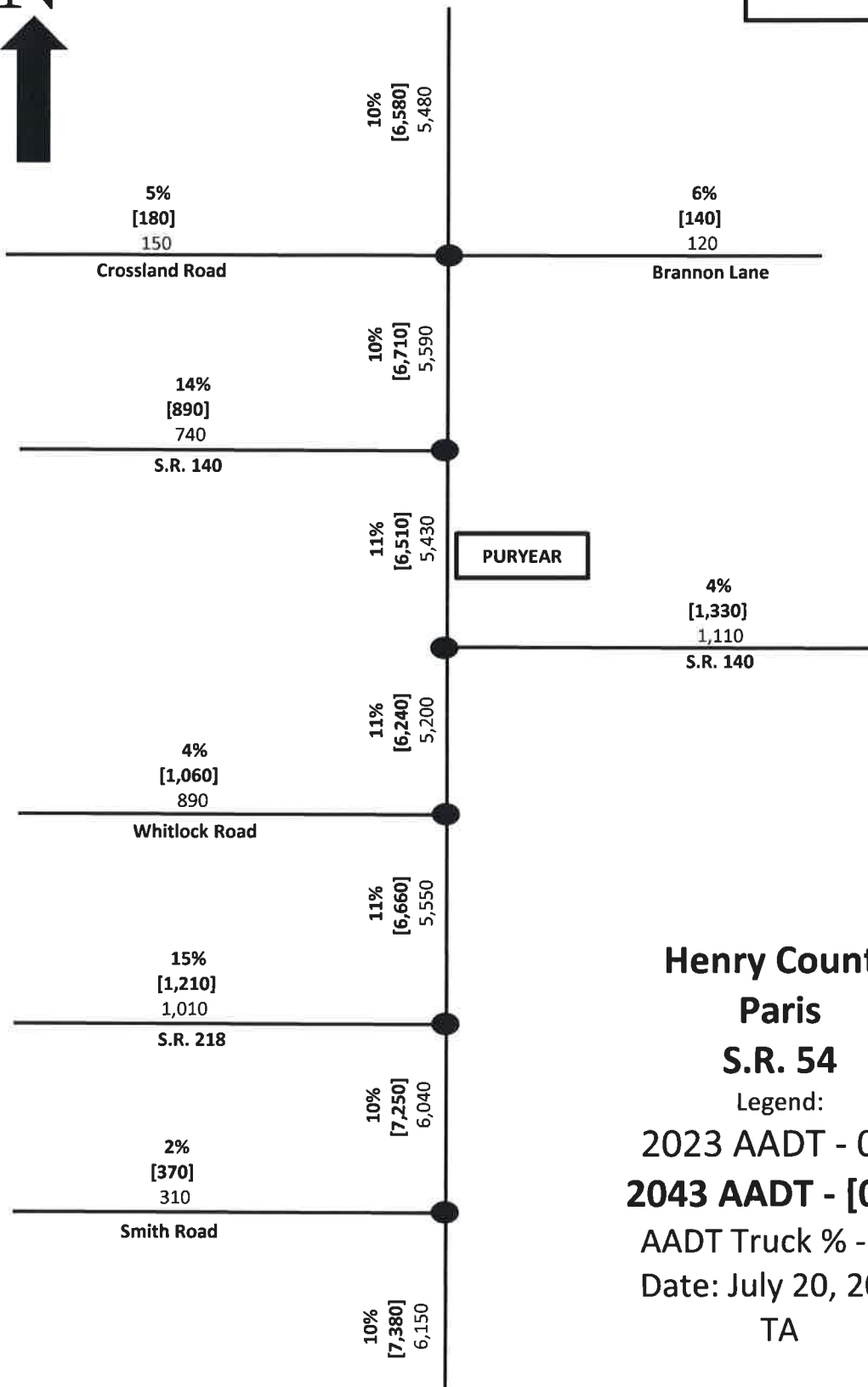
(REV. 4/1/18)



HENRY COUNTY
S.R. 54



AADT



Henry County

Paris

S.R. 54

Legend:

2023 AADT - 000

2043 AADT - [000]

AADT Truck % - 0%

Date: July 20, 2018

TA

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2023
Highway S.R. 54
From/To L.M. 14.02 to L.M. 14.90
Jurisdiction Henry County
Analysis Year 2023
Description No Build

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	3.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	65 %
Up/down	- %	Access point density	1 /mi

Analysis direction volume, Vd 362 veh/h
Opposing direction volume, Vo 242 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	2.0	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.906	0.898
Grade adj. factor, (note-1) fg	0.91	0.81
Directional flow rate, (note-2) vi	499 pc/h	378 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 60.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 2.6 mi/h
Adj. for access point density, (note-3) fA 0.3 mi/h

Free-flow speed, FFSd 57.2 mi/h

Adjustment for no-passing zones, fnp 2.6 mi/h
Average travel speed, ATSD 47.7 mi/h
Percent Free Flow Speed, PFFS 83.5 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.4	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.962	0.935
Grade adjustment factor, (note-1) fg	0.91	0.84
Directional flow rate, (note-2) vi	470 pc/h	350 pc/h
Base percent time-spent-following, (note-4) BPTSFd	46.7 %	
Adjustment for no-passing zones, fnp	38.5	
Percent time-spent-following, PTSFd	68.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	93	veh-mi
Peak-hour vehicle-miles of travel, VMT60	326	veh-mi
Peak 15-min total travel time, TT15	1.9	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	47.7	mi/h
Percent time-spent-following, PTSFd (from above)	68.8	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	411.4
Effective width of outside lane, W_e	15.00
Effective speed factor, S_t	4.79
Bicycle LOS Score, B_{LOS}	7.45
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone:
E-Mail:

Fax:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2023
Highway S.R. 54
From/To L.M. 14.90 to L.M. 20.00
Jurisdiction Henry County
Analysis Year 2023
Description No Build

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	3.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	5.1 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	66 %
Up/down	- %	Access point density	2 /mi

Analysis direction volume, Vd 323 veh/h
Opposing direction volume, Vo 215 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	2.0	2.2
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.906	0.890
Grade adj. factor, (note-1) fg	0.88	0.79
Directional flow rate, (note-2) vi	460 pc/h	347 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 60.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 2.6 mi/h
Adj. for access point density, (note-3) fA 0.5 mi/h

Free-flow speed, FFSd 56.9 mi/h

Adjustment for no-passing zones, fnp 2.8 mi/h
Average travel speed, ATSD 47.8 mi/h
Percent Free Flow Speed, PFFS 84.0 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.943	0.935
Grade adjustment factor, (note-1) fg	0.88	0.82
Directional flow rate, (note-2) vi	442 pc/h	319 pc/h
Base percent time-spent-following, (note-4) BPTSFd	44.8 %	
Adjustment for no-passing zones, fnp	41.4	
Percent time-spent-following, PTSFd	68.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	468	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1647	veh-mi
Peak 15-min total travel time, TT15	9.8	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	5.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	47.8	mi/h
Percent time-spent-following, PTSFd (from above)	68.8	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	367.0
Effective width of outside lane, W_e	15.00
Effective speed factor, S_t	4.79
Bicycle LOS Score, $BLOS$	7.39
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2023
Highway S.R. 54
From/To L.M. 20.00 to L.M. 22.24
Jurisdiction Henry County
Analysis Year 2023
Description No Build

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	3.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.2 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	68 %
Up/down	- %	Access point density	7 /mi

Analysis direction volume, Vd 325 veh/h
Opposing direction volume, Vo 217 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	2.0	2.2
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.906	0.890
Grade adj. factor, (note-1) fg	0.88	0.79
Directional flow rate, (note-2) vi	463 pc/h	351 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 45.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 2.6 mi/h
Adj. for access point density, (note-3) fA 1.8 mi/h

Free-flow speed, FFSd 40.7 mi/h

Adjustment for no-passing zones, fnp 2.5 mi/h
Average travel speed, ATSD 31.8 mi/h
Percent Free Flow Speed, PFFS 78.3 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.943	0.935
Grade adjustment factor, (note-1) fg	0.88	0.82
Directional flow rate, (note-2) vi	445 pc/h	322 pc/h
Base percent time-spent-following, (note-4) BPTSFd	44.8 %	
Adjustment for no-passing zones, fnp	41.2	
Percent time-spent-following, PTSFd	68.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	203	veh-mi
Peak-hour vehicle-miles of travel, VMT60	715	veh-mi
Peak 15-min total travel time, TT15	6.4	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.2	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	31.8	mi/h
Percent time-spent-following, PTSFd (from above)	68.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	40
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	369.3
Effective width of outside lane, W_e	15.00
Effective speed factor, S_t	4.17
Bicycle LOS Score, B_{LOS}	6.88
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2043
Highway S.R. 54
From/To L.M. 14.02 to L.M. 14.90
Jurisdiction Henry County
Analysis Year 2043
Description No Build

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	3.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	65 %
Up/down	- %	Access point density	1 /mi

Analysis direction volume, Vd 435 veh/h
Opposing direction volume, Vo 290 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.8	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.923	0.898
Grade adj. factor, (note-1) fg	0.95	0.85
Directional flow rate, (note-2) vi	564 pc/h	432 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 60.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 2.6 mi/h
Adj. for access point density, (note-3) fA 0.3 mi/h

Free-flow speed, FFSd 57.2 mi/h

Adjustment for no-passing zones, fnp 2.4 mi/h
Average travel speed, ATSD 47.0 mi/h
Percent Free Flow Speed, PFFS 82.3 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.4	1.6
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.962	0.943
Grade adjustment factor, (note-1) fg	0.96	0.87
Directional flow rate, (note-2) vi	536 pc/h	402 pc/h
Base percent time-spent-following, (note-4) BPTSFd	51.4 %	
Adjustment for no-passing zones, fnp	35.9	
Percent time-spent-following, PTSFd	71.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.30	
Peak 15-min vehicle-miles of travel, VMT15	111	veh-mi
Peak-hour vehicle-miles of travel, VMT60	391	veh-mi
Peak 15-min total travel time, TT15	2.4	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	47.0	mi/h
Percent time-spent-following, PTSFd (from above)	71.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	494.3
Effective width of outside lane, W_e	15.00
Effective speed factor, S_t	4.79
Bicycle LOS Score, B_{LOS}	7.54
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2043
Highway S.R. 54
From/To L.M. 14.90 to L.M. 20.00
Jurisdiction Henry County
Analysis Year 2043
Description No Build

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	3.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	5.1 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	66 %
Up/down	- %	Access point density	2 /mi

Analysis direction volume, Vd 387 veh/h
Opposing direction volume, Vo 258 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.914	0.898
Grade adj. factor, (note-1) fg	0.92	0.82
Directional flow rate, (note-2) vi	523 pc/h	398 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 60.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 2.6 mi/h
Adj. for access point density, (note-3) fA 0.5 mi/h

Free-flow speed, FFSd 56.9 mi/h

Adjustment for no-passing zones, fnp 2.5 mi/h
Average travel speed, ATSD 47.2 mi/h
Percent Free Flow Speed, PFFS 83.0 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.4	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.962	0.935
Grade adjustment factor, (note-1) fg	0.92	0.85
Directional flow rate, (note-2) vi	497 pc/h	369 pc/h
Base percent time-spent-following, (note-4) BPTSFd	49.3 %	
Adjustment for no-passing zones, fnp	37.5	
Percent time-spent-following, PTSFd	70.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	561	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1974	veh-mi
Peak 15-min total travel time, TT15	11.9	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	5.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	47.2	mi/h
Percent time-spent-following, PTSFd (from above)	70.8	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	439.8
Effective width of outside lane, W_e	15.00
Effective speed factor, S_t	4.79
Bicycle LOS Score, $BLOS$	7.48
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2043
Highway S.R. 54
From/To L.M. 20.00 to L.M. 22.24
Jurisdiction Henry County
Analysis Year 2043
Description No Build

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	3.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.2 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	68 %
Up/down	- %	Access point density	7 /mi

Analysis direction volume, Vd 390 veh/h
Opposing direction volume, Vo 260 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.914	0.898
Grade adj. factor, (note-1) fg	0.92	0.83
Directional flow rate, (note-2) vi	527 pc/h	396 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 45.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 2.6 mi/h
Adj. for access point density, (note-3) fA 1.8 mi/h

Free-flow speed, FFSd 40.7 mi/h

Adjustment for no-passing zones, fnp 2.2 mi/h
Average travel speed, ATSD 31.3 mi/h
Percent Free Flow Speed, PFFS 76.9 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)	
PCE for trucks, ET	1.4	1.7	
PCE for RVs, ER	1.0	1.0	
Heavy-vehicle adjustment factor, fHV	0.962	0.935	
Grade adjustment factor, (note-1) fg	0.93	0.85	
Directional flow rate, (note-2) vi	496 pc/h	372 pc/h	
Base percent time-spent-following, (note-4) BPTSFd	49.1	%	
Adjustment for no-passing zones, fnp	37.6		
Percent time-spent-following, PTSFd	70.6	%	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	244	veh-mi
Peak-hour vehicle-miles of travel, VMT60	858	veh-mi
Peak 15-min total travel time, TT15	7.8	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.2	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	31.3	mi/h
Percent time-spent-following, PTSFd (from above)	70.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	40
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	443.2
Effective width of outside lane, W_e	15.00
Effective speed factor, S_t	4.17
Bicycle LOS Score, $BLOS$	6.97
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	MEH	Date	7/15/2019
Agency	TDOT STID	Analysis Year	2018
Jurisdiction	Henry County	Time Period Analyzed	2023
Project Description	S.R. 54 (L.M. 14.02 to L.M. 14.90)		

Direction 1 Geometric Data

Direction 1 Description	NB		
Number of Lanes (N), ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	60.0	Right-Side Lateral Clearance (LC _R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC _L), ft	6
Median Type	TWLTL	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	1.1	Free-Flow Speed (FFS), mi/h	59.7

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	362	Heavy Vehicle Adjustment Factor (f _{HV})	0.877
Peak Hour Factor (PHF)	0.94	Flow Rate (v _p), pc/h/ln	220
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2194
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c _{adj}), pc/h/ln	2194
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.10

Direction 1 Speed and Density

Lane Width Adjustment (f _{LW})	0.0	Average Speed (S), mi/h	59.7
Total Lateral Clearance Adj. (f _{LCL})	0.0	Density (D), pc/mi/ln	3.7
Median Type Adjustment (f _M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f _A)	0.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v _{oL}), veh/h	193	Effective Speed Factor (S _i)	4.79
Effective Width of Volume (W _v), ft	18	Bicycle LOS Score (BLOS)	3.84
Average Effective Width (W _e), ft	24	Bicycle Level of Service (LOS)	D

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2023
Highway S.R. 54
From/To L.M. 14.90 to L.M. 20.00
Jurisdiction Henry County
Analysis Year 2023
Description SR 54 3-lane

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	10.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	5.1 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	75 %
Up/down	- %	Access point density	2 /mi

Analysis direction volume, Vd 323 veh/h
Opposing direction volume, Vo 215 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	2.0	2.2
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.906	0.890
Grade adj. factor, (note-1) fg	0.88	0.79
Directional flow rate, (note-2) vi	460 pc/h	347 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 60.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
Adj. for access point density, (note-3) fA 0.5 mi/h

Free-flow speed, FFSd 59.5 mi/h

Adjustment for no-passing zones, fnp 3.0 mi/h
Average travel speed, ATSD 50.3 mi/h
Percent Free Flow Speed, PFFS 84.5 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.943	0.935
Grade adjustment factor, (note-1) fg	0.88	0.82
Directional flow rate, (note-2) vi	442 pc/h	319 pc/h
Base percent time-spent-following, (note-4) BPTSFd	44.8 %	
Adjustment for no-passing zones, fnp	42.0	
Percent time-spent-following, PTSFd	69.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	468	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1647	veh-mi
Peak 15-min total travel time, TT15	9.3	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	5.1	mi
Length of two-lane highway upstream of the passing lane, Lu	3.6	mi
Length of passing lane including tapers, Lpl	1.3	mi
Average travel speed, ATSD (from above)	50.3	mi/h
Percent time-spent-following, PTSFd (from above)	69.2	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-1.50	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, ATSpl	51.6	
Percent free flow speed including passing lane, PFFSpl	86.8	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	7.76	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-7.56	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.61	
Percent time-spent-following including passing lane, PTSFpl	61.3	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	B	
Peak 15-min total travel time, TT15	9.1	veh-h

Bicycle Level of Service

Posted speed limit, S_p	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	367.0
Effective width of outside lane, W_e	32.00
Effective speed factor, S_t	4.79
Bicycle LOS Score, B_{LOS}	3.40
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2023
Highway S.R. 54
From/To L.M. 20.00 to L.M. 22.24
Jurisdiction Henry County
Analysis Year 2023
Description SR 54 3-lane

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	4.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.2 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	7 /mi

Analysis direction volume, Vd 325 veh/h
Opposing direction volume, Vo 217 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	2.0	2.2
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.906	0.890
Grade adj. factor, (note-1) fg	0.88	0.79
Directional flow rate, (note-2) vi	463 pc/h	351 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 45.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 1.3 mi/h
Adj. for access point density, (note-3) fA 1.8 mi/h

Free-flow speed, FFSd 42.0 mi/h

Adjustment for no-passing zones, fnp 3.0 mi/h
Average travel speed, ATSD 32.6 mi/h
Percent Free Flow Speed, PFFS 77.7 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.943	0.935
Grade adjustment factor, (note-1) fg	0.88	0.82
Directional flow rate, (note-2) vi	445 pc/h	322 pc/h
Base percent time-spent-following, (note-4) BPTSFd	44.8 %	
Adjustment for no-passing zones, fnp	43.5	
Percent time-spent-following, PTSFd	70.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	203	veh-mi
Peak-hour vehicle-miles of travel, VMT60	715	veh-mi
Peak 15-min total travel time, TT15	6.2	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.2	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	32.6	mi/h
Percent time-spent-following, PTSFd (from above)	70.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	40
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	369.3
Effective width of outside lane, W_e	16.00
Effective speed factor, S_t	4.17
Bicycle LOS Score, B_{LOS}	6.72
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	MEH	Date	7/15/2019
Agency	TDOT STID	Analysis Year	2018
Jurisdiction	Henry County	Time Period Analyzed	2043
Project Description	S.R. 54 (L.M. 14.02 to L.M. 14.90)		

Direction 1 Geometric Data

Direction 1 Description	NB		
Number of Lanes (N), ln	2	Terrain Type	Rolling
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	60.0	Right-Side Lateral Clearance (LC _R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC _L), ft	6
Median Type	TWLTL	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	1.1	Free-Flow Speed (FFS), mi/h	59.7

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	435	Heavy Vehicle Adjustment Factor (f _{HV})	0.877
Peak Hour Factor (PHF)	0.94	Flow Rate (v _p), pc/h/ln	264
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2194
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c _{adj}), pc/h/ln	2194
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.12

Direction 1 Speed and Density

Lane Width Adjustment (f _{LW})	0.0	Average Speed (S), mi/h	59.7
Total Lateral Clearance Adj. (f _{LC})	0.0	Density (D), pc/mi/ln	4.4
Median Type Adjustment (f _M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f _A)	0.3		

Direction 1 Bicycle LOS

Flow Rate in Outside Lane (v _{oL}), veh/h	231	Effective Speed Factor (S _i)	4.79
Effective Width of Volume (W _v), ft	18	Bicycle LOS Score (BLOS)	3.94
Average Effective Width (W _e), ft	24	Bicycle Level of Service (LOS)	D

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2043
Highway S.R. 54
From/To L.M. 14.90 to L.M. 20.00
Jurisdiction Henry County
Analysis Year 2043
Description SR 54 3-lane

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	10.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	5.1 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	75 %
Up/down	- %	Access point density	2 /mi

Analysis direction volume, Vd 387 veh/h
Opposing direction volume, Vo 258 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.914	0.898
Grade adj. factor, (note-1) fg	0.92	0.82
Directional flow rate, (note-2) vi	523 pc/h	398 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 60.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
Adj. for access point density, (note-3) fA 0.5 mi/h

Free-flow speed, FFSd 59.5 mi/h

Adjustment for no-passing zones, fnp 2.7 mi/h
Average travel speed, ATSD 49.7 mi/h
Percent Free Flow Speed, PFFS 83.5 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.962	0.935
Grade adjustment factor, (note-1) fg	0.92	0.85
Directional flow rate, (note-2) vi	497 pc/h	369 pc/h
Base percent time-spent-following, (note-4) BPTSFd	49.3 %	
Adjustment for no-passing zones, fnp	38.1	
Percent time-spent-following, PTSFd	71.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	561	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1974	veh-mi
Peak 15-min total travel time, TT15	11.3	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	5.1	mi
Length of two-lane highway upstream of the passing lane, Lu	3.6	mi
Length of passing lane including tapers, Lpl	1.3	mi
Average travel speed, ATSD (from above)	49.7	mi/h
Percent time-spent-following, PTSFd (from above)	71.2	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-1.50	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, ATSpl	51.0	
Percent free flow speed including passing lane, PFFSpl	85.8	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	7.32	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-7.12	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.61	
Percent time-spent-following including passing lane, PTSFpl	63.0	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	B	
Peak 15-min total travel time, TT15	11.0	veh-h

Bicycle Level of Service

Posted speed limit, S_p	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	439.8
Effective width of outside lane, W_e	32.00
Effective speed factor, S_t	4.79
Bicycle LOS Score, $BLOS$	3.49
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst MEH
Agency/Co. TDOT STID
Date Performed 7/15/2019
Analysis Time Period 2043
Highway S.R. 54
From/To L.M. 20.00 to L.M. 22.24
Jurisdiction Henry County
Analysis Year 2043
Description SR 54 3-lane

Input Data

Highway class	Class 3	Peak hour factor, PHF	0.88
Shoulder width	4.0 ft	% Trucks and buses	10 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.2 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	4 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	7 /mi

Analysis direction volume, Vd 390 veh/h
Opposing direction volume, Vo 260 veh/h

Average Travel Speed

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.914	0.898
Grade adj. factor, (note-1) fg	0.92	0.83
Directional flow rate, (note-2) vi	527 pc/h	396 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed, (note-3) S FM - mi/h
Observed total demand, (note-3) V - veh/h

Estimated Free-Flow Speed:

Base free-flow speed, (note-3) BFFS 45.0 mi/h
Adj. for lane and shoulder width, (note-3) fLS 1.3 mi/h
Adj. for access point density, (note-3) fA 1.8 mi/h

Free-flow speed, FFSd 42.0 mi/h

Adjustment for no-passing zones, fnp 2.7 mi/h
Average travel speed, ATSD 32.1 mi/h
Percent Free Flow Speed, PFFS 76.4 %

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.4	1.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.962	0.935
Grade adjustment factor, (note-1) fg	0.93	0.85
Directional flow rate, (note-2) vi	496 pc/h	372 pc/h
Base percent time-spent-following, (note-4) BPTSFd	49.1 %	
Adjustment for no-passing zones, fnp	39.7	
Percent time-spent-following, PTSFd	71.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.27	
Peak 15-min vehicle-miles of travel, VMT15	244	veh-mi
Peak-hour vehicle-miles of travel, VMT60	858	veh-mi
Peak 15-min total travel time, TT15	7.6	veh-h
Capacity from ATS, CdATS	1644	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1644	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.2	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSD (from above)	32.1	mi/h
Percent time-spent-following, PTSFd (from above)	71.8	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, S_p	40
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, v_{OL}	443.2
Effective width of outside lane, W_e	16.00
Effective speed factor, S_t	4.17
Bicycle LOS Score, $BLOS$	6.81
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

7.3 Crash Analysis

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Henry	Date: 7/17/2018
Route	= S.R. 54	
Location	= From Near Smith Road in Paris to Crossland Road/Brannon Lane (North of Puryear)	
Highway Type	= Rural Two Lane	
FUNCTIONAL CLASS	= Rural Other Principal Arterial	
DATA YEARS	= 7/1/2015 to 6/30/18	
ADT YEARS USED	= E-TRIMS 2017	
COMMENTS	=	
ANALYZED BY	= Michelle Hunt	

SECTION = MORE THAN 0.10 MILE / SPOT= LESS THAN OR EQUAL TO 0.10 MILE

BLM	ELM	Length	Average AADT	VMT
14.020	15.340	1.320	5,730	7,564
15.340	21.101	5.761	4,890	28,171
21.101	23.466	2.365	5,270	12,464
0.000	0.000	0.000		0
0.000	0.000	0.000		0
0.000	0.000	0.000		0
0.000	0.000	0.000		0
		9.446	5,103	48,198

INTERSECTION

Log Mile =

Leg	Traffic AADT
North	=
East	=
South	=
West	=

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and its production pursuant to a public
document records request does not
waive the provisions of §409

Entering AADT = 0
E-Trims 2017

Rural Two Lane
7/1/2015 To 6/30/18

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	35	0	5	5	9
No. of Years	=	3				
SW avg. rate	=	1.596	0.024	0.113	0.137	0.390
14-16 S/W Rates						
Exposure (E)	=	52.7773				
Crash Rate (A)	=	0.663	0.000	0.095	0.095	0.171
Critical Rate (C)	=	2.010				
Severity Index (SI)	=	0.5429				
Actual Rate/SW Average	=	0.42	0.00	0.84	0.69	0.44
Ratio of A/C	=	0.33				

* Severe Crashes are the sum of fatal and incapacitating injury crashes

Revised 11/3/2009

T.D.O.T. STRATEGIC TRANSPORTATION INVESTMENTS DIVISION (SAFETY DATA SECTION) Michelle Hunt

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TYPE	YEAR	COUNTY	FIGURE NO.
TR	2018	HENRY	1

MATCH LINE LOG MILE 14.26 SEE FIGURE NO. 2

BEGIN PROJECT
LOG MILE 14.02

SMITH RD

TRANGLEWOOD LN.

CONDITION CODES LEGEND

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

X - X - X - #

NUMBER OF VEHICLES

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

● FATAL CRASH
● INCAPACITATING/SUSPECT SERIOUS INJURY CRASH
● NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH
● PROPERTY DAMAGE CRASH

NUMBER OF CRASHES

Time: A=AM P=PM
☐ Parked Vehicle
☐ Object (Specify)

TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 1
S.R. 54
L.M. 14.02 to
L.M. 14.26



CONDITION CODES LEGEND

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

X - X - X - #

NUMBER OF VEHICLES

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

NUMBER OF CRASHES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

☐ Parked Vehicle

☐ Object (Specify)



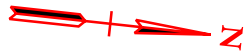
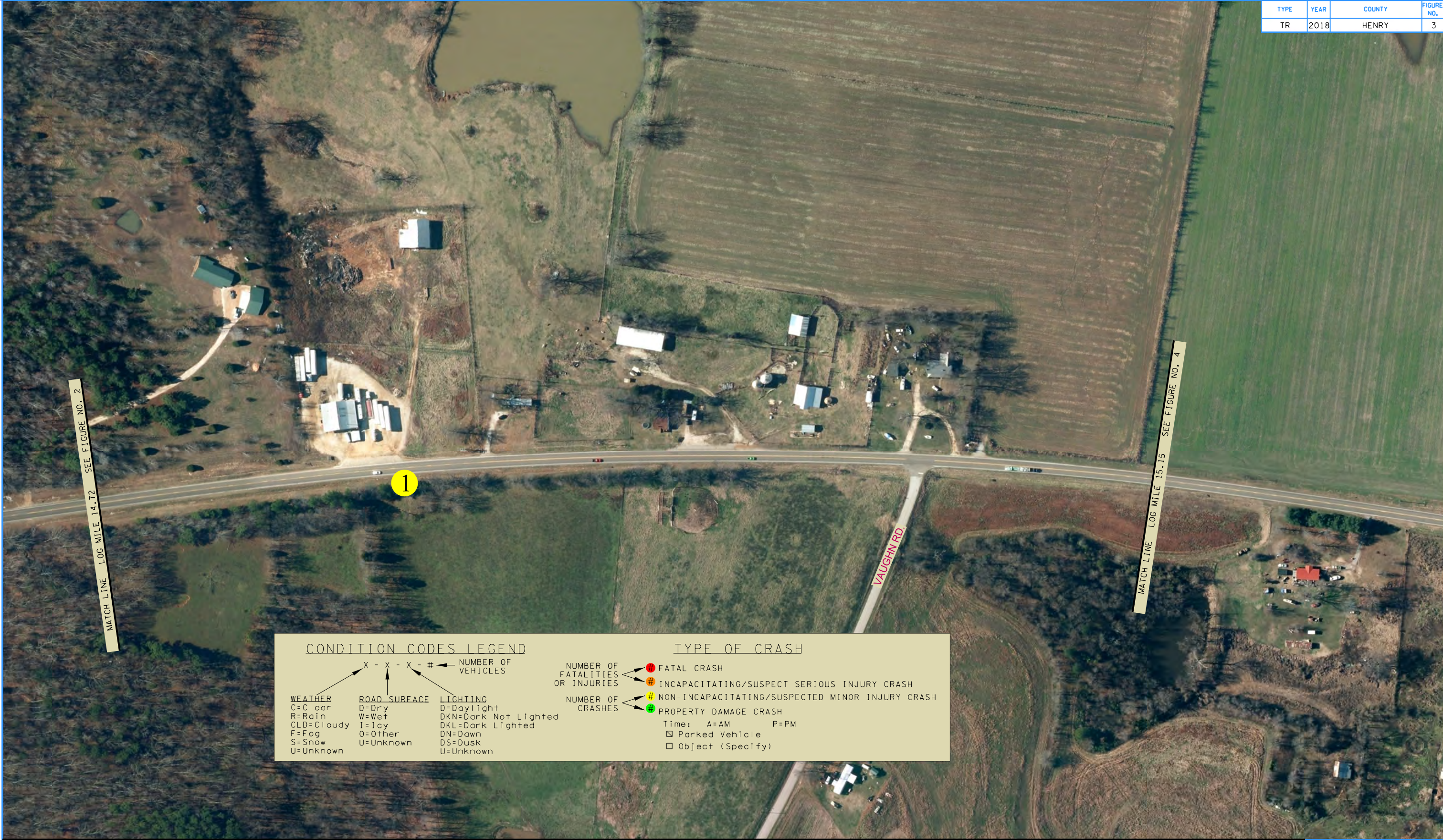
TECHNICAL REPORT

STATE ROUTE 54

L.M. 14.02 TO L.M. 23.48

HENRY COUNTY

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2018	HENRY	3

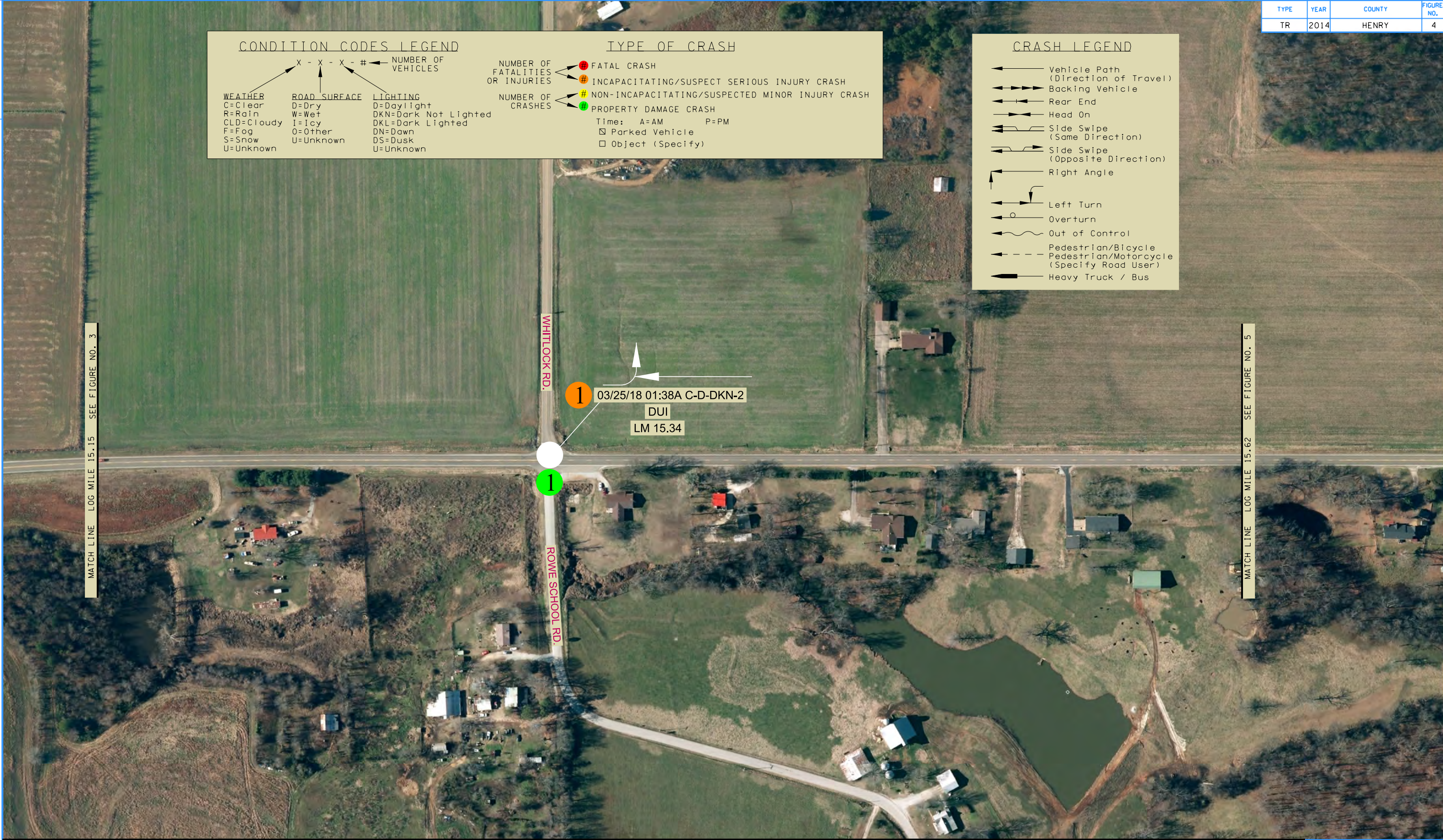


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 3
S.R. 54
L.M. 14.72 to
L.M. 15.15



CONDITION CODES LEGEND

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Down
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

NUMBER OF CRASHES

FATAL CRASH
INCAPACITATING/SUSPECT SERIOUS INJURY CRASH
NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH
PROPERTY DAMAGE CRASH

Time: A=AM P=PM
Parked Vehicle
Object (Specify)

CRASH LEGEND

Vehicle Path (Direction of Travel)

Backing Vehicle

Rear End

Head On

Side Swipe (Same Direction)

Side Swipe (Opposite Direction)

Right Angle

Left Turn

Overturn

Out of Control

Pedestrian/Bicycle

Pedestrian/Motorcycle (Specify Road User)

Heavy Truck / Bus

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2014	HENRY	4



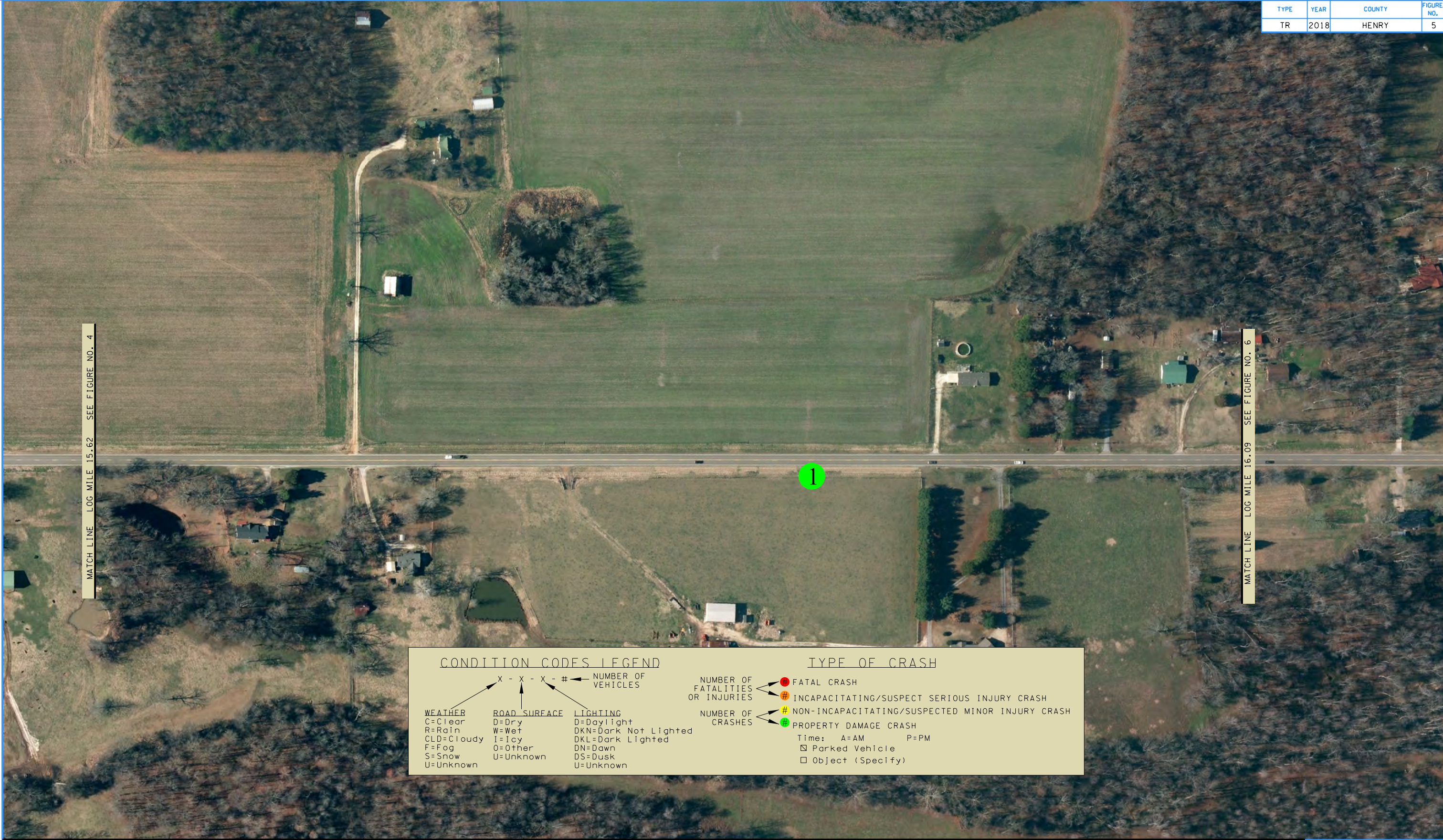
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 4
S.R. 54
L.M. 15.15 to
L.M. 15.62

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CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER

C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE

D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING

D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NUMBER OF CRASHES

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)

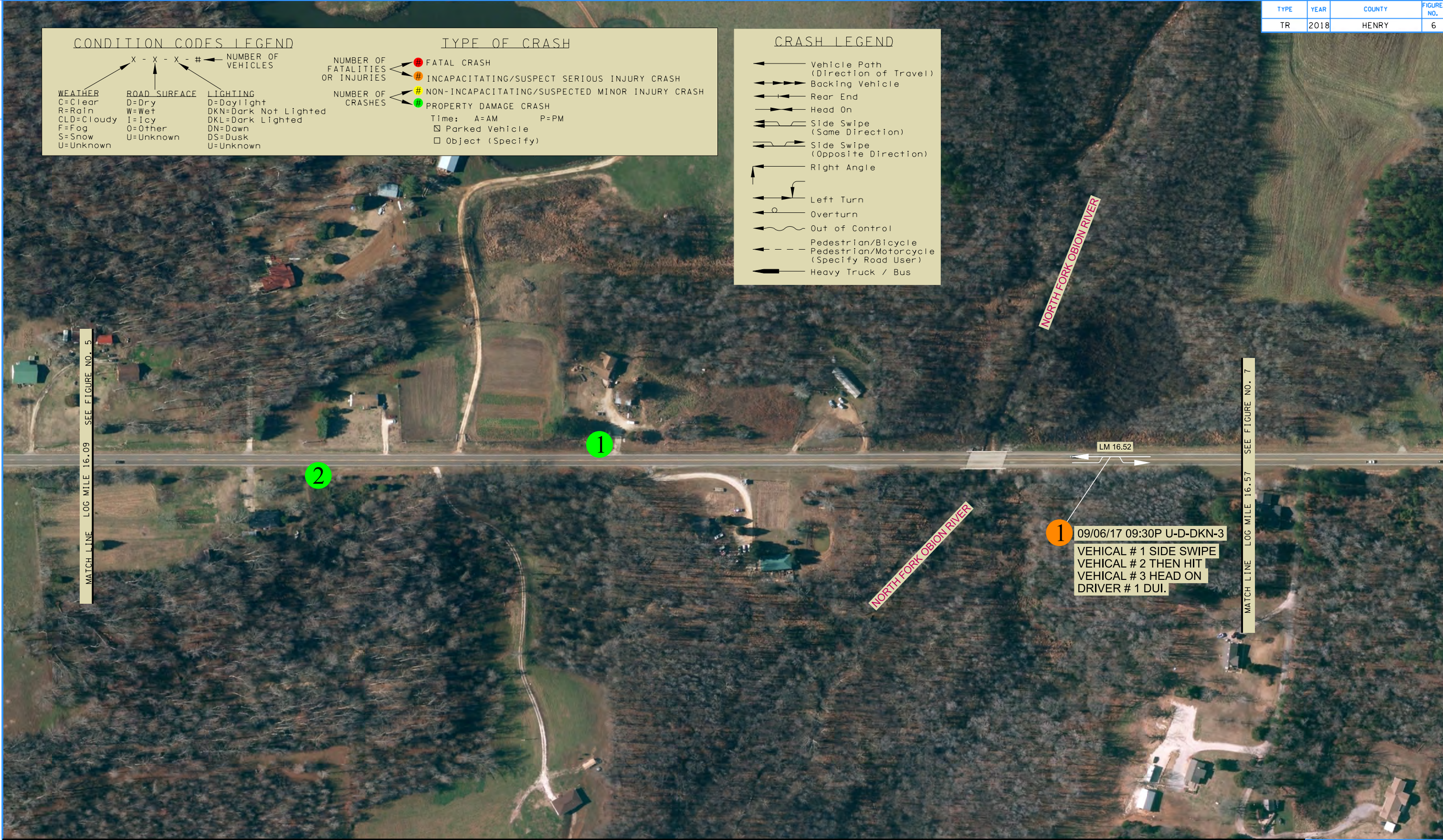


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 5
S.R. 54
L.M. 15.62 to
L.M. 16.09



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

CONDITION CODES LEGEND

X - X - X - #

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

NUMBER OF CRASHES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)

CRASH LEGEND

Vehicle Path (Direction of Travel)

Backing Vehicle

Rear End

Head On

Side Swipe (Same Direction)

Side Swipe (Opposite Direction)

Right Angle

Left Turn

Overturn

Out of Control

Pedestrian/Bicycle

Pedestrian/Motorcycle (Specify Road User)

Heavy Truck / Bus

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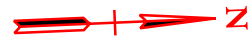
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 7
S.R. 54
L.M. 16.57 to
L.M. 17.02

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2018	HENRY	8



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
S.R. 54
L.M. 17.02 to
L.M. 17.50



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)

CRASH LEGEND

Vehicle Path (Direction of Travel)

Backing Vehicle

Rear End

Head On

Side Swipe (Same Direction)

Side Swipe (Opposite Direction)

Right Angle

Left Turn

Overturn

Out of Control

Pedestrian/Bicycle

Pedestrian/Motorcycle (Specify Road User)

Heavy Truck / Bus

MATCH LINE LOG MILE 17.97 SEE FIGURE NO. 9

MATCH LINE LOG MILE 18.45 SEE FIGURE NO. 11



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

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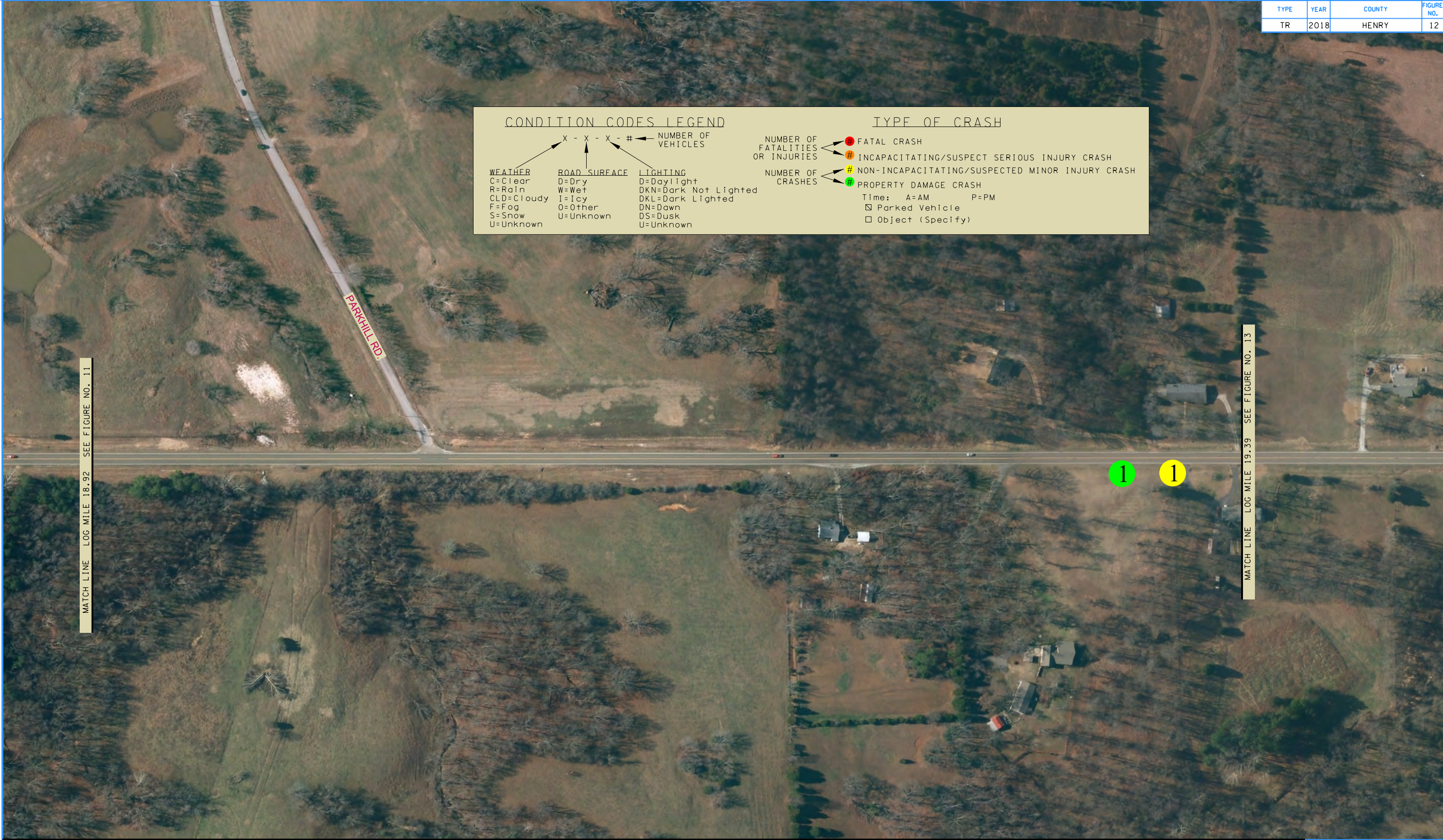


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 11
S.R. 54
L.M. 18.45 to
L.M. 18.92



TYPE	YEAR	COUNTY	FIGURE NO.
TR	2018	HENRY	12

CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER

C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE

D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING

D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

NUMBER OF CRASHES

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)

TECHNICAL REPORT

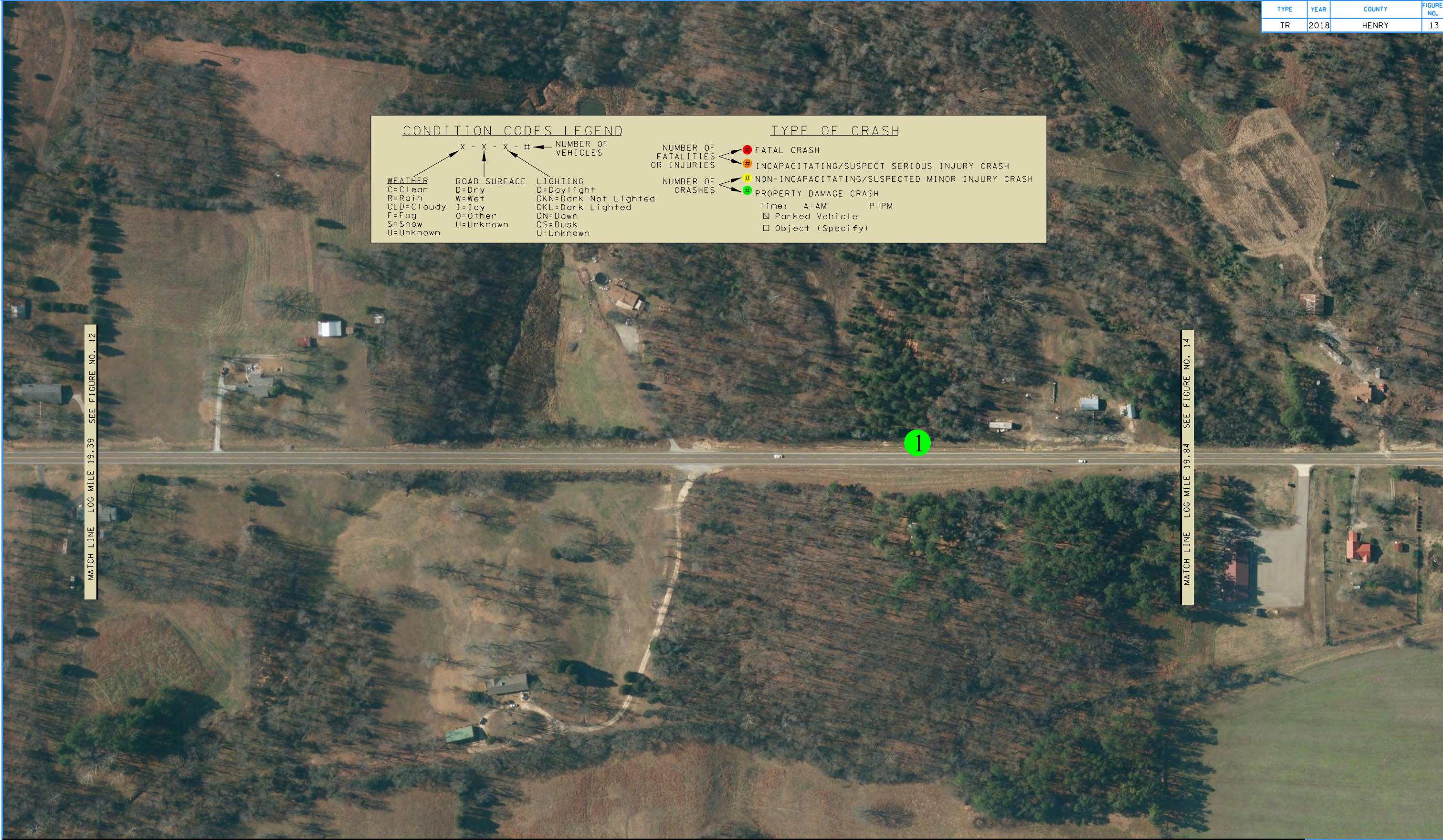
STATE ROUTE 54

L.M. 14..02 TO L.M. 23.48

HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 12
S.R. 54
L.M. 18.92 to
L.M. 19.39



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 14
S.R. 54
L.M. 19.84 to
L.M. 20.30

CONDITION CODES LEGEND

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

NUMBER OF FATALITIES OR INJURIES

NUMBER OF CRASHES

TYPE OF CRASH

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)

CRASH LEGEND

Vehicle Path (Direction of Travel)

Backing Vehicle

Rear End

Head On

Side Swipe (Same Direction)

Side Swipe (Opposite Direction)

Right Angle

Left Turn

Overtake

Out of Control

Pedestrian/Bicycle

Pedestrian/Motorcycle (Specify Road User)

Heavy Truck / Bus



MATCH LINE LOG MILE 20.79 SEE FIGURE NO. 16

LM 20.78

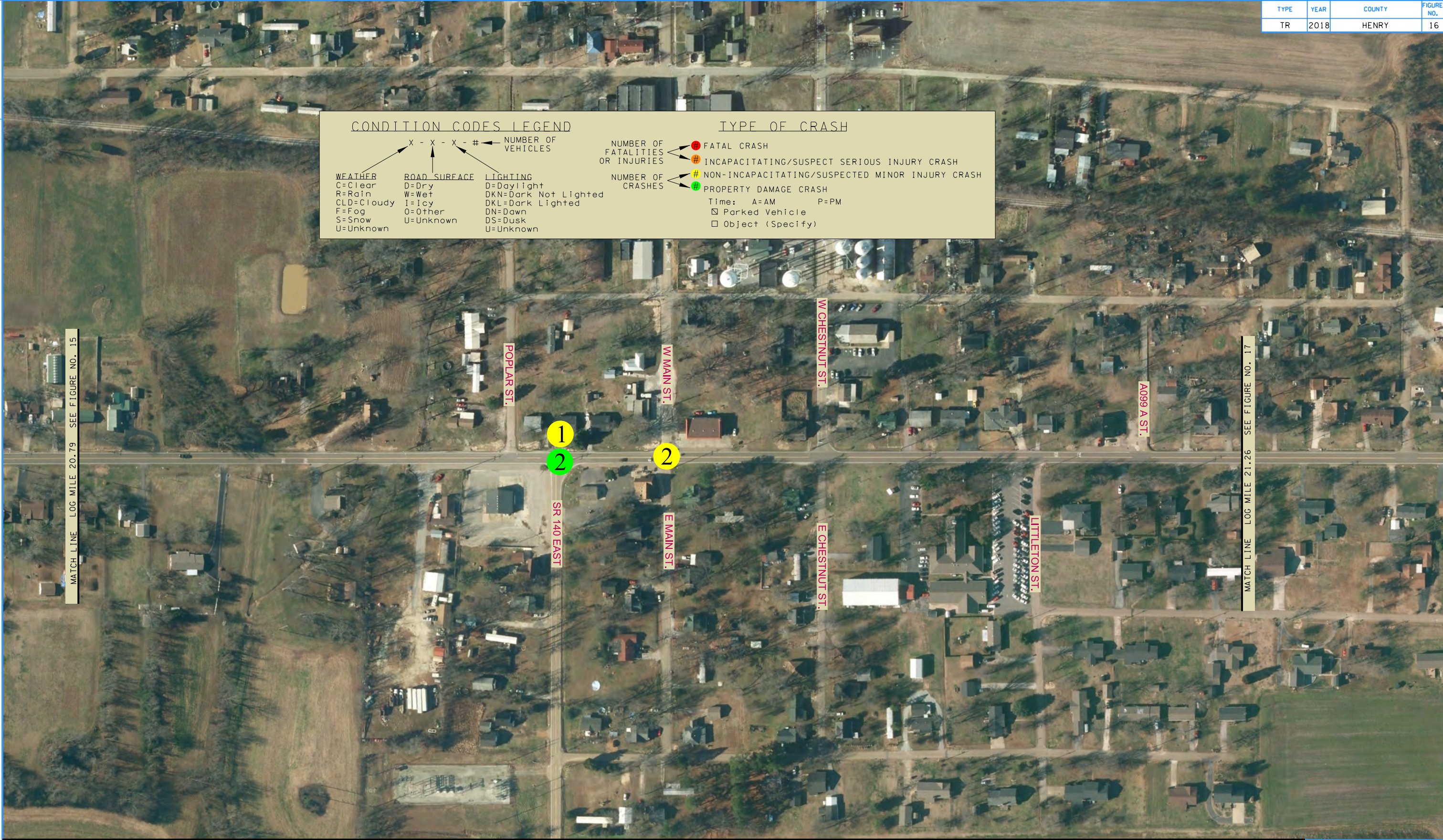
TECHNICAL REPORT

STATE ROUTE 54

L.M. 14.02 TO L.M. 23.48

HENRY COUNTY

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CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

NUMBER OF CRASHES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 16
S.R. 54
L.M. 20.79 to
L.M. 21.26



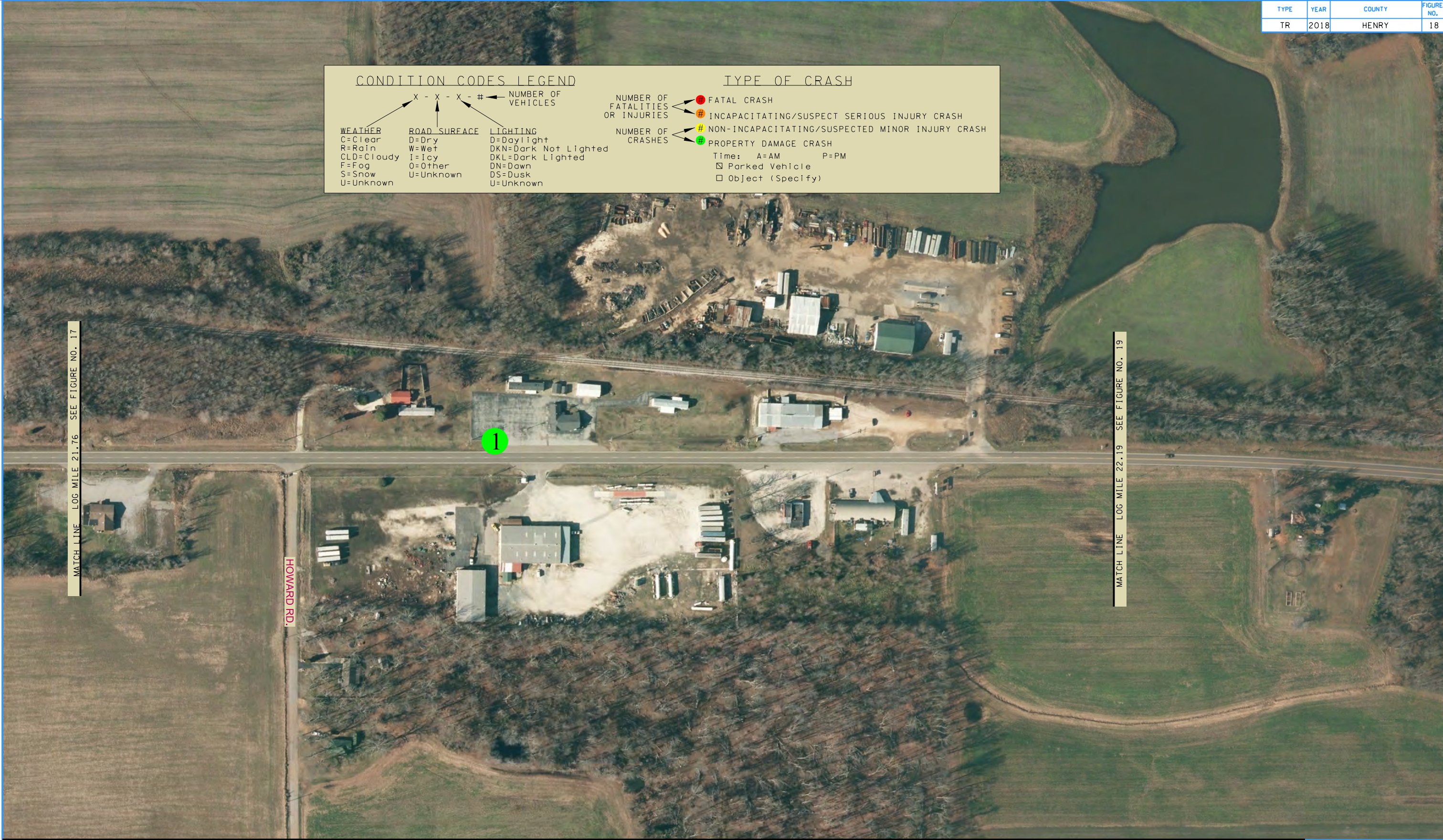
TYPE	YEAR	COUNTY	FIGURE NO.
TR	2018	HENRY	17



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

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CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER

C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE

D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING

D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

NUMBER OF CRASHES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

☒ Parked Vehicle

☐ Object (Specify)

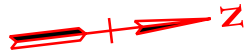
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 18
S.R. 54
L.M. 21.76 to
L.M. 22.19

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TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

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CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER

C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE

D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING

D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

PROPERTY DAMAGE CRASH

NUMBER OF CRASHES

Time: A=AM P=PM

☒ Parked Vehicle

☐ Object (Specify)

TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 20
S.R. 54
L.M. 22.64 to
L.M. 23.09

TYPE	YEAR	COUNTY	FIGURE NO.
TR	2018	HHENRY	21

CONDITION CODES LEGEND

X - X - X - #

NUMBER OF VEHICLES

WEATHER

C=Clear

R=Rain

CLD=Cloudy

F=Fog

S=Snow

U=Unknown

ROAD SURFACE

D=Dry

W=Wet

I=Icy

O=Other

U=Unknown

LIGHTING

D=Daylight

DKN=Dark Not Lighted

DKL=Dark Lighted

DN=Dawn

DS=Dusk

U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

FATAL CRASH

INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NON-INCAPACITATING/SUSPECTED MINOR INJURY CRASH

NUMBER OF CRASHES

PROPERTY DAMAGE CRASH

Time: A=AM P=PM

Parked Vehicle

Object (Specify)

MATCH LINE LOG MILE 23.09 SEE FIGURE NO. 20

CROSSLAND RD.

BRANNON LN.

END PROJECT
LOG MILE 23.48

TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 23.48
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 21
S.R. 54
L.M. 23.09 to
L.M. 23.48

7.4 Relevant Ecology Species

1 Mile Species

SCIENTIFIC_NAME	COMMON_NAME	LAST_OBS_DATE	FED_PROTECTION	HABITAT_
Silphium laciniatum	Compass Plant	1977-06-09	--	Barrens
Etheostoma pyrrhogaster	Firebelly Darter	1982-11-06	--	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.
Etheostoma pyrrhogaster	Firebelly Darter	1978-05	--	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.
Polygonum arifolium	Halberd-leaf Tearthumb	2003-03	--	Wetlands And Marshes
Juncus brachyphyllus	Shortleaf Rush	1980-07-05	--	Wet Sandy Areas
Myriophyllum pinnatum	Cutleaf Water-milfoil	1975-07-18	--	Acidic Wetland And Ponds
Salvia azurea var. grandiflora	Blue Sage	1980-10-11	--	Barrens
Myriophyllum pinnatum	Cutleaf Water-milfoil	1979-07-06	--	Acidic Wetland And Ponds
Polygonum arifolium	Halberd-leaf Tearthumb	2003-03	--	Wetlands And Marshes

4 Mile Species

SCIENTIFIC_NAME	COMMON_NAME	LAST_OBS_DATE	FED_PROTECTION	HABITAT_
Etheostoma pyrrhogaster	Firebelly Darter	1971-10-30	--	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.
Didiplis diandra	Water-purslane	1975-08-21	--	Swamps
Orconectes burri	Blood River Crayfish	2006-09-30	--	In woody debris or leaf piles, small-medium sized streams with sand-gravel substrates; Blood River drainage (TN River), Henry County.
Orconectes burri	Blood River Crayfish	2009-04-21	--	In woody debris or leaf piles, small-medium sized streams with sand-gravel substrates; Blood River drainage (TN River), Henry County.
Etheostoma pyrrhogaster	Firebelly Darter	1994-04-20	--	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.
Orconectes taylori	Crescent crayfish	2006-03-16	--	Found among woody debris & tree roots; small-med size tribs of N Fk Obion River with slow-mod current; Henry County.
Orconectes taylori	Crescent crayfish	1971	--	Found among woody debris & tree roots; small-med size tribs of N Fk Obion River with slow-mod current; Henry County.
Silphium laciniatum	Compass Plant	1976-08-06	--	Barrens
Etheostoma pyrrhogaster	Firebelly Darter	1973-04-24	--	Sand- and gravel-bottomed pools of headwaters, creeks, and small

SCIENTIFIC_NAME	COMMON_NAME	LAST_OBS_DATE	FED_PROTECTION	HABITAT_
				rivers; upper Coastal Plain in Obion River watershed; west Tennessee.
Silphium laciniatum	Compass Plant	1976-08-06	--	Barrens
Orconectes burri	Blood River Crayfish	2006-09-29	--	In woody debris or leaf piles, small-medium sized streams with sand-gravel substrates; Blood River drainage (TN River), Henry County.
Etheostoma pyrrhogaster	Firebelly Darter	1993-05-27	--	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.
Orconectes taylori	Crescent crayfish	2005-11-05	--	Found among woody debris & tree roots; small-med size tribs of N Fk Obion River with slow-mod current; Henry County.
Orconectes taylori	Crescent crayfish	2007-03-16	--	Found among woody debris & tree roots; small-med size tribs of N Fk Obion River with slow-mod current; Henry County.

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix E

PIN 101886.02

Public Involvement

PUBLIC NOTICE

Notice of Solicitation of Public Comment

State Route 54 (U.S. Highway 641), From Near Smith Road to Near Howard Road (North of Puryear)
Henry County, Tennessee, PIN 101886.02

The Tennessee Department of Transportation (TDOT) is issuing a public notice for the solicitation of public comment concerning the preparation of a National Environmental Policy Act (NEPA) (Construction) Reevaluation for the improvement of State Route (SR) 54 (U.S. Highway 641) (US-641) from near Smith Road to near Howard Road (North of Puryear) Henry County (PIN101886.02), in accordance with Title 23 of the Code of Federal Regulations (CFR) 771.129. This project is a segment of the larger SR-54 (US-641) project that is discussed in further detail below.

An Environmental Assessment (EA) was approved by the Federal Highway Administration (FHWA) on October 21, 2010. The EA proposed improvements to SR-54 from SR-69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear) in Henry County (PIN 101886.00). Following the approval of the EA, TDOT held a Public Hearing for the proposed project on January 25, 2011. The comments from this meeting were incorporated into the Finding of No Significant Impact (FONSI), prepared pursuant to the NEPA and approved by the FHWA on June 15, 2011. Following approval of the FONSI, the Selected (Build) Alternative has been divided into the following two design segments for construction purposes:

- **Design Segment 1 (PIN 101886.01):** SR-54 (US-641), From near Rison Street to near Smith Road. This design segment was let to construction in August 2017.
- **Design Segment 2 (PIN 101886.02):** SR-54 (US-641), From near Smith Road to near Howard Road (North of Puryear)– This design segment is the focus of this NEPA (Construction) Reevaluation.

In April 2020, TDOT prepared a Design Technical Report for Design Segment 2 (PIN 101886.02), from near Smith Road to near Howard Road (North of Puryear). Within the 2020 Design Technical Report, TDOT is now proposing the following design specifics:

- **Near Smith Road to SR-218–** Widen existing SR-54 (US-641) to an improved rural five lane typical section consisting of four 12-foot travel lanes, a 12-foot two-way left-turn lane, and six-foot paved shoulders using a design speed of 50 miles per hour (mph). Curb and gutter are to be constructed on both sides of the roadway.
- **From SR-218 to South of Puryear–** Widen existing SR-54 (US-641) to an improved rural three lane typical section consisting of two 12-foot travel lanes, a 12-foot two-way left-turn lane, and ten-foot paved shoulders using a design speed of 60 mph. The bridge over North Fork Obion River at Log Mile 16.47 and the bridge over Rowe Creek at Log Mile 17.13 are proposed to be widened.
- **From South of Puryear to North of Puryear–** Widen existing SR-54 (US-641) throughout the City of Puryear to an improved rural three lane typical section consisting of two 12-foot travel lanes, a 12-foot two-way left-turn lane, and four-foot paved shoulders utilizing a design speed of 45 mph.
- **Passing Lanes –** Passing lanes in either direction are proposed in order to provide adequate distance for vehicles, particularly heavy vehicles, to pass slower-moving vehicles.
 - Southbound Passing Lane- Proposed from south of Parkhill Road to north of Wyninger Road.
 - Northbound Passing Lane- Proposed from south of Parkhill Road to south of Puryear Country Club Road.

The Design Technical Report (dated April 2020) indicates that the project's major design features have not changed since approval of 2011 FONSI. In addition, the basic settings of the affected environment have not been altered and the project corridor is of essentially the same character as previously studied, with no substantial modifications of land use or new development. There are no other changes to the project that would alter findings documented in the approved 2011 FONSI.

Requests for a copy of the 2020 Design Technical Report can be made by contacting:

Mr. Dennis Moultrie
Tennessee Department of Transportation
Region 4 Project Development Office
300 Benchmark Place
Jackson, Tennessee 38301
Office: (731)-935-0339
Email: Dennis.Moultrie@tn.gov

For further information regarding the project, please contact:

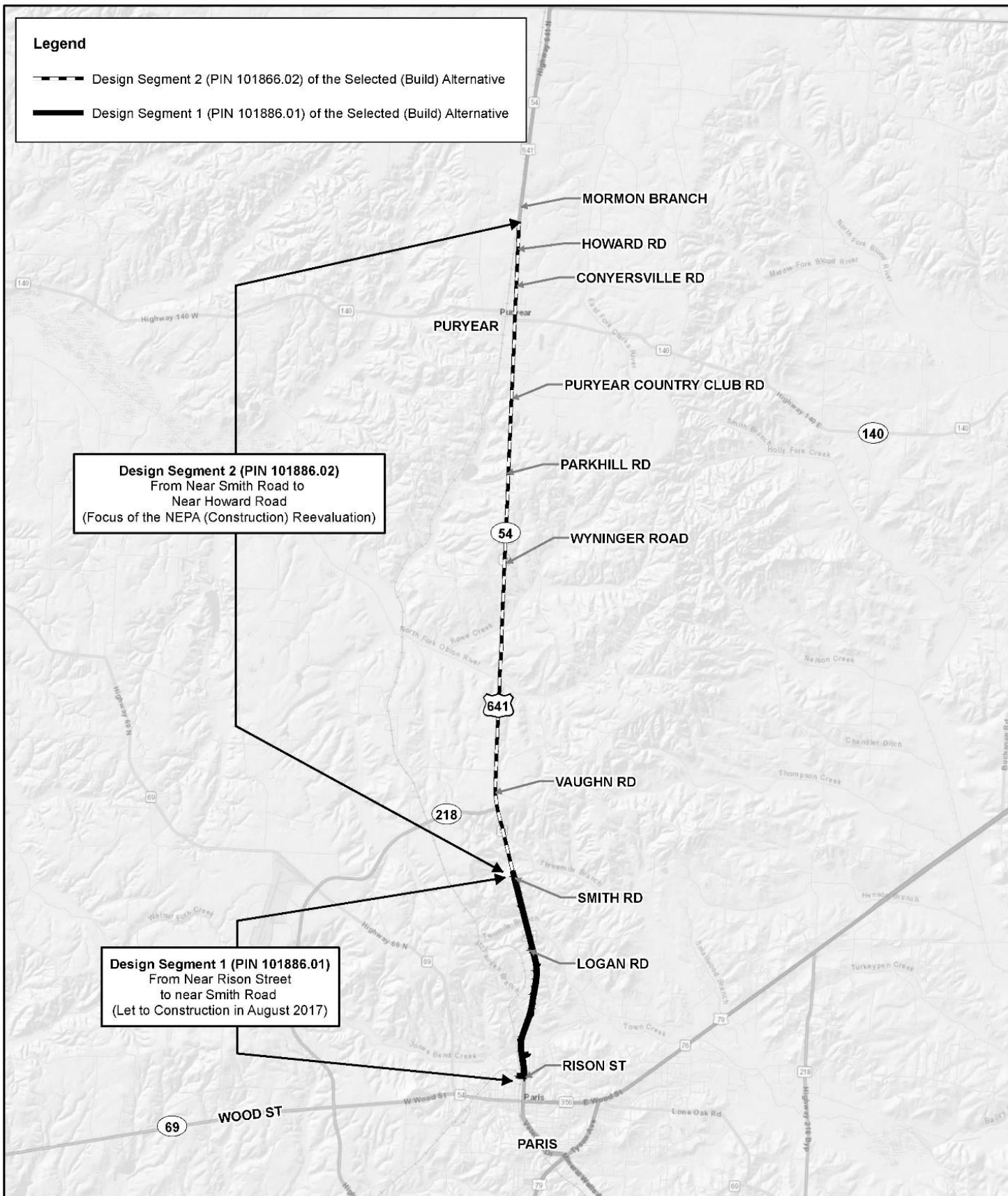
Mr. Sam Patterson
Tennessee Department of Transportation
Environmental Division/NEPA Programs Office
505 Deaderick Street
Nashville, Tennessee 37243
Office: (615) 253-2464
Email: Samuel.T.Patterson@tn.gov

Any comments regarding this public notice should be provided in writing and sent to the address below or by email to TDOT.Comments@tn.gov.

Written statements should be submitted within 21 days after publication to the following address:

Project Comments
Attn: SR-54 (US-641) Project, PIN 101886.02
Tennessee Department of Transportation
Suite 700, James K. Polk Building,
505 Deaderick Street, Nashville, TN 37243-0332

TDOT is an Equal Opportunity Employer and does not discriminate on the basis of race, age, sex, religion, color, disability or national.



OVERVIEW MAP

0 1.5 3 Miles



PROJECT

STATE ROUTE 54 (US-641)

From SR-69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear)
Henry County, Tennessee, PIN 101886.00



TDOT
Department of
Transportation

TN PRESS SERVICE

Knoxville, TN

(865) 584-5761

Fri, Feb 19 2022

Paris - The Paris Post-Intelligencer
Paris, TN

PUBLIC NOTICE

Notice of Solicitation of Public Comment

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Henry County, Tennessee, PIN 101886.02**

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 - **From South of Puryear to North of Puryear-** Widen existing SR-54 (US-641) throughout the City of Puryear to an improved rural three lane typical section consisting of two 12-foot travel lanes, a 12-foot two-way left-turn lane, and four-foot paved shoulders utilizing a design speed of 45 mph.
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can be made by contacting:

For further information regarding the project,
please contact:

Mr. Dennis Moultrie
Tennessee Department of Transportation
Region 4 Project Development Office
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Jackson, Tennessee 38301
Office: (731)-935-0339
Email: Dennis.Moultrie@tn.gov

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Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix F
PIN 101886.02
Conceptual Stage
Relocation Plan



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

RIGHT OF WAY DIVISION
SUITE 600, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3196

CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

CONCEPTUAL STAGE RELOCATION PLAN

County	Henry County		
Route	SR-54		
PIN	101886.02		
State Project No.	40003-1222-14	Federal Project No.	NH-54(43)

Termini: From Smith Road to near Howard Springs Road.

PROJECT INFORMATION: In order to improve safety and relieve traffic congestion, the Tennessee Department of Transportation (**TDOT**) is proposing to widen and realign 8.22± miles of SR-54 in Henry County. This project will tie into the State of Kentucky 3-lane on 5-lane highway project to be constructed by Kentucky Transportation Cabinet.

A map showing the location of the proposed project is provided on Page 4 of this report.

According to the submitted Functional plans, typical sections will contain the following:

Two 12 ft. travel lanes in each direction, 12 ft. center turn lane, 6 ft. outside shoulders, curb and gutter.

12 ft. travel lanes in each direction, 12 ft. center turn lane, and 10 ft. outside shoulders.

12 ft. travel lanes in each direction, 12 ft. center turn lane, and 4 ft. outside shoulders.

Right-of-way width will vary, depending on construction requirements.

For specific detail regarding typical sections and other project information, refer to the separately attached CSRP Marked Plans.

AREA INFORMATION: The subject area is located in the North central portion of Henry County. Current land use in the project area is commercial and residential.

According to the U. S. Census Bureau, the population for Henry County in 2019 was estimated to be 32,345. This reflects a 0% increase since the 2010 census.

ENVIRONMENTAL TECHNICAL STUDY AREA: For the purpose of this study, the project study area limits extend beyond the immediate area of the proposed improvements described in Project Information Section. The project study area limits are bounded by the limits of the Environmental Technical Study Area (ETSA). The ETSA for the project is based on conceptual level plans and encompasses an area that is generally 250 feet on either side of the proposed centerline, extends 300 feet from the project termini, and extends 150 feet from intersections with side roads.

Potential impacts of both Build Alternatives were based on impacts occurring within the entire ETSA. As such, the impacts presented are an overall assessment since the ETSA encompasses an area greater than the proposed right-of-way necessary for the project. As design for the project progresses, the design will be further refined to avoid and/or minimize impacts to the extent practicable.

STRUCTURES WITHIN ETSA	
SINGLE FAMILY RESIDENCES	94
MOBILE HOME RESIDENCES	9
MULTI FAMILY RESIDENCES	3
BUSINESSES	18
NON-PROFITS	2

*Data represents a worst-case scenario and identifies structures within the ETSA boundary. This information was obtained via a desktop review of aerial imagery only.

DISPLACEMENTS:

ANTICIPATED RELOCATIONS	
SINGLE FAMILY RELOCATIONS	13
MOBILE HOME RELOCATIONS	2
MULTI FAMILY RELOCATIONS	3
BUSINESS RELOCATIONS	5
NON-PROFIT	1

DISPLACEMENT EFFECTS AND ANALYSIS

Single-Family

ETSA LIMITS

Within the ETSA boundary 94 (ninety-four) single-family residences were identified through a desktop review of aerial imagery only.

RIGHT-OF-WAY LIMITS

Construction of this project is expected to displace 13 (thirteen) single-family residences. Out of the 13 (thirteen) residences, 1 (one) is vacant but suitable for occupancy. Based on observation, the affected homes appear to be typical in size and age for the area.

Mobile Home

ETSA LIMITS

Within the ETSA boundary 9 (nine) mobile home residences were identified through a desktop review of aerial imagery only.

RIGHT-OF-WAY LIMITS

This project is expected to cause 2 (two) mobile home displacements. It is unknown at this time if the occupants are owners or tenants.

Multi-Family

ETSA LIMITS

Within the ETSA boundary 1 (one) multi-family apartment building with 3 (three) residential units was identified through desktop review of aerial imagery only.

RIGHT-OF-WAY LIMITS

This project is expected to cause the relocation of 1 (one) multi-family apartment building containing 3 (three) residential units.

Business

ETSA LIMITS

Within the ETSA boundary 18 (eighteen) businesses were identified through a desktop review of aerial imagery only.

RIGHT-OF-WAY LIMITS

According to the functional plans provided, this project is expected to displace a total of 5 (five) businesses. 3 (three) of the 5 (five) businesses are currently vacant but suitable for use and occupancy. The remaining 2 (two) businesses consist of a day care center and a freight hauling business.

Non-Profit

ETSA LIMITS

Within the ETSA boundary 2 (two) non-profits were identified through a desktop review of aerial imagery only.

RIGHT-OF-WAY LIMITS

Construction is expected to displace 1 (one) non-profit consisting of a church.

Other

No farms are expected to be displaced by this project.

Availability of Replacement Housing


An examination of the Henry County housing market in the project area shows a limited amount of homes for sale and/or rent to accommodate the 18 (eighteen) anticipated residential relocations. The search for replacement housing may have to extend south towards Paris, TN.

Based on a survey of the commercial real estate market, the supply of available commercial property in the immediate area appears to be inadequate to satisfy the relocation requirements of the 5 (five) displaced businesses and 1 (one) non-profit. However, vacant sites suitable for commercial development are available in the near vicinity.

ENVIRONMENTAL: Although the proposed improvement will potentially displace 18 (eighteen) families, 5 (five) businesses, and 1 (one) non-profit, the immediate area should experience only minor impact due to the acquisition. When completed, no neighborhoods will be disrupted nor will access from areas north or south of the project will experience a disproportionate impact.


ASSURANCES: The Tennessee Department of Transportation will make relocation assistance available to all eligible persons impacted by this project, including residences, businesses, farm operations, non-profit organizations, and those requiring special services or assistance. The Regional Relocation Staff will administer the relocation program under the rules, policies, and procedures set forth in the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended, the Uniform Relocation Assistance Act of 1972, implementing federal regulations, TCA 13-11-101 through 119, The State of Tennessee Relocation Assistance Brochure and Chapter IX of the State of Tennessee Department of Transportation Right-of-Way Manual. TDOT's relocation program is practical and will allow for the efficient relocation of all eligible displaced persons in accordance with State and Federal Guidelines.

Prepared By:

 Digitally signed by
Christina Wilbert
Date: 2020.07.31
07:34:08 -05'00'

Christina Wilbert
Right of Way Agent Senior

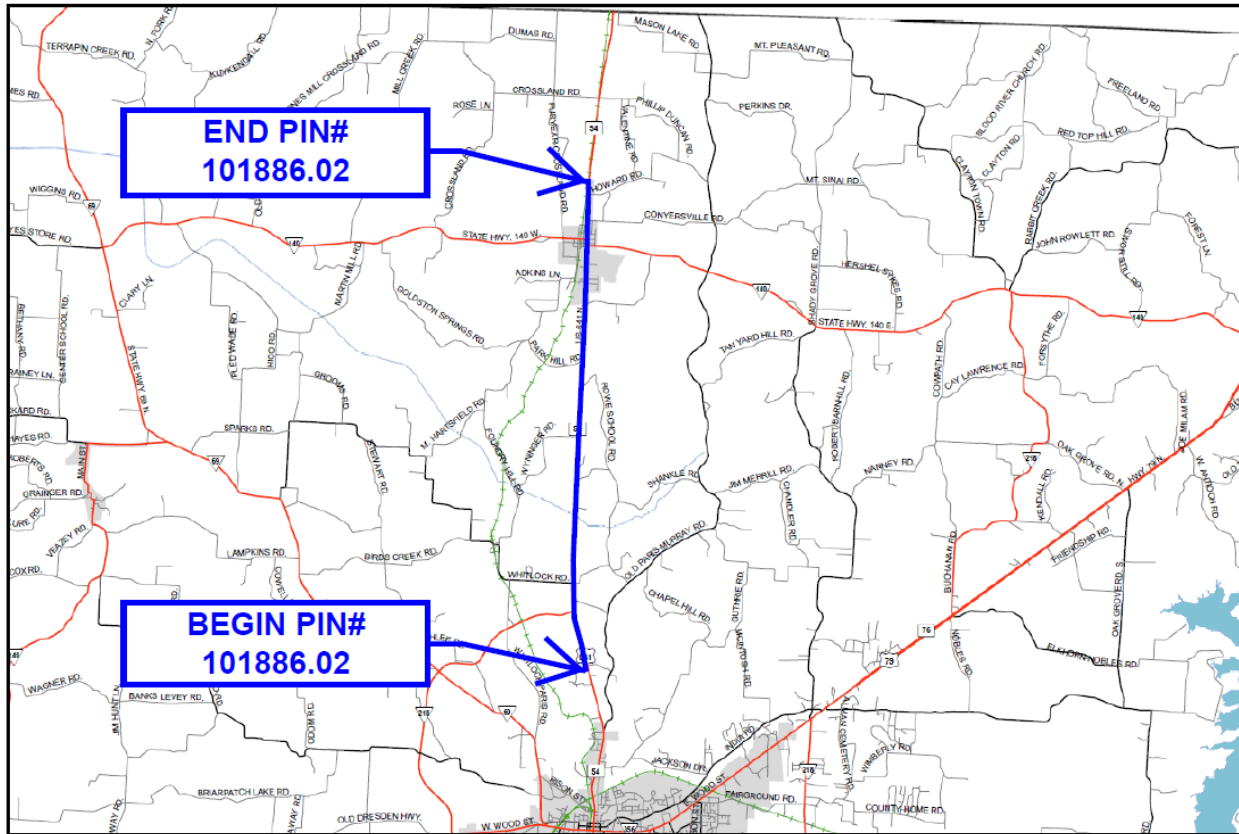
Approved by:

 Digitally signed by Gale Wagner
DN: cn=Gale Wagner,
o=Tennessee Department of
Transportation, ou=Right of Way
Division,
email=gale.wagner@tn.gov, c=US
Date: 2020.07.31 07:37:03 -05'00'

Gale Wagner
Assistant Director
Right of Way Division

Project Location Map

(For Illustration Only)



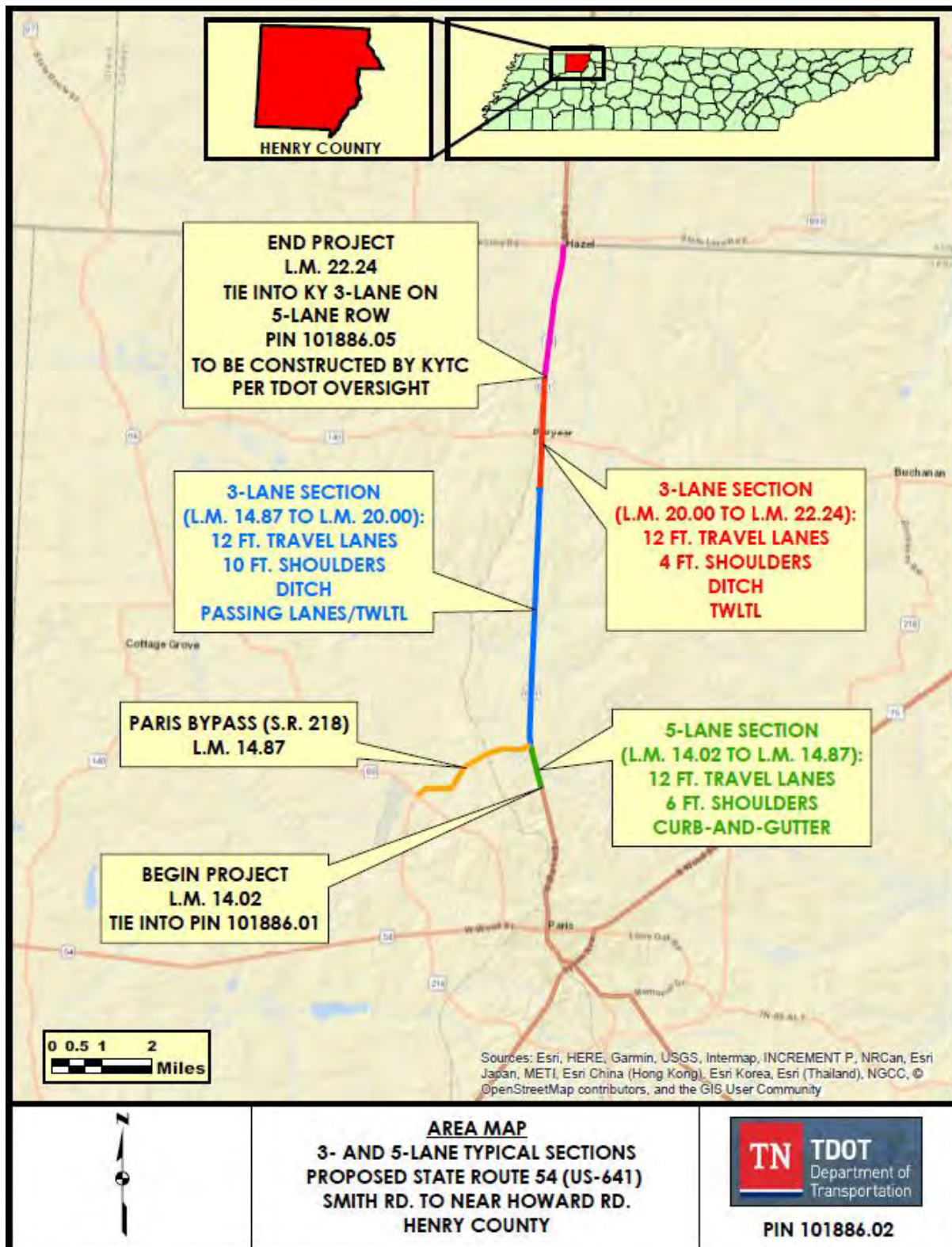
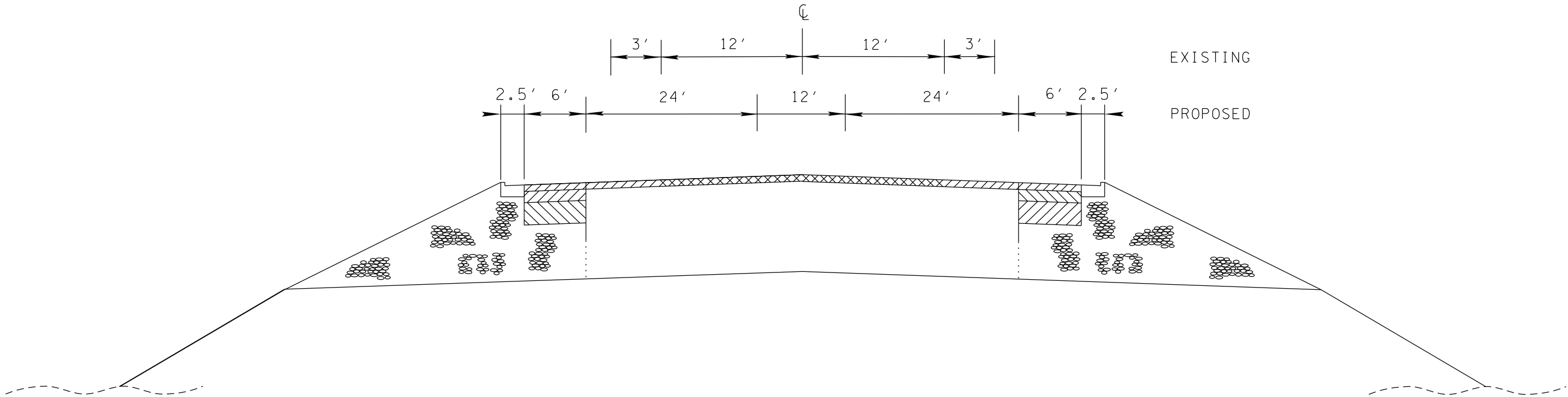


Figure 4. Area Map of Proposed S.R. 54 Typical Sections



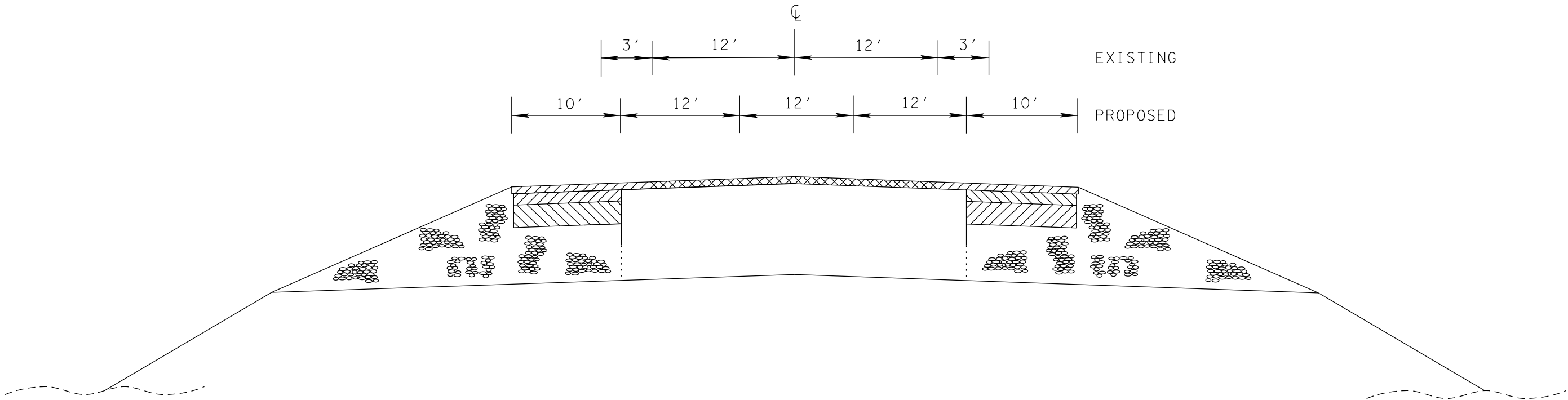
STATE ROUTE 54
L.M. 14.02 TO L.M. 14.87

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FIGURE 20
TYPICAL SECTION

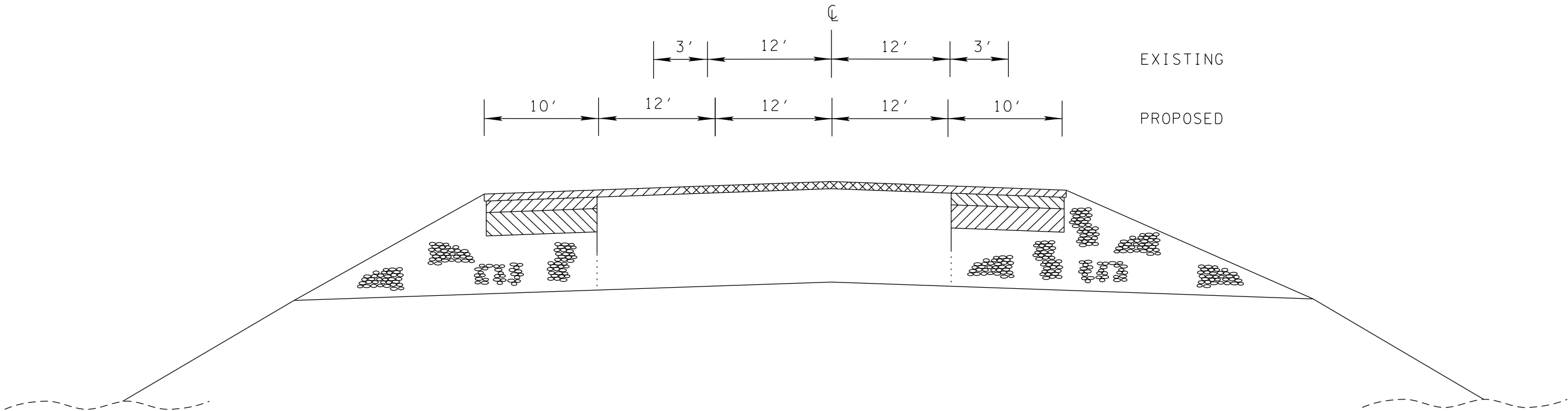


TECHNICAL REPORT

STATE ROUTE 54

L.M. 14.02 TO L.M. 22.24

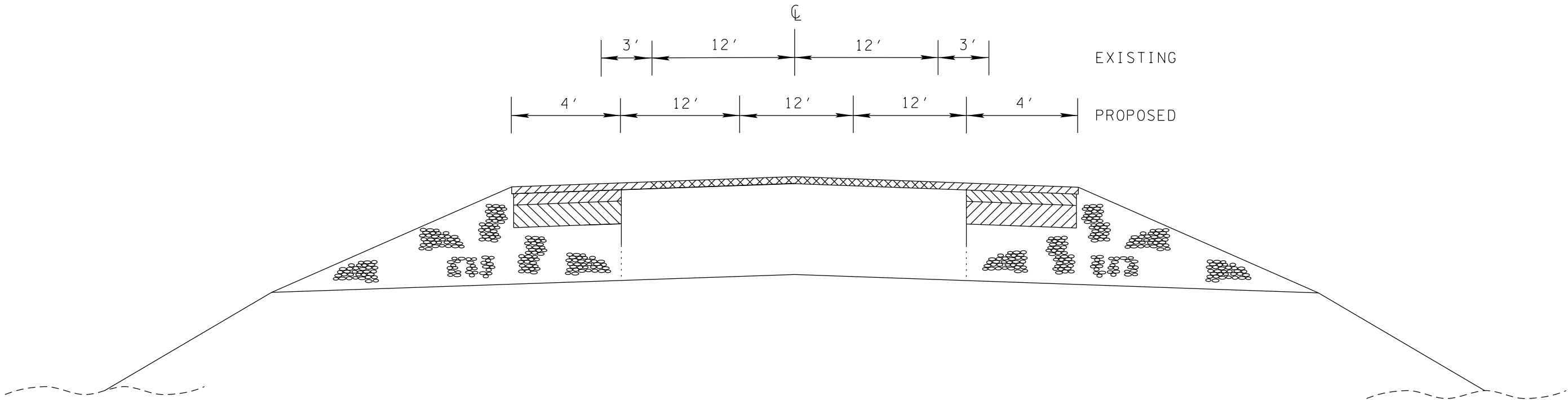
HENRY COUNTY



STATE ROUTE 54
SOUTHBOUND PASSING LANE L.M. 17.87 TO L.M. 18.84
NORTHBOUND PASSING LANE L.M. 18.93 TO L.M. 19.83

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



STATE ROUTE 54
L.M. 20.00 TO L.M. 22.24

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FIGURE 23
TYPICAL SECTION

3/24/2020 10:32:23 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 24 SR 54.dgn



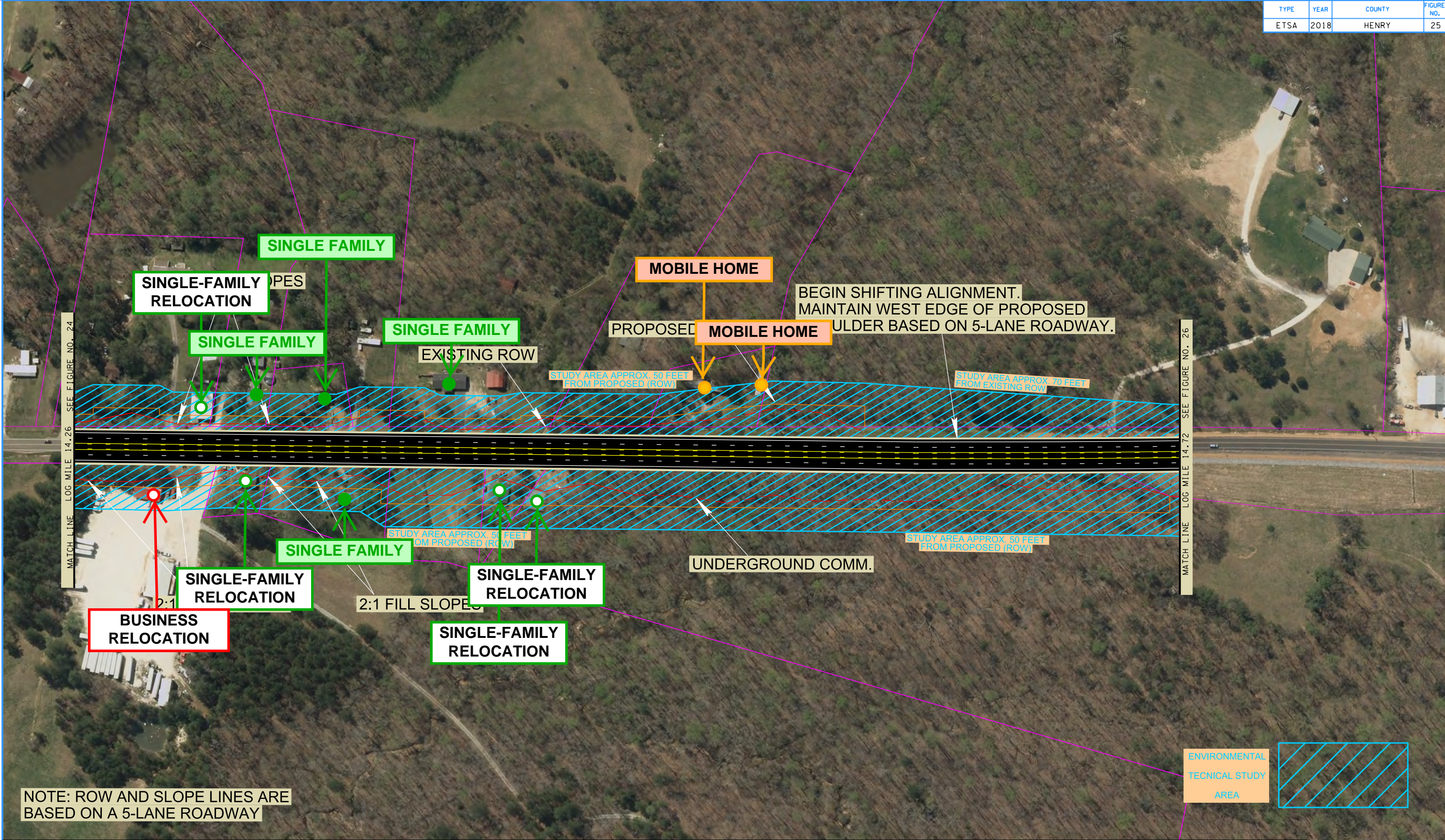
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 24
S.R. 54
L.M. 14.02 to
L.M. 14.36

3/24/2020 10:52:49 AM
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NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

3/25/2020 6:54:08 AM
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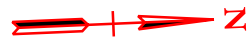
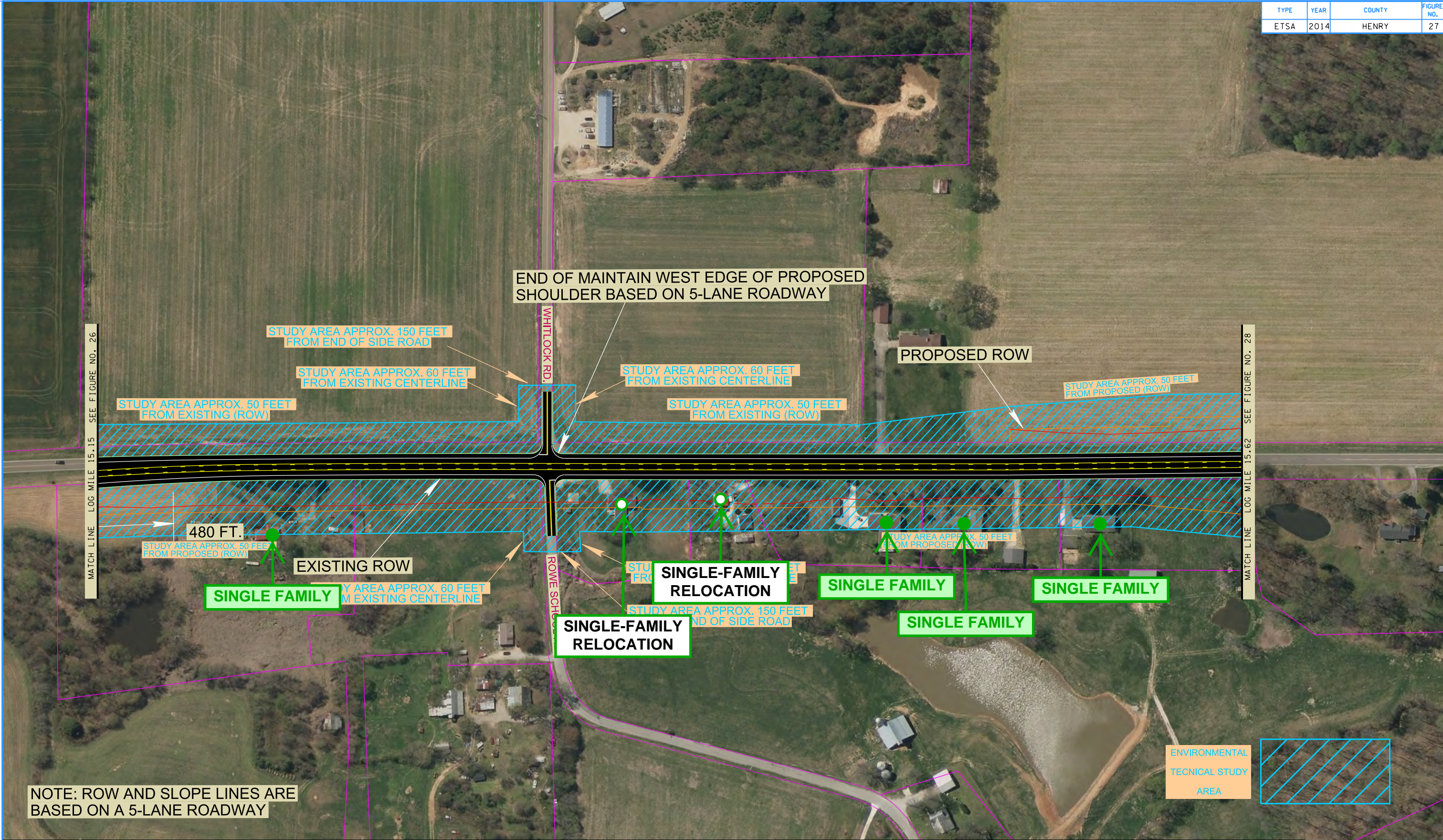
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 26
S.R. 54
L.M. 14.72 to
L.M. 15.15

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X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 27 SR 54.dgn



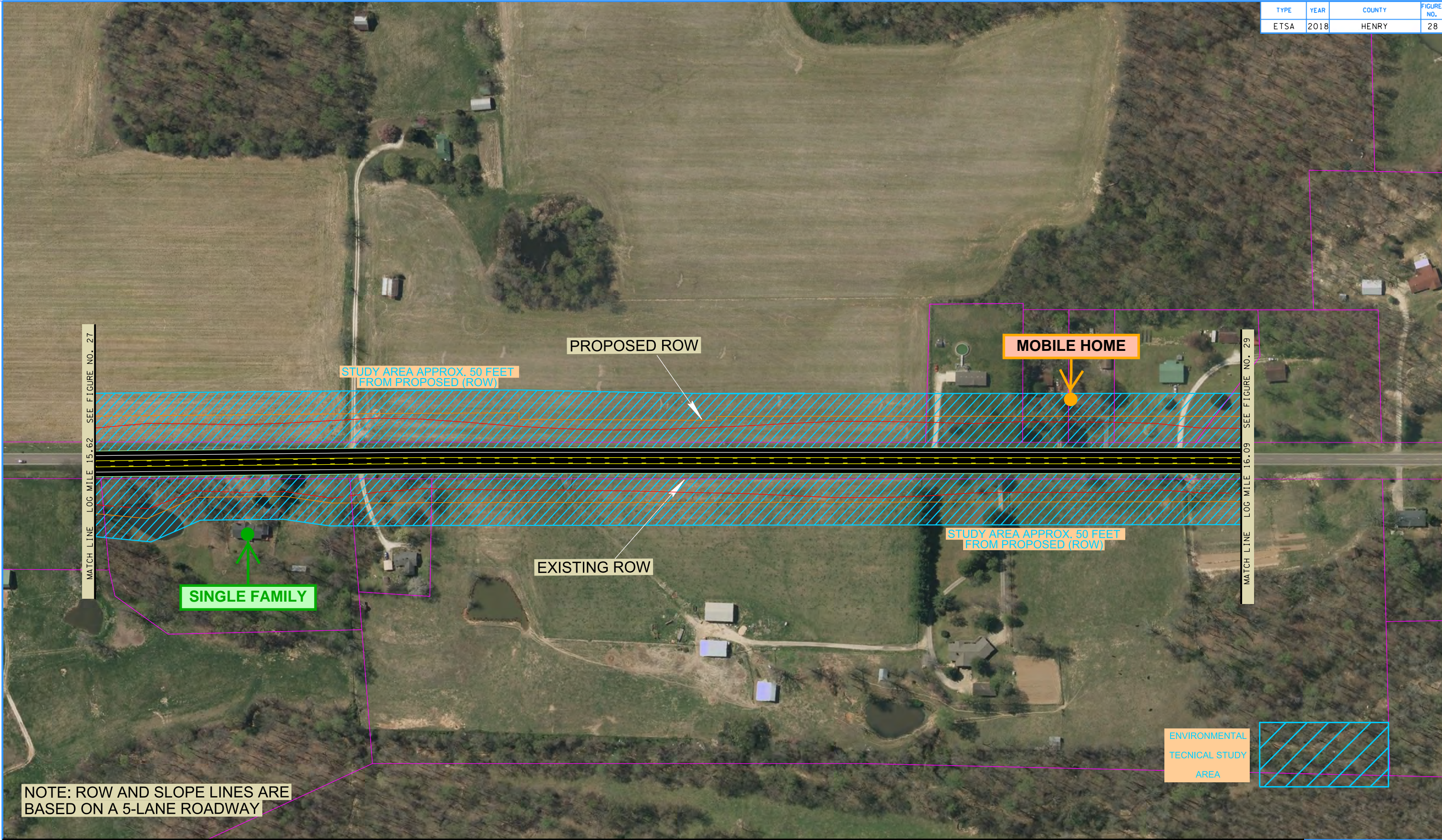
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 27
S.R. 54
L.M. 15.15 to
L.M. 15.62

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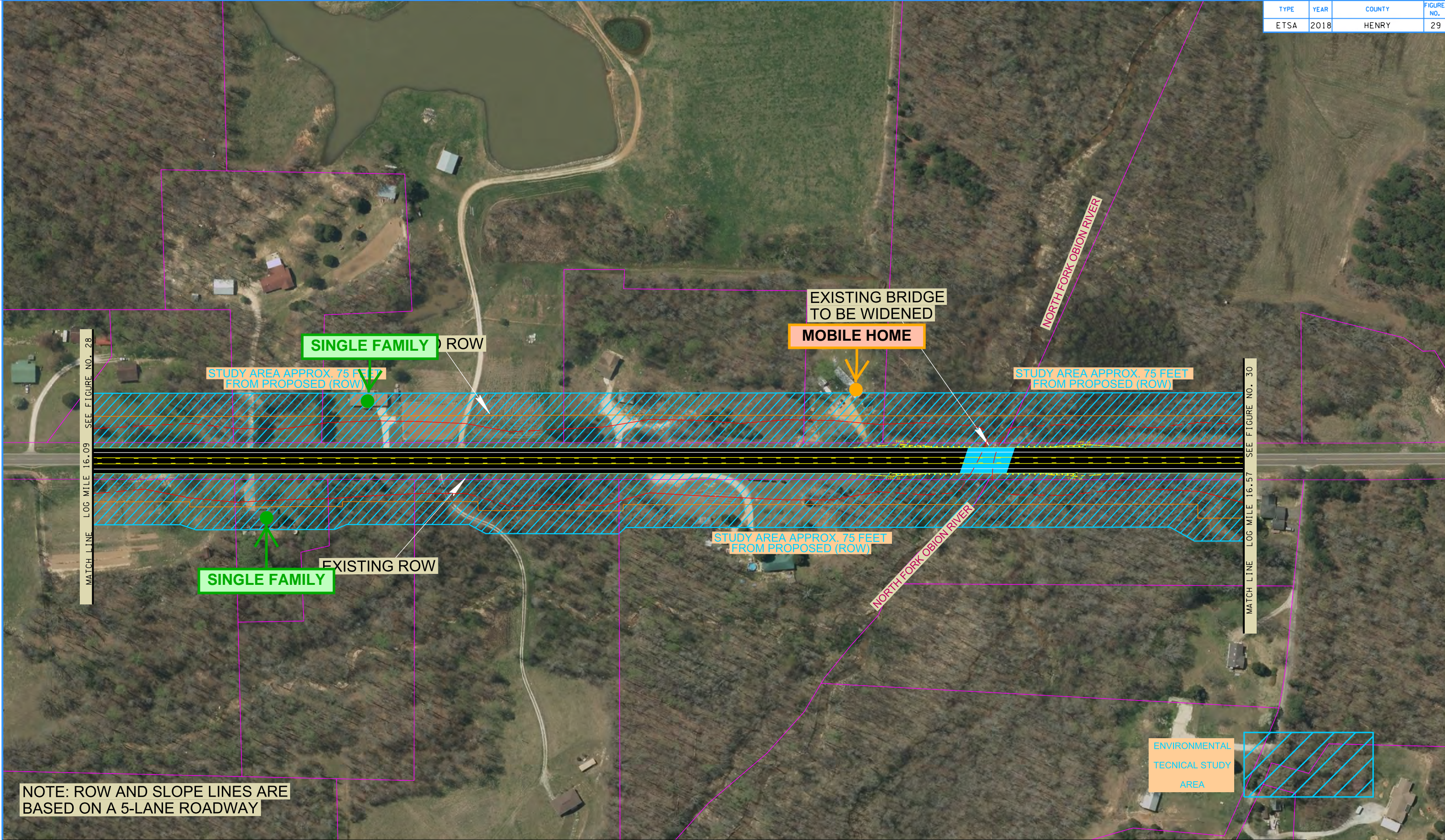
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 28
S.R. 54
L.M. 15.62 to
L.M. 16.09

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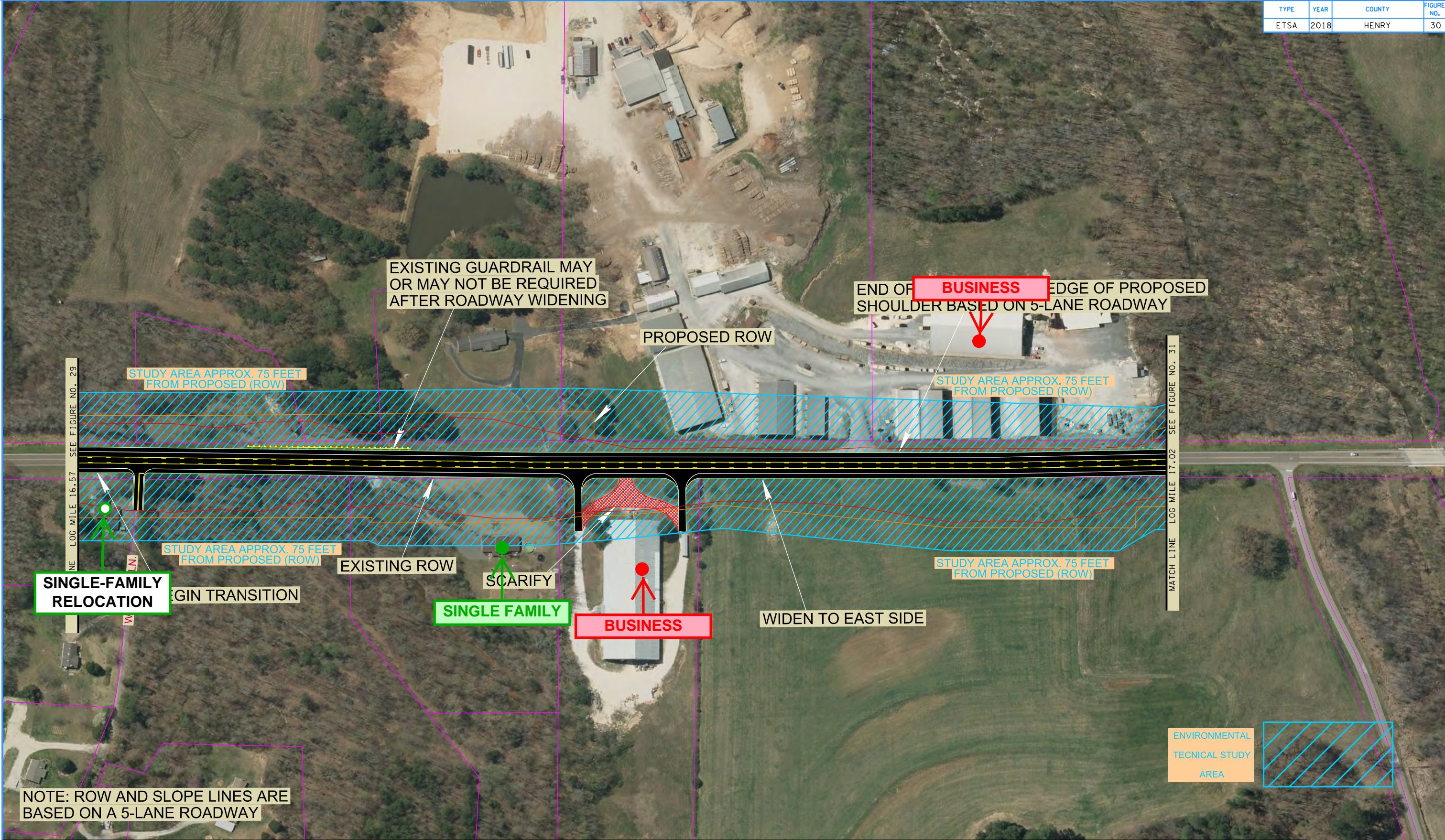
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

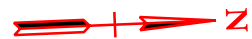
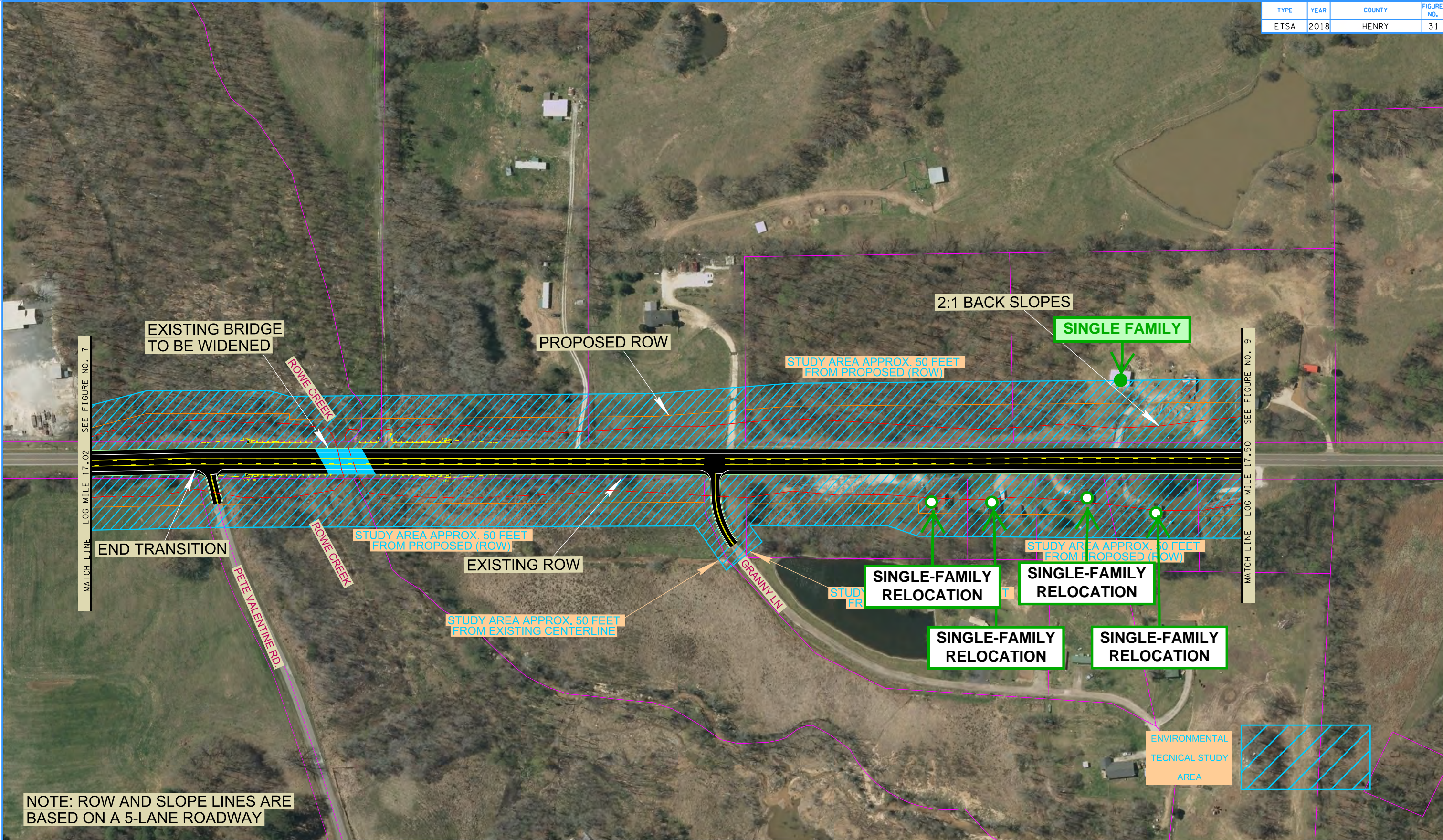
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 29
S.R. 54
L.M. 16.09 to
L.M. 16.57

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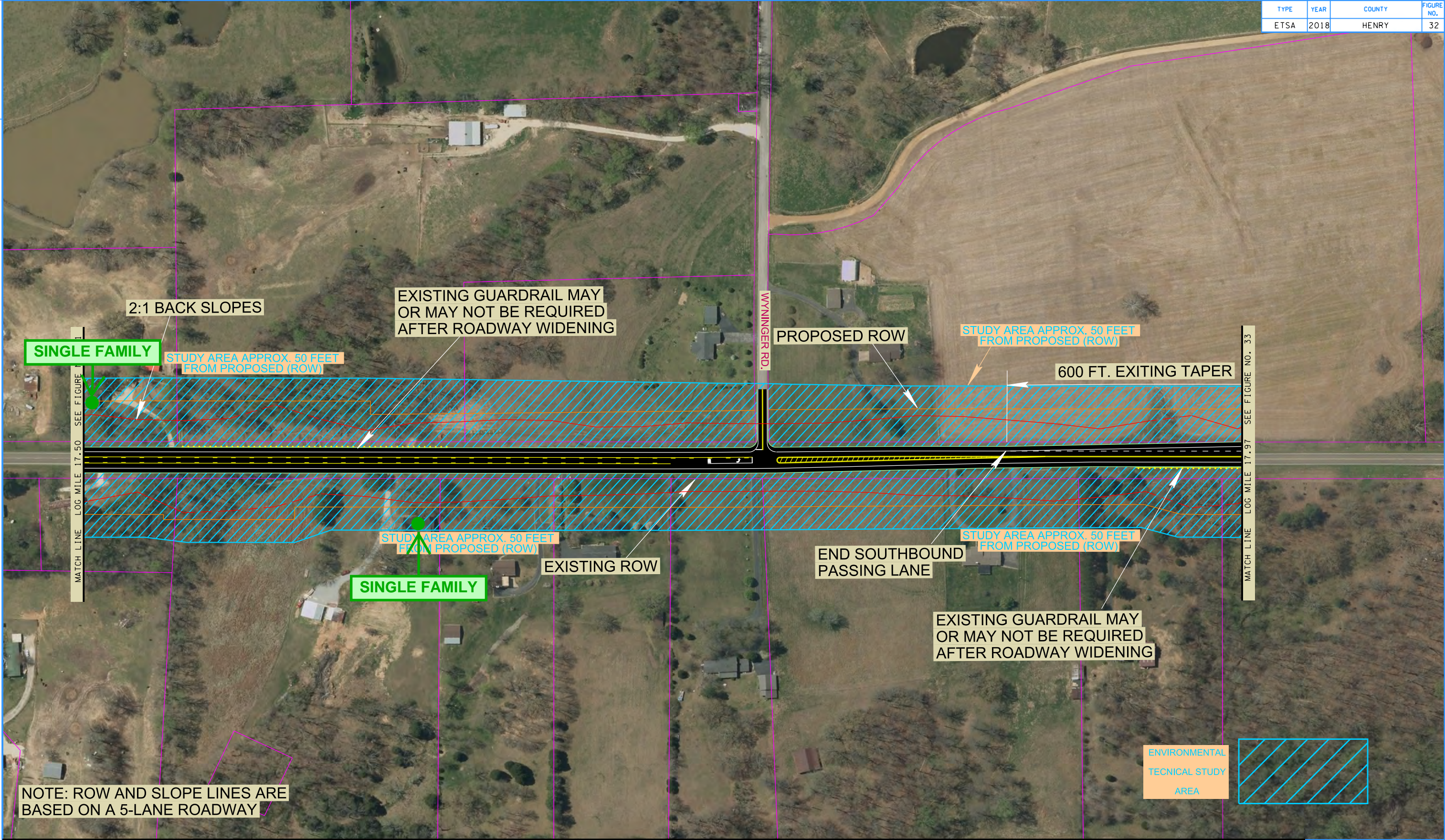
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 31
S.R. 54
L.M. 17.02 to
L.M. 17.50

3/25/2020 2:24:11 PM X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 32 SR 54.dgn



NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



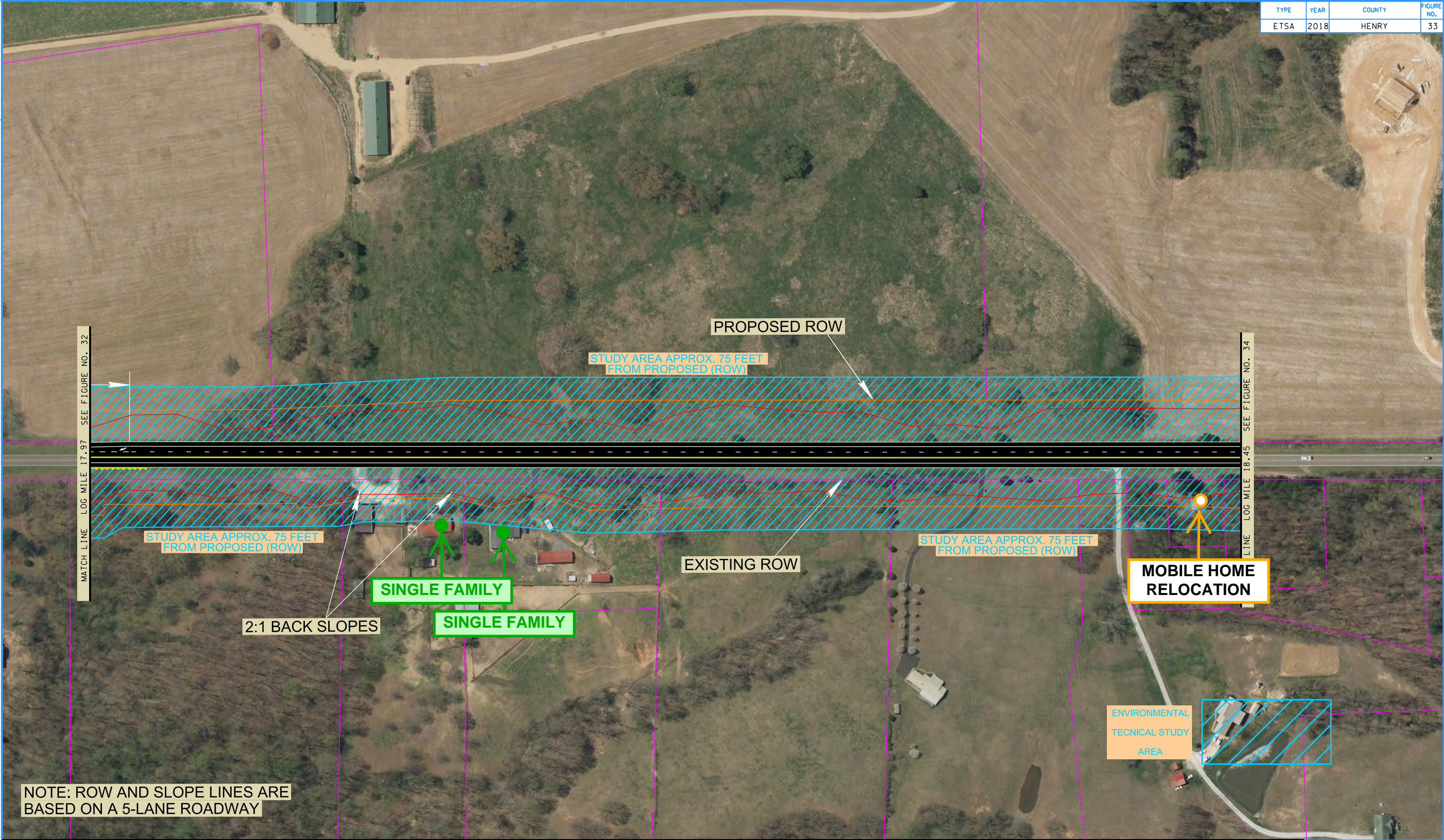
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 32
S.R. 54
L.M. 17.50 to
L.M. 17.97

3/26/2020 7:40:01AM
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NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 33
S.R. 54
L.M. 17.97 to
L.M. 18.45

3/26/2020 8:42:20 AM
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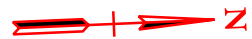
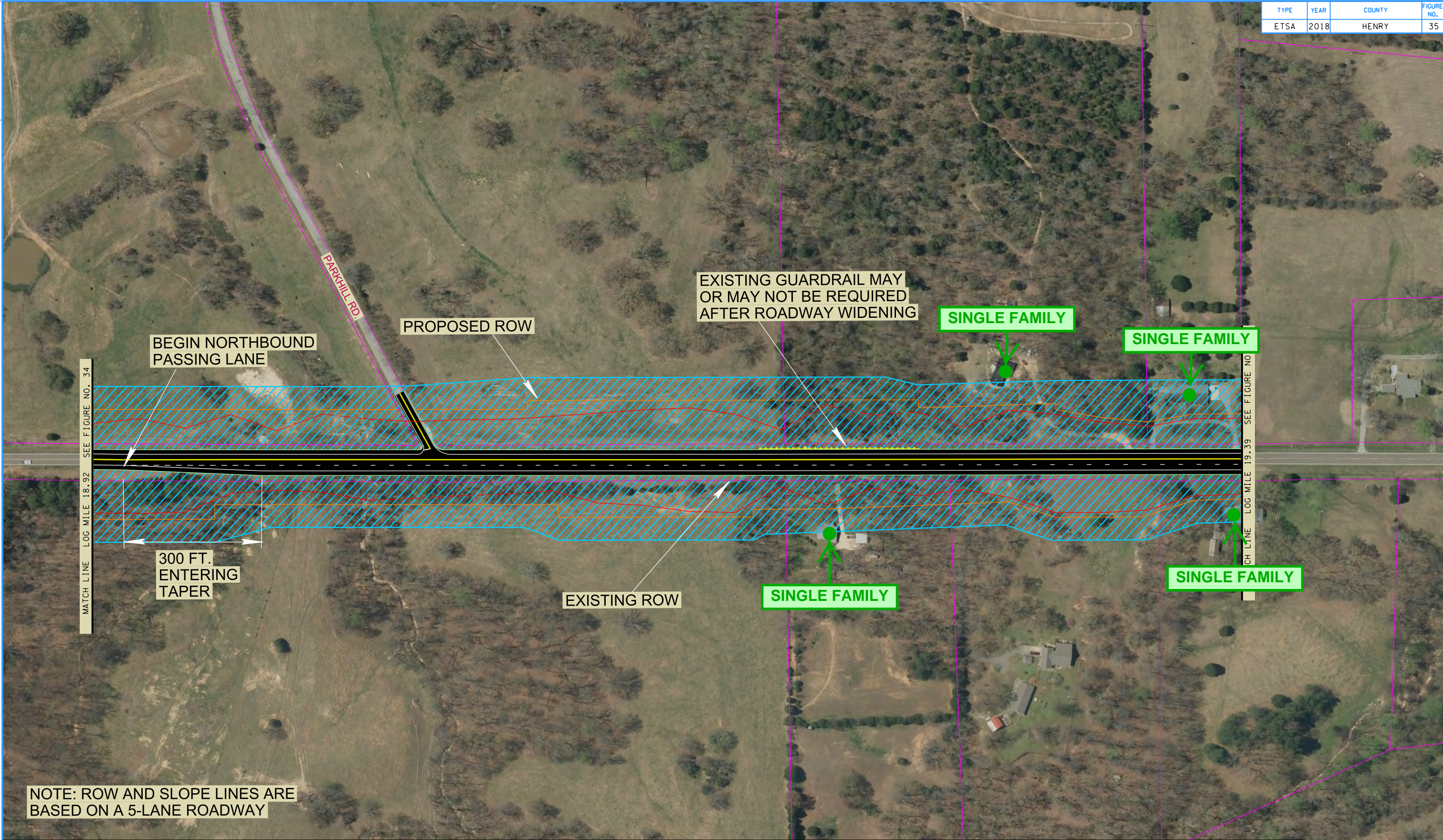
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 34
S.R. 54
L.M. 18.45 to
L.M. 18.92

3/26/2020 8:37:22 AM
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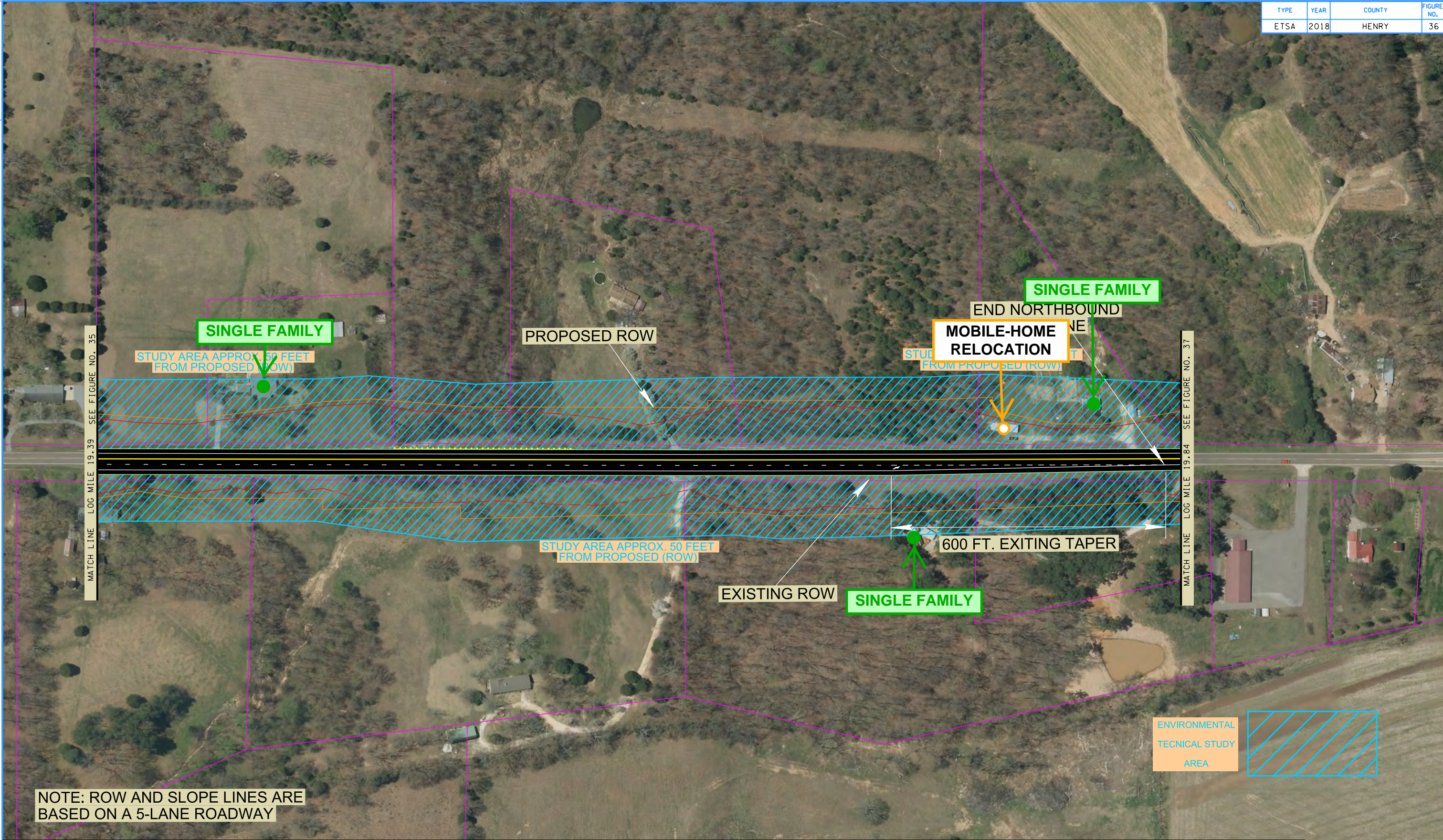
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 35
S.R. 54
L.M. 18.92 to
L.M. 19.39

3/26/2020 9:49:53 AM
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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 36
S.R. 54
L.M. 19.39 to
L.M. 19.84

FIGURE 37
S.R. 54
M. 19.84 to
L.M. 20.30

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0' 200' 400' 600'

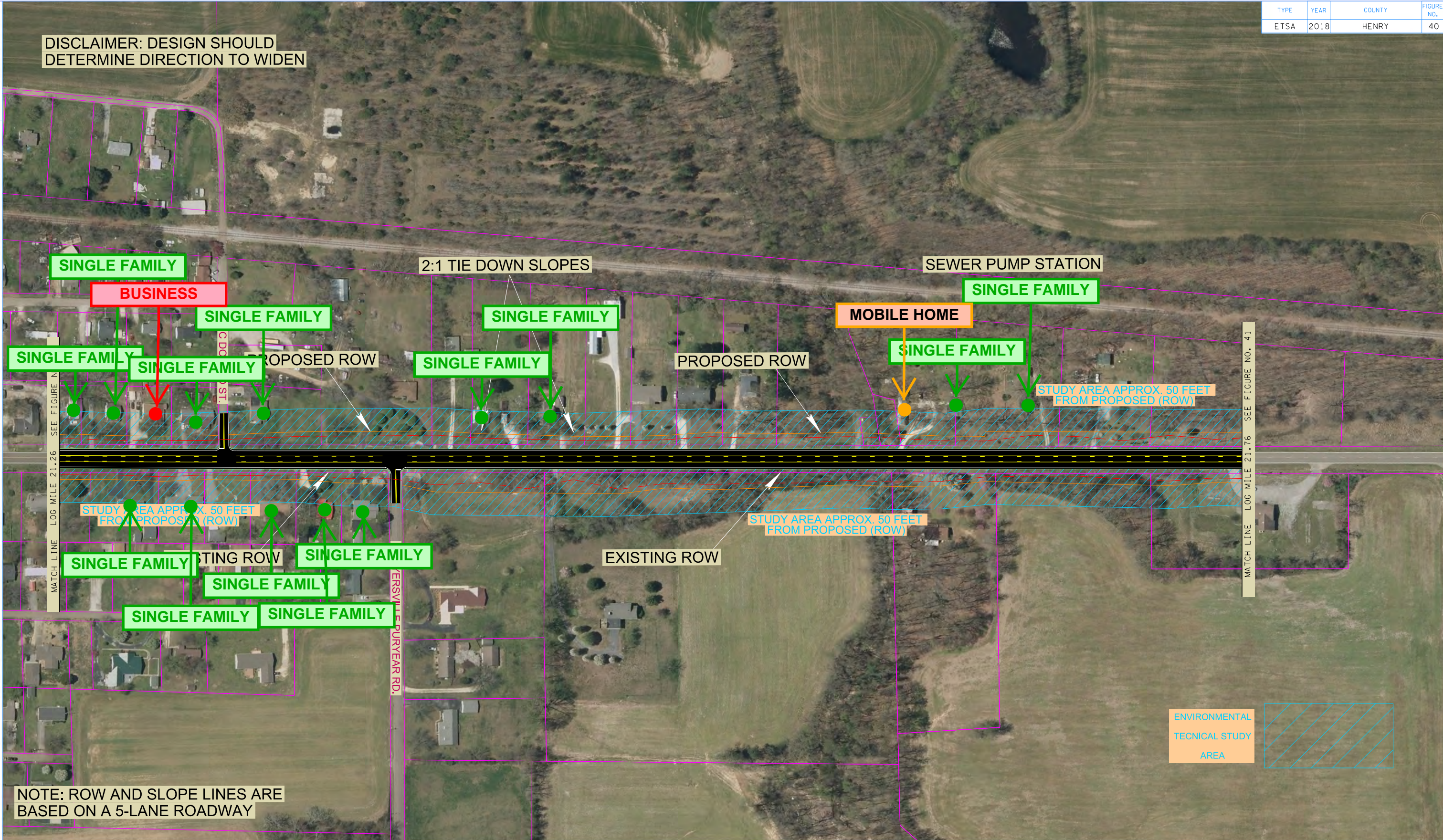
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 38
S.R. 54
L.M. 20.30 to
L.M. 20.79

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ENVIRONMENTAL TECHNICAL STUDY AREA

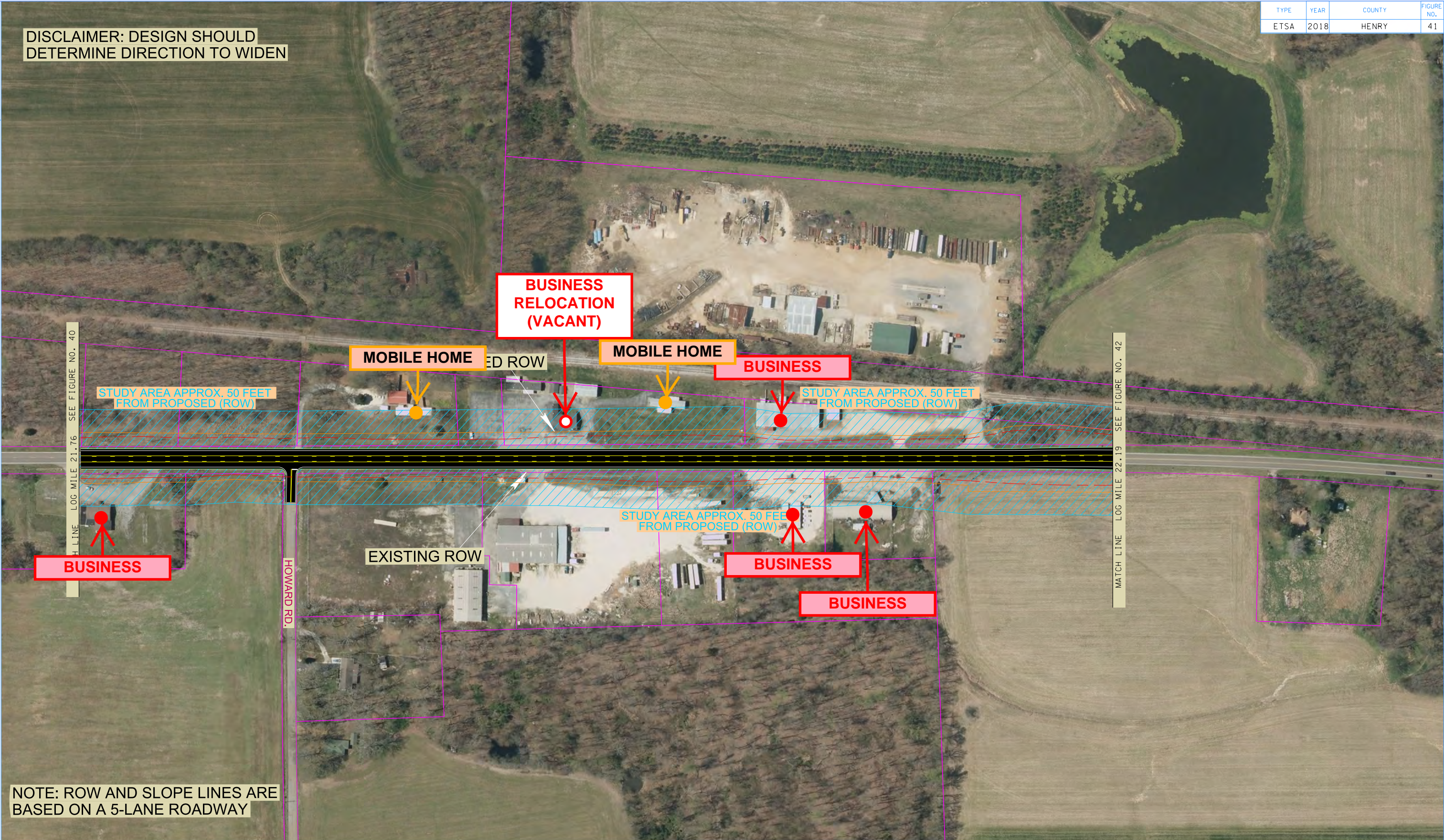
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 40
S.R. 54
L.M. 21.26 to
L.M. 21.76

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 41
S.R. 54
L.M. 21.76 to
L.M. 22.19



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 42
S.R. 54
L.M. 22.19 to
L.M. 22.24

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix G
PIN 101886.02
Hazardous Materials

Environmental Studies

Hazardous Materials

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Environmental Study

Technical Section

Section: Hazardous Materials

Study Results

Based on the Environmental Technical Study Area figures in the Technical Report dated 2 April 2020, several known hazardous material sites exist along this corridor as listed below. No hazardous material studies are recommended at this time, avoidance or minimization are recommended.

- Fred's Minit Mart # 33, TDEC UST Facility #7400127, 9220 Highway 641 North, Puryear, TN 38251
- Puryear Amoco, TDEC UST Facility #7400028, Highway 641 and 140, Puryear, TN 38251
- Jim's Amoco, TDEC UST Facility #7400113, Highway 641 and 140, Puryear, TN 38251

Asbestos bridge surveys have been completed on bridges 40SR0540023 and 40SR0540025 (the two indicated to be widened), asbestos was detected, and project commitments EDHZ001 and EDHZ002 have been submitted in PPRM.

Databases reviewed include: Google Earth imagery, EPA National Priorities List, EPA EnviroMapper, TDEC Registered Underground Storage Tanks Data and Reports, TDEC Division of Water Resources Public Data Viewer and Oil and Gas Wells database, TDEC Division of Remediation Sites Public Data Viewer, TDOT Integrated Bridge Information System, and others, as necessary.

Commitments

Did the study of this project result in any environmental commitments?

Yes

EDHZ001. Asbestos Containing Material (ACM) surveys were completed on the following bridges and asbestos was detected.

- Bridge No. 40SR0540023, SR-54 over North Fork Obion River LM 16.47 (40-SR054-16.47). The bridge has asbestos (3% chrysotile) in 150 square feet of bearing pad material between the girders and bents.
- Bridge No. 40SR0540025, SR-54 over Rowe Creek LM 17.13 (40-SR054-17.13). The bridge has asbestos (3% chrysotile) in 150 square feet of bearing pad material between the girders and bents.

EDHZ002. The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2015) Sections 107.08 D and 202.03).

Additional Information

Is there any additional information or material included with this study?

No

Certification

Responder: Kyle Kirschenmann

Signature:

Kyle Kirschenmann

Title: Environmental Manager, Hazardous Materials Section

Digitally signed by Kyle Kirschenmann
DN: cn=Kyle Kirschenmann, o=TDOT,
ou=Hazardous Materials Section,
email=kyle.kirschenmann@tn.gov,
c=US
Date: 2020.06.24 08:56:12 -04'00'



TENNESSEE DEPARTMENT OF TRANSPORTATION ASBESTOS SURVEY REPORT

SR-54 over North Fork Obion River, LM 16.47
Bridge 40SR0540023 (40-SR054-16.47)
Henry County
TDOT Project No.: 40003-0224-04, PIN: 101886.02



TriAD Project No. 18-TDOT29-01

Prepared by



ENVIRONMENTAL CONSULTANTS

07/16/19

David Espy Mike Baker

David Espy and Mike Baker
Tennessee Asbestos Inspector Accreditation No: A-I-55949-75308
Tennessee Asbestos Inspector Accreditation No: A-I-119004-71017

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Figure 2	Homogenous Area

APPENDICES

Appendix A	Laboratory Analysis Report
Appendix B	Asbestos Sampling Photographs
Appendix C	Asbestos Inspection Credentials
Appendix D	Health and Safety Plan and JSA

1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed by TriAD Environmental Consultants, Inc., (TriAD) in accordance with the requirements of the State of Tennessee, Department of Transportation Environmental Division (TDOT), Hazardous Materials Section.

1.1 TDOT Bridge Identification

The bridge is identified in the TDOT Project Management System as:

Bridge Number: 40SR0540023

Termini: SR-54 From near Smith Road in Paris to Crossland Road/Brannon Lane (North of Puryear) (IA)

TDOT PE-N: 40003-0224-04

TDOT PIN: 101886.02

County: Henry

1.2 Bridge Description

Bridge Number 40SR0540023 is located on SR-54 over North Fork Obion River at log mile (LM) 16.47 in Henry County. The bridge is an 80-foot, two-lane, three-span bridge, constructed of concrete deck girders and box beams with a concrete deck and wearing surface. The bridge was constructed in 1937 with an unknown widening date. The location of the bridge is provided on the Bridge Vicinity Map in Figure 1.

2.0 ACM ASSESSMENT

Observed suspect ACM were categorized by homogeneous areas (HA), which are materials that appear similar throughout in terms of color, texture, and application date. Suspect ACM for each HA were physically assessed for friability and condition of material. Random samples of suspect ACM were collected from designated HAs and submitted to

an accredited laboratory for analysis. The laboratory results of the ACM sampling are included in Appendix A. Photographs showing the locations of the HAs are provided in Figure 2. Photographs of the HAs that were sampled are included in Appendix B.

2.1 Inspection Personnel

The sampling and field activities were performed on June 26, 2019, by Mr. David Espy and Mr. Mike Baker, Accredited State of Tennessee Asbestos Inspectors, with TriAD. Copies of Mr. Espy's, Mr. Baker's, and TriAD's current accreditation from the State of Tennessee are included in Appendix C. This work was completed in accordance with TriAD's Health and Safety Plan and Job Safety Analysis (JSA). A copy of the JSA and the cover page for the Health and Safety Plan is included in Appendix D.

2.2 Visual Survey

The inspection began with a walk-through and visual survey of the bridge. The visual survey consisted of:

- Locating and confirming the structure to be sampled
- Sketching the structure and/or verifying the plans provided
- Taking general photos of the structure
- Locating and identifying suspect ACM to be sampled
- Determining accessible locations to collect samples

2.3 ACM Sampling of Bridge Components

Suspect ACM was sampled in accordance with United States Environmental Protection Agency (USEPA) regulation 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP) and in general conformance with the protocols as outlined in USEPA regulation 40 CFR 763 Asbestos Hazard Emergency Response Act (AHERA). TriAD personnel made reasonable effort during the performance of this survey to identify suspect ACM which may be encountered during future demolition or renovation

activities. Suspect ACM samples collected for analysis were obtained by minimal destructive sampling techniques. Possible suspect ACM located in voids or concealed areas which were not accessible during the survey process are not included as part of this report. Should suspect materials other than those identified in this report be discovered during demolition or renovation activities, these materials should be assumed asbestos containing until laboratory confirmation of the presence or absence of asbestos content is made. Below is a list of the HAs that were sampled:

Table 1: Homogeneous Areas	
HA-01	Outer Longitudinal Girder Coating
HA-02	End Wall
HA-03	Bottom of Decking Outer Strip
HA-04	Top of Decking
HA-05	Wing Wall
HA-06	Parapet
HA-07	Longitudinal Girder
HA-08	Bent
HA-09	Bearing Pad
HA-10	Bottom of Decking
HA-11	Bent Header
HA-12	Abutment

Individual sample numbers show the HA number plus the unique sample designation. For example, sample HA-02-05 was collected from HA-02 and is the fifth sample of the total sample set from the bridge.

2.3.1 HA-01 Outer Longitudinal Girder Coating

The outer longitudinal girders are coated with a thin tan textured material. Three samples of the coating were collected from this HA. A utility knife was used to collect these samples.

2.3.2 HA-02 End Wall

The end walls are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.3 HA-03 Bottom of Decking Outer Strip

The bottom of the decking outer strips are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.4 HA-04 Top of Decking

The top of the decking is made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.5 HA-05 Wing Wall

The wing walls are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.6 HA-06 Parapet

The parapets are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.7 HA-07 Longitudinal Girder

The longitudinal girders are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.8 HA-08 Bent

The bents are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.9 HA-09 Bearing Pad

A flexible bearing pad was present between the cross girder and the bent header. Three samples were collected from this HA. A utility knife was used to collect these samples.

2.3.10 HA-10 Bottom of Decking

The bottom of the decking is made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.11 HA-11 Bent Header

The bent headers are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.12 HA-12 Abutment

The abutments are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.13 Utility Components

There were no utility conduits attached to the bridge.

2.3.14 Bridge Drainage System

The storm water drainage system on the bridge consisted of 12 approximately 2-foot by 6-inch rectangular holes that had been installed through the bottom of the bridge parapets and lined with a metal spout. There were no suspected ACM associated with these drainage structures other than the concrete decking and concrete parapets which were sampled and identified as HA-04 and HA-06.

3.0 ANALYTICAL PROCEDURES

The bulk samples were analyzed in the laboratory using Polarized Light Microscopy (PLM) coupled with dispersion staining (USEPA Method 600/R-93/116). PLM is an asbestos analytical method which identifies the specific asbestos minerals by their unique optical properties. The optical properties are a result of the mineral's chemical composition, physical atomic structure, and visual morphology. This is the USEPA-recommended method of analysis for asbestos identification in bulk samples.

The bulk samples collected for this inspection were analyzed by Frost Environmental Services, LLC, a laboratory that has received certification from the American Industrial Hygiene Association Laboratory Accreditation Program (Laboratory identification number 198214).

4.0 REGULATORY OVERVIEW

4.1 National Emission Standards for Hazardous Air Pollutants

The USEPA's NESHAP regulations require that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.2 Definitions

Significant definitions related to regulation of asbestos under NESHAP regulations include:

Friable ACM is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, PLM, that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. (40 CFR 61.141)

Non-friable ACM is any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, PLM, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. USEPA also defines two categories of non-friable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than one percent (1%) asbestos as determined using PLM according to the method specified in Appendix A, Subpart F, 40 CFR Part 763. (40 CFR 61.141)

Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than one percent (1%) asbestos as determined using PLM according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (40 CFR 61.141)

Regulated Asbestos-Containing Material (RACM) is (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Friable materials are defined as those that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

A total of 36 samples were obtained from the bridge. Multiple samples of each HA were collected in accordance with TDOT requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on HAs of suspect materials, as described in Section 2.0.

Based on the analytical results, three of the samples collected contained greater than one percent (1%) asbestos. The materials found to be positive for asbestos were the bearing pads located between the cross girders and the bent headers. The estimated quantity of the asbestos containing bearing pads is 150 square feet. A summary of the sampled materials that were found to contain greater than one percent (1%) asbestos is presented in the following table.

Table 2: Materials Containing Asbestos				
Sample No.	Material Description	Location	Condition	% Asbestos and Type
HA-09-25	Black Tar Material	Bearing Pad	Good	3% Chrysotile
HA-09-26	Black Tar Material	Bearing Pad	Good	3% Chrysotile
HA-09-27	Black Tar Material	Bearing Pad	Good	3% Chrysotile

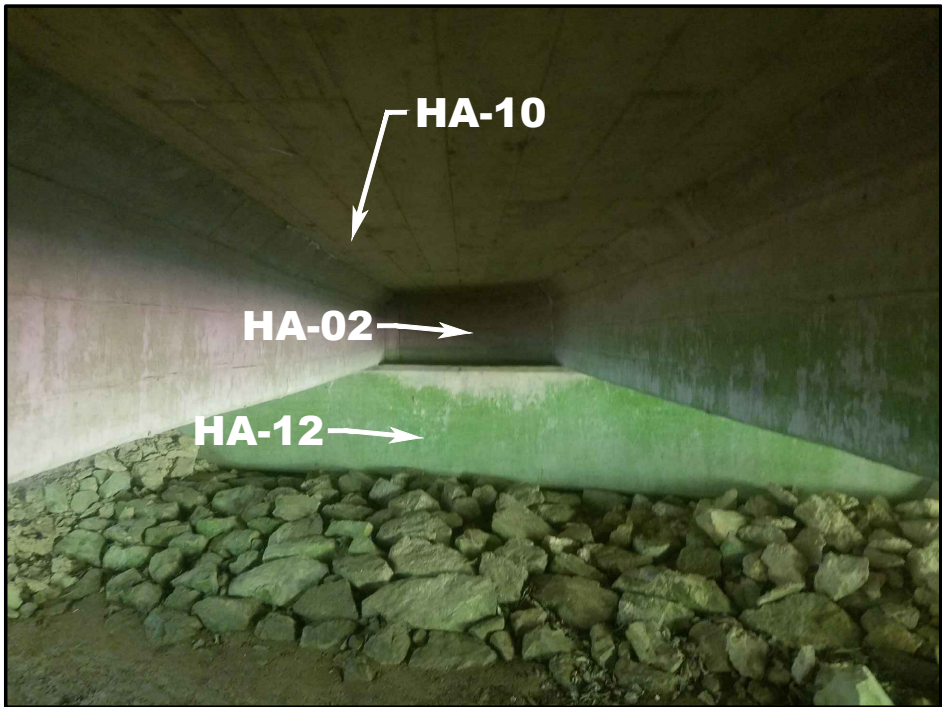
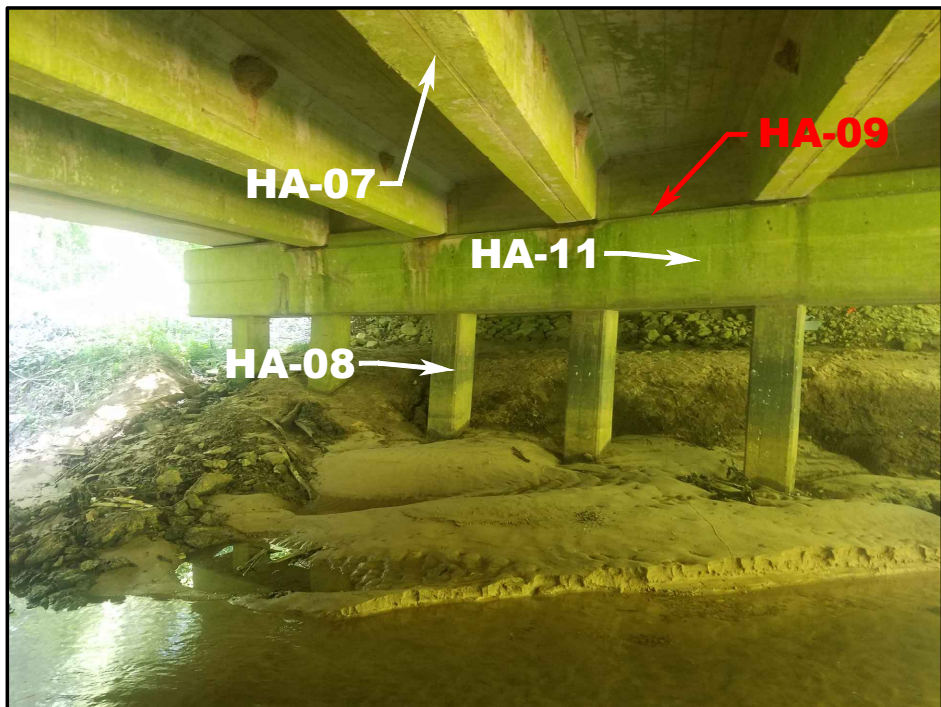
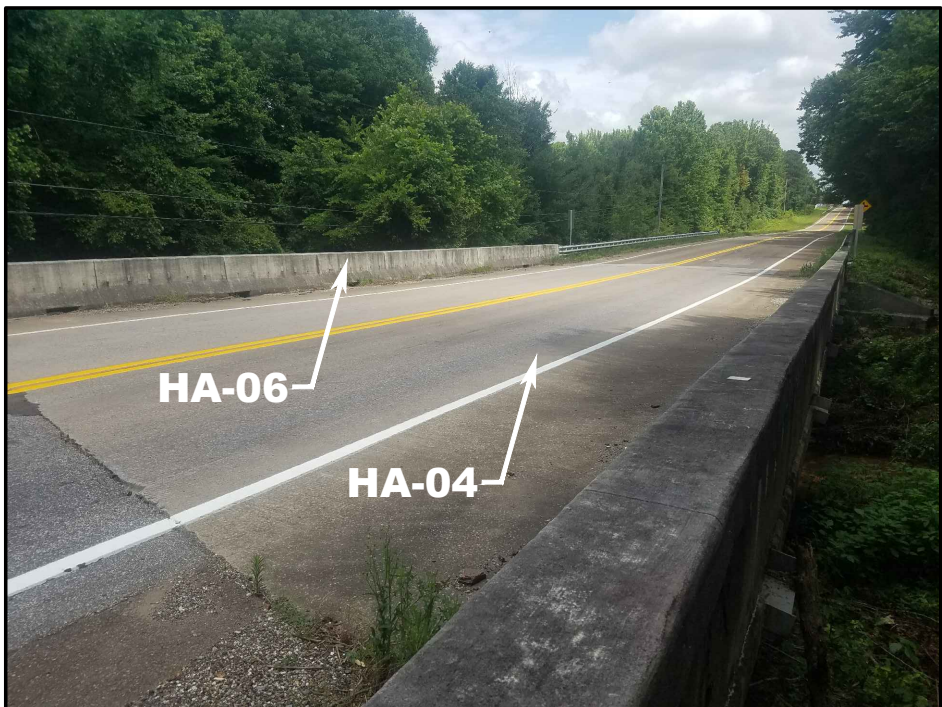
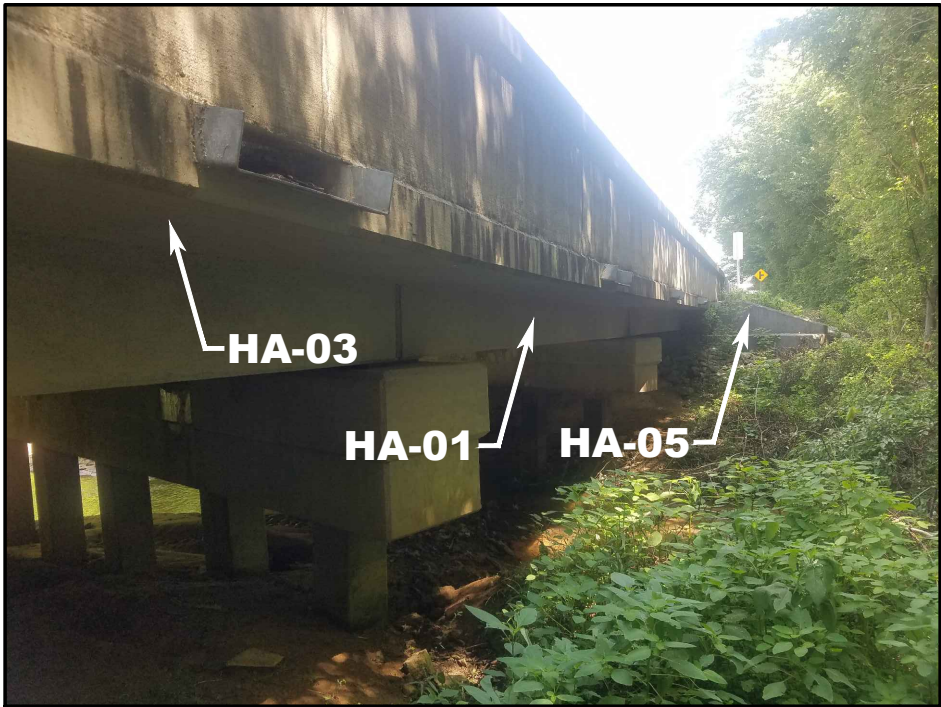
The analytical results of all the samples collected, along with the chain-of-custody records, are included in Appendix A. Photographs of examples of the HAs are included in Appendix B. A Bridge Vicinity Map is provided as Figure 1. A profile of the bridge with homogenous area sample locations is depicted on Figure 2.

6.0 QUALIFICATIONS

This report has been prepared on behalf of and exclusively for TDOT. The information presented in this report is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, TriAD requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Any party, other than TDOT, relying on this document is cautioned that all conclusions made, or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee, or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

Figures

N:\eha\DOT\18-TDOT29-01 - Henry County 3 Bridges\DRAWINGS\BRIDGE 2\2001-FIG-2-HENRY CO-2.dwg SAVED: 7/8/2019 9:40 AM BY: AWATTS



HOMOGENEOUS AREAS

HA-01 - OUTER LONGITUDINAL GIRDER COATING	HA-07 - LONGITUDINAL GIRDER
HA-02 - END WALL	HA-08 - BENT
HA-03 - BOTTOM OF DECKING OUTER STRIP	HA-09 - BEARING PAD
HA-04 - TOP OF DECKING	HA-10 - BOTTOM OF DECKING
HA-05 - WING WALL	HA-11 - BENT HEADER
HA-06 - PARAPET	HA-12 - ABUTMENT

NOTES

1. HOMOGENEOUS AREA SAMPLE LOCATIONS ARE GENERALIZED; ACTUAL SAMPLES WERE COLLECTED FROM RANDOM LOCATIONS ACROSS THE STRUCTURE.
2. MATERIALS CONTAINING ASBESTOS ARE MARKED IN RED.

FIGURE 2 HOMOGENEOUS AREAS

PIN NO.: 101886.02
SR-54 OVER NORTH FORK OBION
RIVER, LM 16.47
BRIDGE NO.: 40SR0540023
HENRY COUNTY, TENNESSEE

SCALE: N.T.S. DR ALW CHK DME REV JMP

PREPARED BY:



ENVIRONMENTAL CONSULTANTS, INC.
Suite 200, 207 Donelson Pike, Nashville, TN 37214
615-889-6888 fax 615-889-4004

PROJ: 18-TDOT29-01 DATE: 07/04/19 SHEET 1 OF 1

Appendix A:
Laboratory Analysis Report

FROST ENVIRONMENTAL SERVICES, LLC

339 ROCKLAND ROAD, SUITE E, HENDERSONVILLE, TENNESSEE 37075

(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



POLARIZED LIGHT MICROSCOPY (PLM) LABORATORY ANALYSIS REPORT (EPA/600/R-93/116 (JUNE 1993))

CLIENT: TRIAD Environmental Consultants
PROJECT: 18-TDOT29-01 North Fork Obion River
LOCATION: Henry County

Date Received: 6/28/2019
Date Analyzed: 7/2/2019
Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-01-01	Outer Longitudinal Girder Coating	Tan Coating	100	None Detected	None Detected
HA-01-02	Outer Longitudinal Girder Coating	Tan Coating	100	None Detected	None Detected
HA-01-03	Outer Longitudinal Girder Coating	Tan Coating	100	None Detected	None Detected
HA-02-04	End Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-02-05	End Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-02-06	End Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-03-07	Bottom of Decking Outer Strip	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-03-08	Bottom of Decking Outer Strip	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-03-09	Bottom of Decking Outer Strip	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-04-10	Top of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-04-11	Top of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-04-12	Top of Decking	Gray Cementitious Material	100	None Detected	None Detected

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asbestos in Bulk Building Materials.

FROST ENVIRONMENTAL SERVICES, LLC

339 ROCKLAND ROAD, SUITE E, HENDERSONVILLE, TENNESSEE 37075

(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



POLARIZED LIGHT MICROSCOPY (PLM) LABORATORY ANALYSIS REPORT (EPA/600/R-93/116 (JUNE 1993))

CLIENT: TRIAD Environmental Consultants
PROJECT: 18-TDOT29-01 North Fork Obion River
LOCATION: Henry County

Date Received: 6/28/2019
Date Analyzed: 7/2/2019
Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-05-13	Wing Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-05-14	Wing Wall	Gray Cementitious Material	100	None Detected	None Detected
		Gray Coating	100	None Detected	None Detected
HA-05-15	Wing Wall	Gray Cementitious Material	100	None Detected	None Detected
		Gray Coating	100	None Detected	None Detected
HA-06-16	Parapet	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-06-17	Parapet	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-06-18	Parapet	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-07-19	Longitudinal Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-07-20	Longitudinal Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-07-21	Longitudinal Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-08-22	Bent	Gray Cementitious Material	100	None Detected	None Detected
HA-08-23	Bent	Gray Cementitious Material	100	None Detected	None Detected

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asbestos in Bulk Building Materials.

FROST ENVIRONMENTAL SERVICES, LLC

339 ROCKLAND ROAD, SUITE E, HENDERSONVILLE, TENNESSEE 37075

(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



POLARIZED LIGHT MICROSCOPY (PLM) LABORATORY ANALYSIS REPORT (EPA/600/R-93/116 (JUNE 1993))

CLIENT: TRIAD Environmental Consultants
PROJECT: 18-TDOT29-01 North Fork Obion River
LOCATION: Henry County

Date Received: 6/28/2019
Date Analyzed: 7/2/2019
Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-08-24	Bent	Gray Cementitious Material	100	None Detected	None Detected
HA-09-25	Bearing Bad	Black Tar Material	82	15-Cellulose	3-Chrysotile
HA-09-26	Bearing Bad	Black Tar Material	82	15-Cellulose	3-Chrysotile
HA-09-27	Bearing Bad	Black Tar Material	82	15-Cellulose	3-Chrysotile
HA-10-28	Bottom Of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-10-29	Bottom Of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-10-30	Bottom Of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-11-31	Bent Header	Gray Cementitious Material	100	None Detected	None Detected
HA-11-32	Bent Header	Gray Cementitious Material	100	None Detected	None Detected
HA-11-33	Bent Header	Gray Cementitious Material	100	None Detected	None Detected
HA-12-34	Abutment	Gray Cementitious Material	100	None Detected	None Detected
HA-12-35	Abutment	Gray Cementitious Material	100	None Detected	None Detected
HA-12-36	Abutment	Gray Cementitious Material	100	None Detected	None Detected

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asebstos in Bulk Building Materials.



CHAIN OF CUSTODY

Report To: David Espy

PROJECT: 18-TDOT 29-01 North Fork Obion River

Company: TriAD Environmental Consultants

Address: 207 Donelson Pike
Nashville, TN 37214

PROJECT LOCATION: Henry County

Phone: (615) 889-6888

Email: despy@triadenv.com

Turnaround Time Requested: ☐ 2-3 Hour ☐ Same Day ☐ 24 Hour ☒ 2-3 Day

Sample Number	Date Collected	Location	Analysis Requested	Volume
HA-01-01	06/26/19	Outer longitudinal girder coating	PLM	
HA-01-02	"	"	"	
HA-01-03	"	"	"	
HA-02-04	"	End wall	"	
HA-02-05	"	"	"	
HA-02-06	"	"	"	
HA-03-07	"	Bottom of decking outer strip	"	
HA-03-08	"	"	"	
HA-03-09	"	"	"	
HA-04-10	"	Top of decking	"	
HA-04-11	"	"	"	
HA-04-12	"	"	"	
HA-05-13	"	Wing wall	"	
HA-05-14	"	"	"	
HA-05-15	"	"	"	

RELINQUISHED BY David Espy

DATE:

06/28/19

RECEIVED AT LAB BY:

DATE:

[Signature]
6/28/19

FROST ENVIRONMENTAL SERVICES, LLC

339 Rockland Road Suite E, Hendersonville, Tennessee 37075

(615) 562-2669 office • (615)-473-9047 cell • email info@frostenvironmental.com



CHAIN OF CUSTODY

Report To: David Espy

PROJECT: 18-TDOT 29-01 North Fork Obion River

Company: TriAD Environmental Consultants

Address: 207 Donelson Pike

Nashville, TN 37214

Phone: (615) 889-6888

Email: despy@triadenv.com

PROJECT LOCATION: Henry County

Turnaround Time Requested: ☐ 2-3 Hour ☐ Same Day ☐ 24 Hour ☒ 2-3 Day

Sample Number	Date Collected	Location	Analysis Requested	Volume
HA-06-16	06/06/19	Parapet	PLM	
HA-06-17	"	"	"	
HA-06-18	"	"	"	
HA-07-19	"	Longitudinal girder	"	
HA-07-20	"	"	"	
HA-07-21	"	"	"	
HA-08-22	"	Bent	"	
HA-08-23	"	"	"	
HA-08-24	"	"	"	
HA-09-25	"	Bearing pad	"	
HA-09-26	"	"	"	
HA-09-27	"	"	"	
HA-10-28	"	Bottom of decking	"	
HA-10-29	"	"	"	
HA-10-30	"	"	"	

RELINQUISHED BY: David Espy

DATE:

06/28/19

RECEIVED AT LAB BY:

DATE:

[Signature]
6/28/19



CHAIN OF CUSTODY

Report To: David Espy
Company: TriAD Environmental Consultants
Address: 207 Donelson Pike
Nashville, TN 37214
Phone: (615) 889-6888
Email: despy@triadenv.com

PROJECT: 18-TDOT 29-01 North Fork Obion River

PROJECT LOCATION: Henry County

Turnaround Time Requested: ☐ 2-3 Hour ☐ Same Day ☐ 24 Hour ☒ 2-3 Day

Sample Number	Date Collected	Location	Analysis Requested	Volume
HA-11-31	06/26/19	Bent header	PLM	
HA-11-32	"	"	"	
HA-11-33	"	"	"	
HA-12-34	"	Abutment	"	
HA-12-35	"	"	"	
HA-12-36	"	"	"	
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—


RELINQUISHED BY _____
DATE: _____

RECEIVED AT LAB BY: [Signature]
DATE: 6/26/19

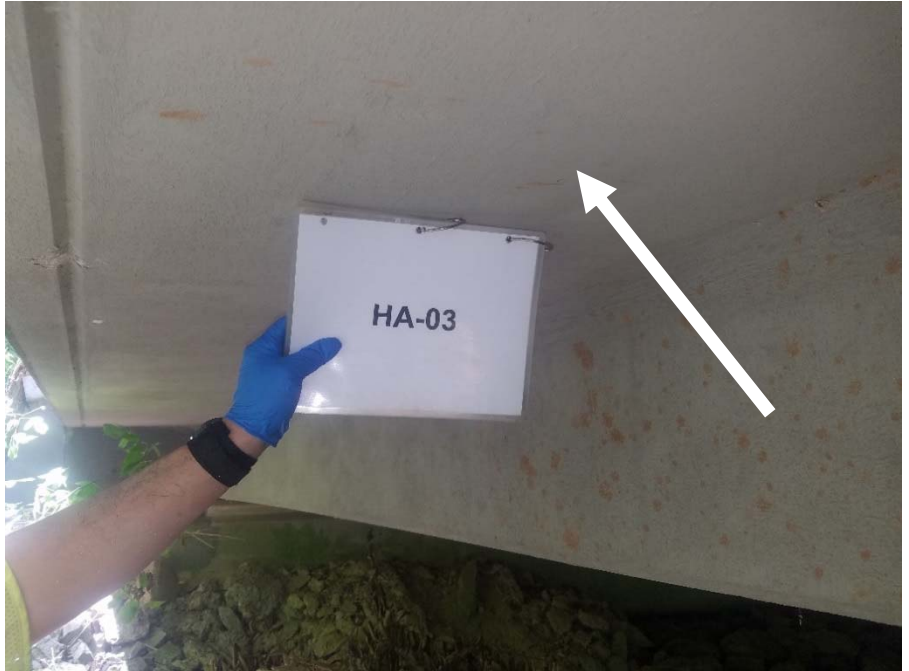
Appendix B:
Asbestos Sampling Photographs

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 1 – East Side of Bridge Facing Northwest	

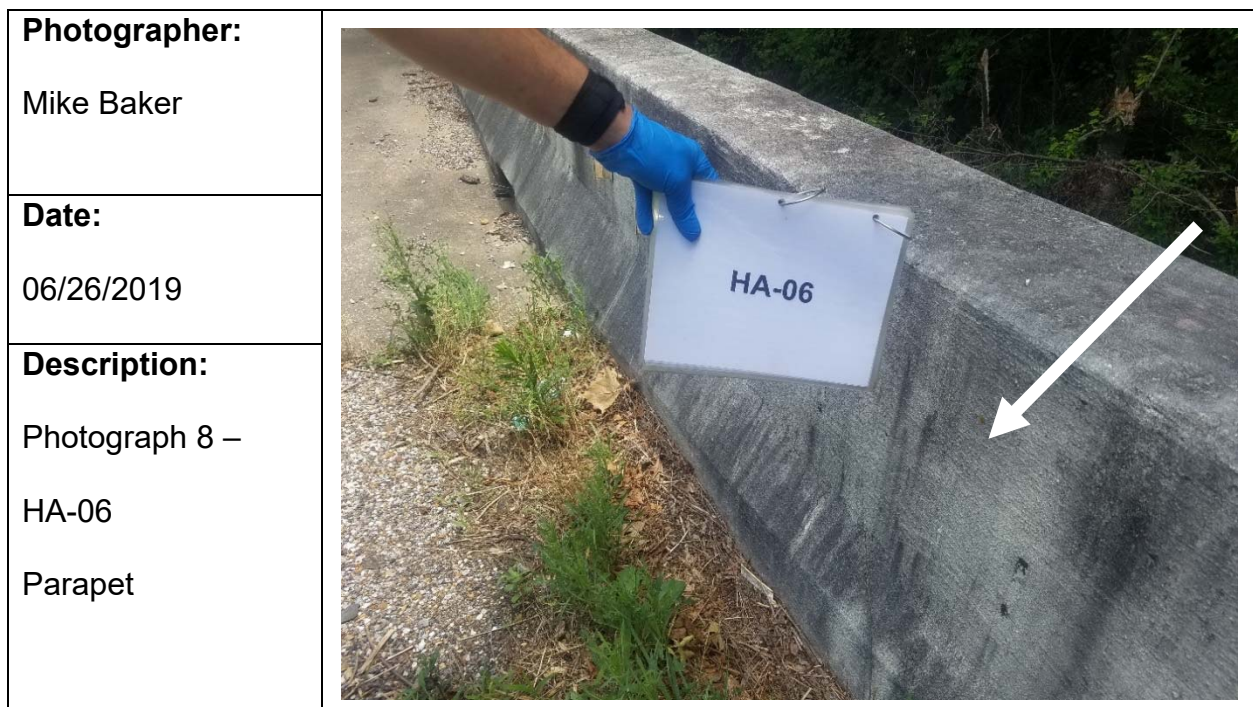
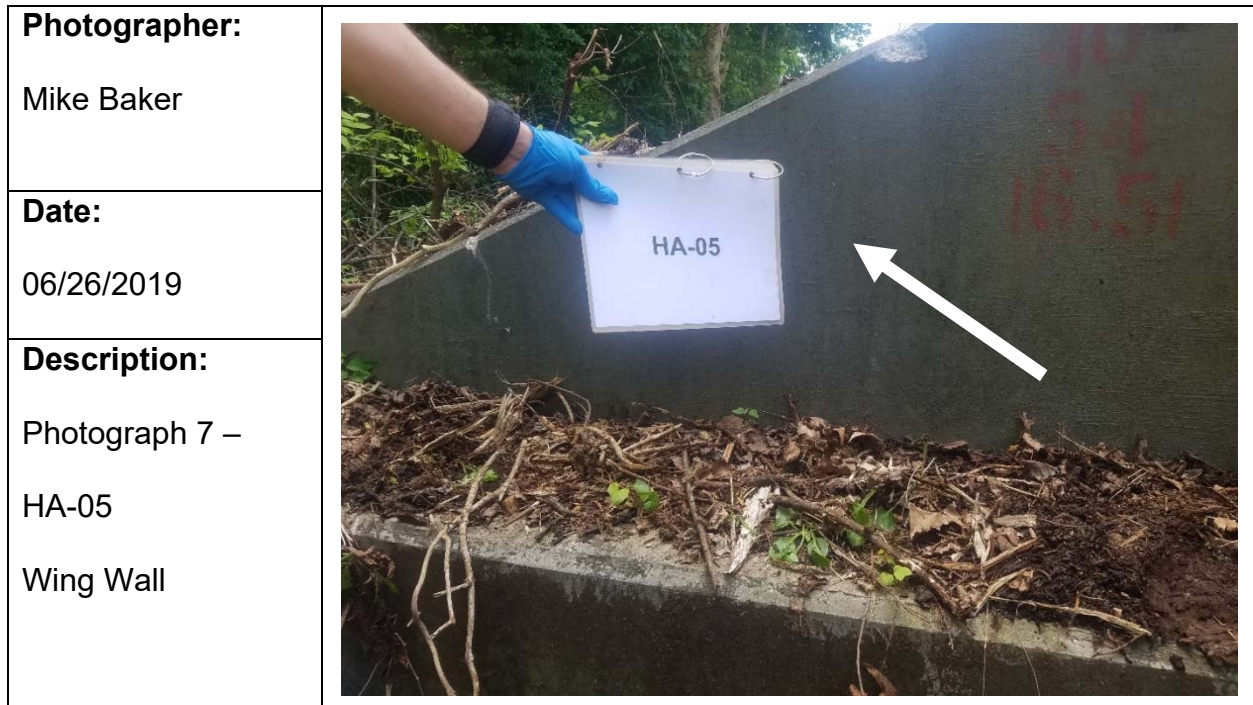
Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 2 – Bridge Identification Number on Guardrail	


Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 3 – HA-01 Outer Longitudinal Girder	

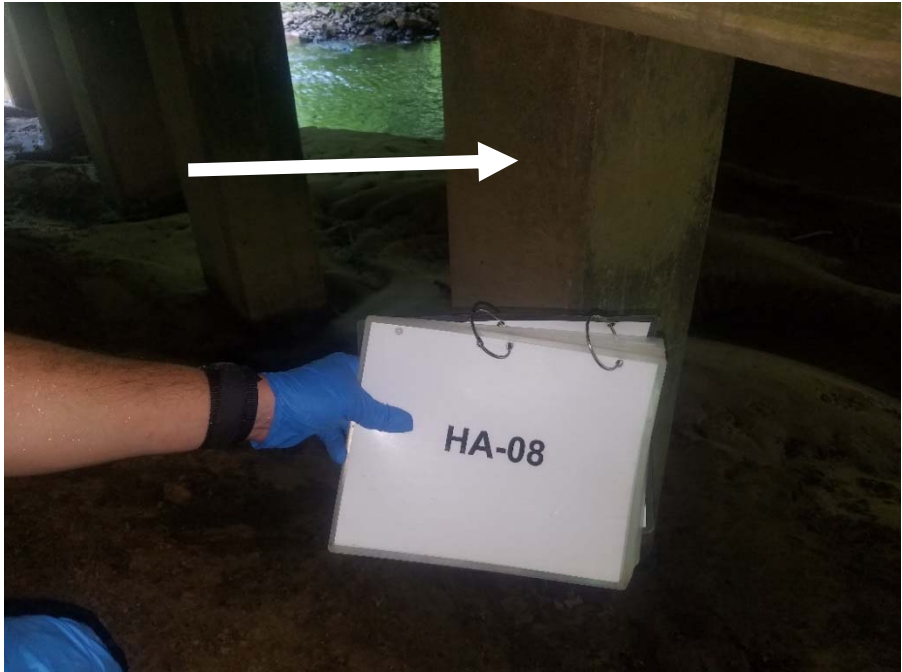
Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 4 – HA-02 End Wall	

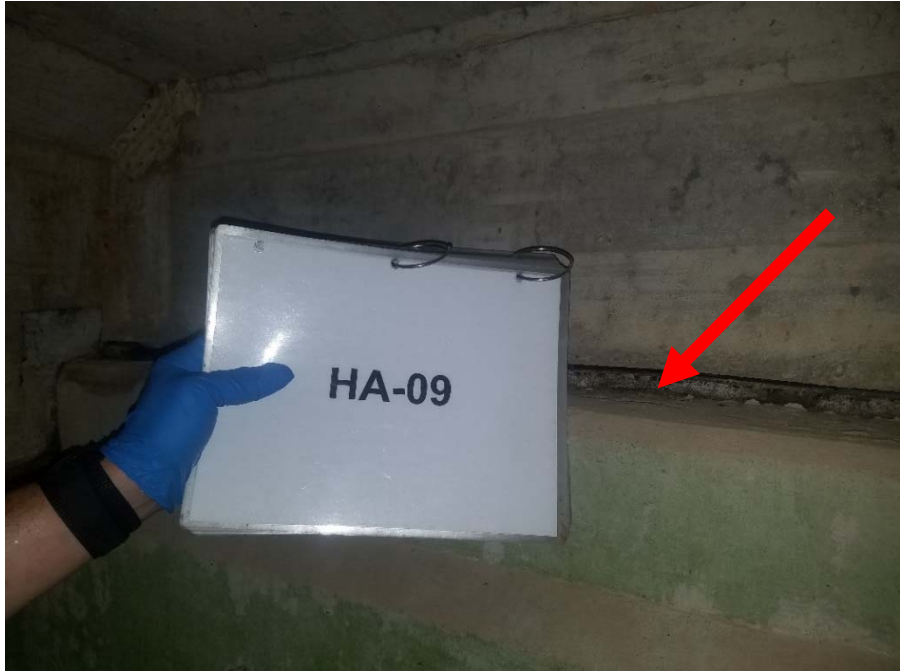
Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 5 – HA-03 Bottom of Decking Outer Strip	


Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 6 – HA-04 Top of Decking	



Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 9 – HA-07 Longitudinal Girder	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 10 – HA-08 Bent	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 11 – HA-09 Bearing Pad Samples Contain 3% Chrysotile	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 12 – HA-10 Bottom of Decking	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 13 – HA-11 Bent Header	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 14 – HA-12 Abutment	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 15 – Storm Water Drainage, Outer Side of Parapet	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 16 – Storm Water Drainage	

Appendix C:
Asbestos Inspection Credentials



THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management

Toxic Substances Program

William R. Snodgrass Tennessee Tower

312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the Company named below is hereby accredited to offer and/or conduct Asbestos activities pursuant to Rule 1200-01-20:

TriAD Environmental Consultants

207 Donelson Pike Ste. 200 Nashville TN, 37214

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee.
This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Initial	A-F-5195-69568	July 03, 2018	July 31, 2019



Given under the Seal of the State of Tennessee in Nashville.

This 2nd Day of July 2018

Division of Solid Waste Management
Toxic Substance Program

CN-1324

(Rev 6/13)

RDA-3020

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

62777-40831



Date Issued: 4/9/20

Re-Accreditation

David M Espy

DOB
18-Sep-1985

Sex
M

HGT
6'0"

WGT
205

Discipline	Accreditation	Expiration
Inspector	A-I-55949-75308	May-31-2020
Management Planner	A-MP-55949-75307	May-31-2020
Project Monitor	A-PM-55949-72889	Jan-31-2020

Asbestos Accreditation

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

111273-38063



Date Issued: 8/21/2018

Initial

Michael B Baker

DOB
19-Jul-1978

Sex
M

HGT
5'10"

WGT
170

Discipline

Accreditation

Expiration

Inspector

A-I-119004-71017

Aug-31-2019

Asbestos Accreditation

Appendix D:
Health and Safety Plan and JSA

HEALTH AND SAFETY PLAN
TDOT PROJECT No. 40003-0224-04

Project Location: Bridge No.: 40SR0540023

Project Description: Asbestos Survey

Project Dates: 06/26/19

TDOT PIN: 101886.02

Project Personnel:

Title	Organization	Name	Phone Number
Project Manager – TDOT (TDOT PM)	Tennessee Dept. of Transportation	Kyle Kirschenmann	615-598-1522
Project Manager – TriAD (TriAD PM)	TriAD Environmental Consultants, Inc.	Jeff Postell	615-889-6888 615-417-8050
Project Safety and Health Manager (SHM)	TriAD Environmental Consultants, Inc.	Chris Scott	615-889-6888 615-417-6154
Site Safety and Health Officer (SSO)	TriAD Environmental Consultants, Inc.	David Espy	615-889-6888 229-347-0516
Emergency Coordinator (EC)	TriAD Environmental Consultants, Inc.	David Espy	615-889-6888 229-347-0516
OSHA Hotline			(800) 321-OSHA

Nearest Hospital: Murray-Calloway County Hospital, Murray, Kentucky

Hospital Phone Number: (270) 762-1100

Map to Hospital: See Attached Page

Health and Safety Plan: See Following Pages

SAFE WORK PERMIT- JSA AND DAILY FIELD REPORT

Site Name/ Work: Bridge No.: 40SR0540023 over North Fork Obion River		Date: 06/26/19
Time Permit Issued/Work Started: 10:00 AM/ PM	Permit Expires/work stopped: 12:30 AM/ PM	Issued To: David Espy
Job Description: Asbestos Survey		Weather: Sunny 80's

Section: 2 EMERGENCY PLANNING: DISCUSSION AT JOB SITE OR SAFETY TAILGATE MEETING

<input checked="" type="checkbox"/> Site Contact:	<input checked="" type="checkbox"/> Emergency Phone: 911
<input checked="" type="checkbox"/> Evacuation Routes	<input checked="" type="checkbox"/> Alt. Site Emergency Phone: (270) 762-1100 Murray-Calloway ER
<input checked="" type="checkbox"/> Staging Area	<input checked="" type="checkbox"/> First Aid/ CPR Trained
<input checked="" type="checkbox"/> Emergency Equipment Needed (Retrieval; SCBA; Radio; etc.)	<input checked="" type="checkbox"/> Rescue Procedures Discussion
Additional Comments: See Map to Hospital and Health and Safety Plan	

Section: 3 JOB SAFETY ANALYSIS

JOB STEPS / WORK ACTIVITIES

HAZARDS (LIST)

1. Asbestos Survey	3,5,6,8,11,12,13,15, 17
2.	
3.	
4	
5	
6	
7	
8	
SUPERVISOR SIGNATURE: <i>David Espy</i>	

POTENTIAL HAZARDS

1. Fire / Explosion	5. Strain / Sprain	9. Thermal Burn	13. Chemical Contact
2. Pinch Points / Caught In	6. Struck By/Traffic Hazards	10. Overhead Work	14. Asphyxiation
3. Slip / Trip / Fall	7. Noise	11. Temperature Extremes	15. Biological Contact
4. Electric Shock	8. Cut / Laceration	12. Inhalation (Dust/ Vapor/ Fumes)	16. Key Procedure Applies
17. Asbestos Exposure	18. Other: (Specify)	19. Other: (Specify)	

HAZARD MITIGATION For Corresponding Job Step

1. Wear proper PPE	6. Ensure good footing and clear egress/ingress
2. Understand the work plan	7. Practice good housekeeping
3. No solo lifting of greater than 50 pounds	8. Use proper tools for the task
4. Maintain awareness of surroundings	9. No smoking
5. Place Warning Signs	10. Other: (Specify)

JOB HAZARD REMINDERS (Check All That Apply)

Equipment Operation	Ergonomics/Exposures	Conditions	Other
<input type="checkbox"/> Motor Vehicle Operation	<input type="checkbox"/> Body Positioning	<input checked="" type="checkbox"/> Walking Surfaces	<input type="checkbox"/> Extension Cords / <u>GFCI</u>
<input type="checkbox"/> Ladders	<input type="checkbox"/> Cramped Conditions	<input checked="" type="checkbox"/> Water Hazards	<input type="checkbox"/> Housekeeping
<input type="checkbox"/> Heavy Equipment	<input type="checkbox"/> Elevated Work	<input checked="" type="checkbox"/> Sharp Edges	<input type="checkbox"/> Barricades
<input type="checkbox"/> Overhead Obstructions mark	<input type="checkbox"/> Heavy Lifting	<input type="checkbox"/> Lighting	<input type="checkbox"/> Adverse Weather
<input type="checkbox"/> Underground Utilities mark	<input checked="" type="checkbox"/> Heat Stress/Cold Stress	<input type="checkbox"/> Overhead Work	<input type="checkbox"/> Other
<input type="checkbox"/> Site Conditions (Slope, Stability)	<input checked="" type="checkbox"/> Physical Exertion	<input checked="" type="checkbox"/> Hand & Power Tools	<input type="checkbox"/>
<input type="checkbox"/> Equipment Fueling	<input checked="" type="checkbox"/> Repetitive Motion	<input type="checkbox"/> Hot / Cold Liquids / Surfaces	<input type="checkbox"/>
<input type="checkbox"/> Road Hazards use spotters	<input type="checkbox"/> Suitability for Work	<input type="checkbox"/> Other	<input type="checkbox"/>
<input type="checkbox"/> Man Lifts	<input type="checkbox"/> Communications	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> Training	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> Other	<input type="checkbox"/>	<input type="checkbox"/>

PPE REQUIREMENTS

HES EQUIPMENT

Minimum: Hard Hat, Safety Vest, Safety Glasses, Steel Toed Shoes, Long Pants, Sleeved Shirt	Fire Extinguisher: Y / N / <u>N/R</u>	Spill Response Mat'l. Y / N / <u>N/R</u>
Other PPE Req'd: <u>Gloves, Resp.</u>	Eyewash/Shower Y / N / <u>N/R</u>	Air Monitoring: Y / N / <u>N/R</u>
	First Aid Kit <u>Y</u> / N / N/R	Other:

SECTION 4

KEY PROCEDURES

CONTROL OF HAZARDOUS ENERGY (LOCKOUT/ TAGOUT) Needed ☐ Not Needed ☒Individual Lockout ☐ Group Lockout ☐

Group Primary Authorized Employee: _____

Attach Lockout List or Machine Specific Procedure

HOT WORK PERMIT Needed ☐ Not Needed ☒Type of Hot Work: Burning ☐ Welding ☐ Grinding ☐ Fire Watch Req'd.? ☐ YES ☒ NOHot Work Permit Used: Client Permit ☐ Contractor Permit ☐

ELEVATED WORK OR EXCAVATION / TRENCH WORK

Personnel Working <3 Ft below ground level or > 6 Ft. Above Lower Level? ☐ YES ☒ NOProtected By: Guardrail System: ☐ Personal Fall Arrest System: ☐ Other (Specify): ☐

Section: 5

PERMIT-APPROVALS / EMPLOYEE SIGNATURES

Signatures approve only work conducted under the requirements of this permit

Supervisor: David EsparteroDate: 06/26/19

Employee(s) /Contractor(s) Names (print): I have reviewed and understand and will follow all conditions of this completed permit and its attachments. I will report hazardous conditions identified on this job site to my supervisor and/or designee for necessary corrections.

1) David Espartero

6)

2) Mike Baker

7)

3)

8)

4)

9)

5)

10)

Section: 6

MEET and GREET Job Site Awareness

Visitors and Additional Personnel Names (print): All employees, visitors and contractors entering the area affected by this permit must meet and exchange information on the scope of work, hazards involved and intentions for the day. All persons on job sites must be aware of all work and the presence of all other persons on the site. Those not authorized on this permit above must list their name below acknowledging awareness of the task authorized by this permit. A representative, such as a contractor foreman, may acknowledge for the group.

Print Name and Company/Organization

1)

2)

3)

4)

5)

6)

7)

8)

9)

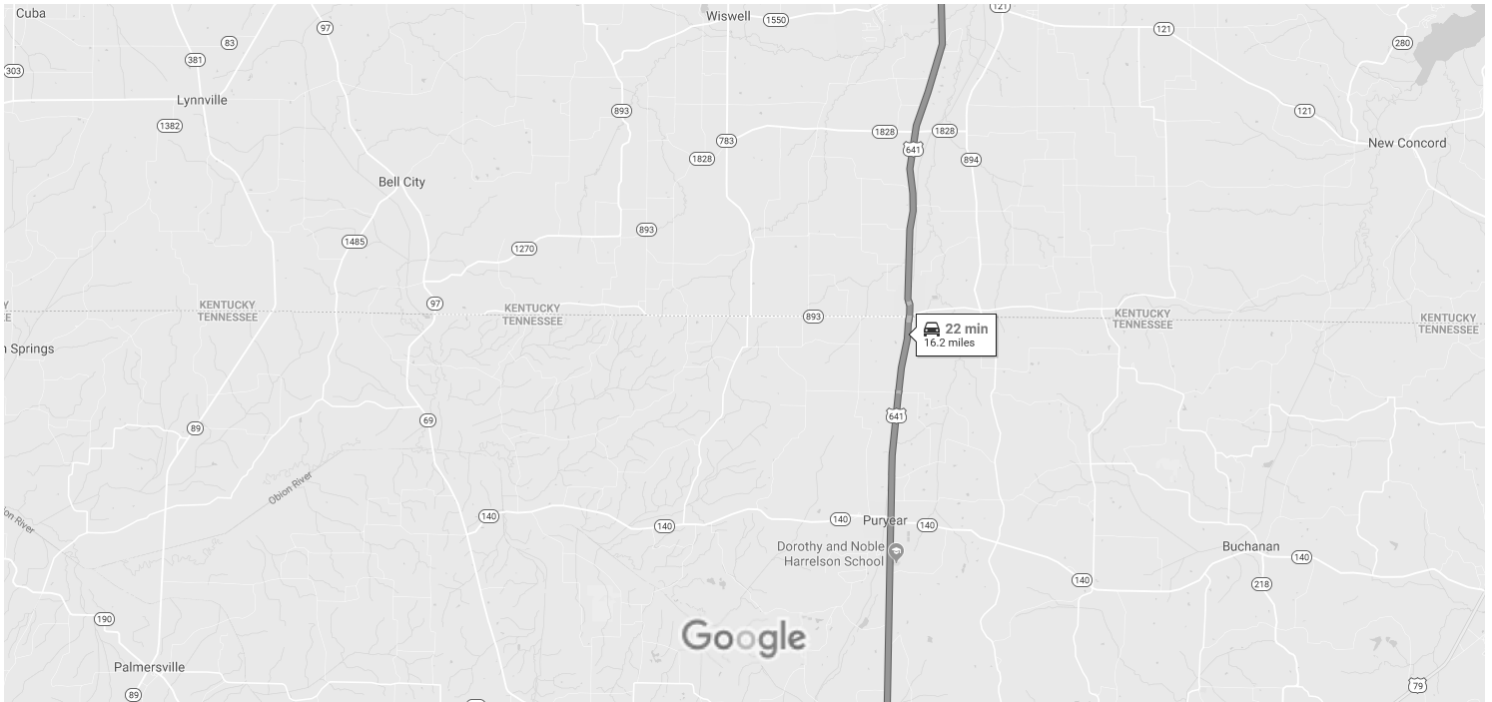
10)

Section: 7

JOB COMPLETE OR PERMIT CLOSED

Signature verifies closure of permit and completion of items checked below.

☒ Job Complete☐ Job Not Complete☒ Review work area to verify job site clean-up and safe conditionSupervisor: David EsparteroTime: 12:30



Map data ©2019 2 mi

5325 US-641

Puryear, TN 38251

- ↑ 1. Head north on US-641 N toward Williams Ln
 ⓘ Entering Kentucky
 15.6 mi
- ➔ 2. Turn right onto Sycamore St
 0.3 mi
- ➔ 3. Turn left onto S 9th St
 0.3 mi
- ➔ 4. Turn right
 ⓘ Destination will be on the right
 276 ft

Murray-Calloway County Hospital- Emergency Room

803 Poplar St, Murray, KY 42071

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.



TENNESSEE DEPARTMENT OF TRANSPORTATION ASBESTOS SURVEY REPORT

SR-54 over Rowe Creek, LM 17.13
Bridge 40SR0540025 (40-SR054-17.13)
Henry County
TDOT Project No.: 40003-0224-04, PIN: 101886.02



TriAD Project No. 18-TDOT29-01

Prepared by



ENVIRONMENTAL CONSULTANTS

07/16/19

David Espy Mike Baker

David Espy and Mike Baker
Tennessee Asbestos Inspector Accreditation No: A-I-55949-75308
Tennessee Asbestos Inspector Accreditation No: A-I-119004-71017

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Appendix B	Asbestos Sampling Photographs
Appendix C	Asbestos Inspection Credentials
Appendix D	Health and Safety Plan and JSA

1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed by TriAD Environmental Consultants, Inc., (TriAD) in accordance with the requirements of the State of Tennessee, Department of Transportation Environmental Division (TDOT), Hazardous Materials Section.

1.1 TDOT Bridge Identification

The bridge is identified in the TDOT Project Management System as:

Bridge Number: 40SR0540025

Termini: SR-54 From near Smith Road in Paris to Crossland Road/Brannon Lane (North of Puryear) (IA)

TDOT PE-N: 40003-0224-04

TDOT PIN: 101886.02

County: Henry

1.2 Bridge Description

Bridge Number 40SR0540025 is located on SR-54 over Rowe Creek at log mile (LM) 17.13 in Henry County. The bridge is an 80-foot, two-lane, three-span bridge, constructed of concrete deck girders and box beams with a concrete deck and wearing surface. The bridge was constructed in 1937 with an unknown widening date. The location of the bridge is provided on the Bridge Vicinity Map in Figure 1.

2.0 ACM ASSESSMENT

Observed suspect ACM were categorized by homogeneous areas (HA), which are materials that appear similar throughout in terms of color, texture, and application date. Suspect ACM for each HA were physically assessed for friability and condition of material. Random samples of suspect ACM were collected from designated HAs and submitted to

an accredited laboratory for analysis. The laboratory results of the ACM sampling are included in Appendix A. Photographs showing the locations of the HAs are provided in Figure 2. Photographs of the HAs that were sampled are included in Appendix B.

2.1 Inspection Personnel

The sampling and field activities were performed on June 26, 2019, by Mr. David Espy and Mr. Mike Baker, Accredited State of Tennessee Asbestos Inspectors, with TriAD. Copies of Mr. Espy's, Mr. Baker's, and TriAD's current accreditation from the State of Tennessee are included in Appendix C. This work was completed in accordance with TriAD's Health and Safety Plan and Job Safety Analysis (JSA). A copy of the JSA and the cover page for the Health and Safety Plan is included in Appendix D.

2.2 Visual Survey

The inspection began with a walk-through and visual survey of the bridge. The visual survey consisted of:

- Locating and confirming the structure to be sampled
- Sketching the structure and/or verifying the plans provided
- Taking general photos of the structure
- Locating and identifying suspect ACM to be sampled
- Determining accessible locations to collect samples

2.3 ACM Sampling of Bridge Components

Suspect ACM was sampled in accordance with United States Environmental Protection Agency (USEPA) regulation 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP) and in general conformance with the protocols as outlined in USEPA regulation 40 CFR 763 Asbestos Hazard Emergency Response Act (AHERA). TriAD personnel made reasonable effort during the performance of this survey to identify suspect ACM which may be encountered during future demolition or renovation

activities. Suspect ACM samples collected for analysis were obtained by minimal destructive sampling techniques. Possible suspect ACM located in voids or concealed areas which were not accessible during the survey process are not included as part of this report. Should suspect materials other than those identified in this report be discovered during demolition or renovation activities, these materials should be assumed asbestos containing until laboratory confirmation of the presence or absence of asbestos content is made. Below is a list of the HAs that were sampled:

Table 1: Homogeneous Areas	
HA-01	Parapet
HA-02	Top of Decking
HA-03	Parapet Coating
HA-04	Longitudinal Girder
HA-05	Bent Header
HA-06	Bent
HA-07	Bearing Pad
HA-08	Abutment
HA-09	End Wall
HA-10	Cross Girder
HA-11	Bottom of Decking
HA-12	Outer Longitudinal Girder Coating
HA-13	Bottom of Decking Outer Strip

Individual sample numbers show the HA number plus the unique sample designation. For example, sample HA-02-05 was collected from HA-02 and is the fifth sample of the total sample set from the bridge.

2.3.1 HA-01 Parapet

The parapets are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.2 HA-02 Top of Decking

The top of the decking is made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.3 HA-03 Parapet Coating

The parapets are coated with a thin white textured material. Three samples of the coating were collected from this HA. A utility knife was used to collect these samples.

2.3.4 HA-04 Longitudinal Girder

The longitudinal girders are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.5 HA-05 Bent Header

The bent headers are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.6 HA-06 Bent

The bents are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.7 HA-07 Bearing Pad

A flexible bearing pad was present between the cross girder and the bent header. Three samples were collected from this HA. A utility knife was used to collect these samples.

2.3.8 HA-08 Abutment

The abutments are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.9 HA-09 End Wall

The end walls are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.10 HA-10 Cross Girder

The cross girders are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.11 HA-11 Bottom of Decking

The bottom of the decking is made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.12 HA-12 Outer Longitudinal Girder Coating

The outer longitudinal girders are coated with a thin tan textured material. Three samples of the coating were collected from this HA. A utility knife was used to collect these samples.

2.3.13 HA-13 Bottom of Decking Outer Strip

The bottom of the decking outer strips are made of concrete. Three samples were collected from this HA. A hammer and chisel were used to collect these samples.

2.3.14 Utility Components

There were no utility conduits attached to the bridge.

2.3.15 Bridge Drainage System

The storm water drainage system on the bridge consisted of 12 approximately 2-foot by 6-inch rectangular holes that had been installed through the bottom of the bridge parapets and lined with a metal spout. There were no suspected ACM associated with these

drainage structures other than the concrete parapets, concrete decking, and parapet coatings which were sampled and identified as HA-01, HA-02 and HA-03.

3.0 ANALYTICAL PROCEDURES

The bulk samples were analyzed in the laboratory using Polarized Light Microscopy (PLM) coupled with dispersion staining (USEPA Method 600/R-93/116). PLM is an asbestos analytical method which identifies the specific asbestos minerals by their unique optical properties. The optical properties are a result of the mineral's chemical composition, physical atomic structure, and visual morphology. This is the USEPA-recommended method of analysis for asbestos identification in bulk samples.

The bulk samples collected for this inspection were analyzed by Frost Environmental Services, LLC, a laboratory that has received certification from the American Industrial Hygiene Association Laboratory Accreditation Program (Laboratory identification number 198214).

4.0 REGULATORY OVERVIEW

4.1 National Emission Standards for Hazardous Air Pollutants

The USEPA's NESHAP regulations require that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.2 Definitions

Significant definitions related to regulation of asbestos under NESHAP regulations include:

Friable ACM is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, PLM, that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. (40 CFR 61.141)

Non-friable ACM is any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, PLM, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. USEPA also defines two categories of non-friable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than one percent (1%) asbestos as determined using PLM according to the method specified in Appendix A, Subpart F, 40 CFR Part 763. (40 CFR 61.141)

Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than one percent (1%) asbestos as determined using PLM according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (40 CFR 61.141)

Regulated Asbestos-Containing Material (RACM) is (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II

non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Friable materials are defined as those that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

A total of 39 samples were obtained from the bridge. Multiple samples of each HA were collected in accordance with TDOT requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on HAs of suspect materials, as described in Section 2.0.

Based on the analytical results, three of the samples collected contained greater than one percent (1%) asbestos. The materials found to be positive for asbestos are the bearing pads located between the cross girders and the bent headers. The estimated quantity of the asbestos containing bearing pads is 150 square feet. A summary of the sampled materials that were found to contain greater than one percent (1%) asbestos is presented in the following table.

Table 2: Materials Containing Asbestos				
Sample No.	Material Description	Location	Condition	% Asbestos and Type
HA-07-19	Black Tar Material	Bearing Pad	Good	3% Chrysotile
HA-07-20	Black Tar Material	Bearing Pad	Good	3% Chrysotile
HA-07-21	Black Tar Material	Bearing Pad	Good	3% Chrysotile

The analytical results of all the samples collected, along with the chain-of-custody records, are included in Appendix A. Photographs of examples of the HAs are included

in Appendix B. A Bridge Vicinity Map is provided as Figure 1. A profile of the bridge with homogenous area sample locations is depicted on Figure 2.

6.0 QUALIFICATIONS

This report has been prepared on behalf of and exclusively for TDOT. The information presented in this report is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, TriAD requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Any party, other than TDOT, relying on this document is cautioned that all conclusions made, or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee, or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

Figures

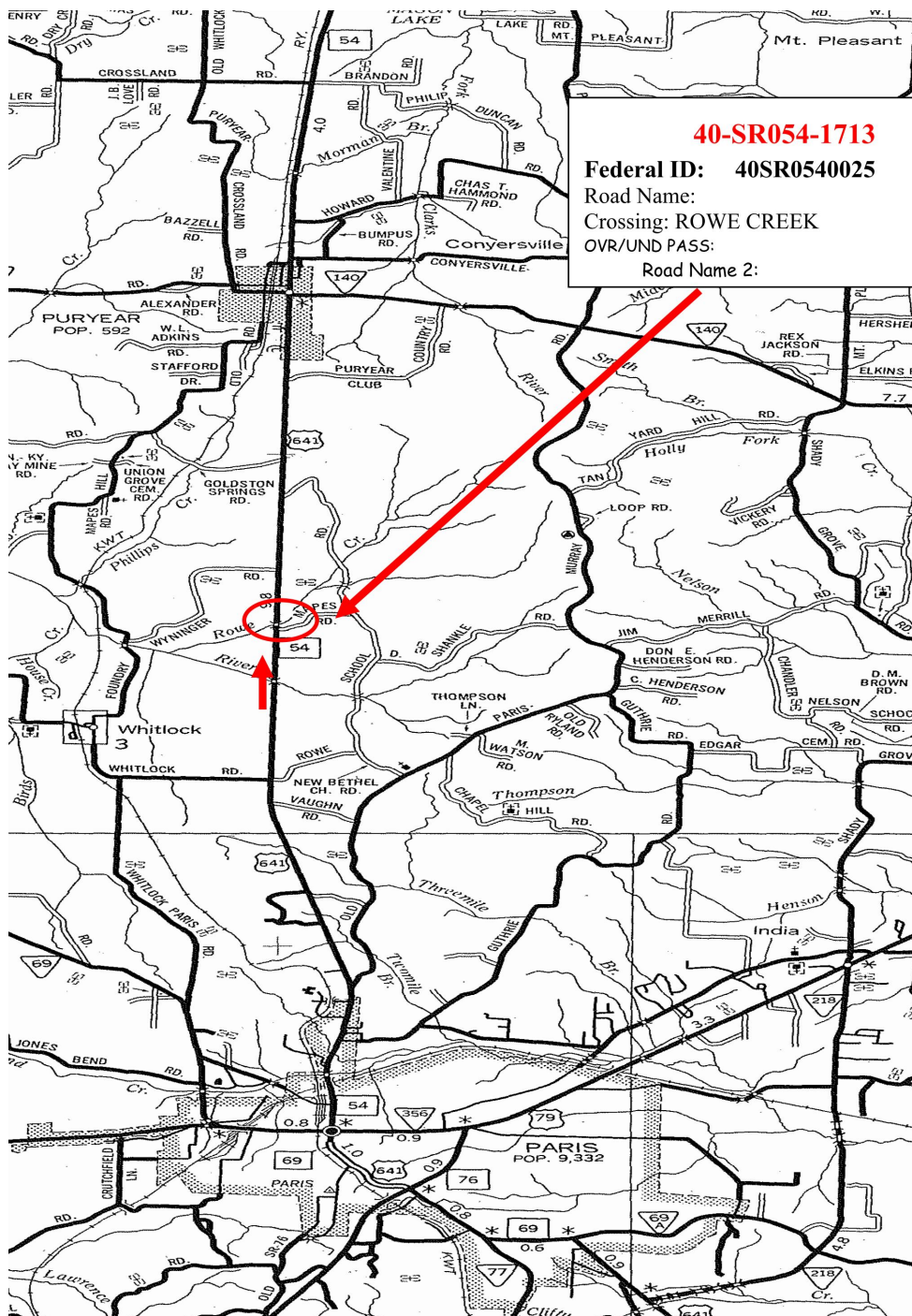


FIGURE 1
BRIDGE VICINITY MAP

PIN NO.: 101886.02
SR-54 OVER ROWE CREEK, LM 17.13
BRIDGE NO.: 40SR0540025
HENRY COUNTY, TENNESSEE

SCALE: N.T.S.

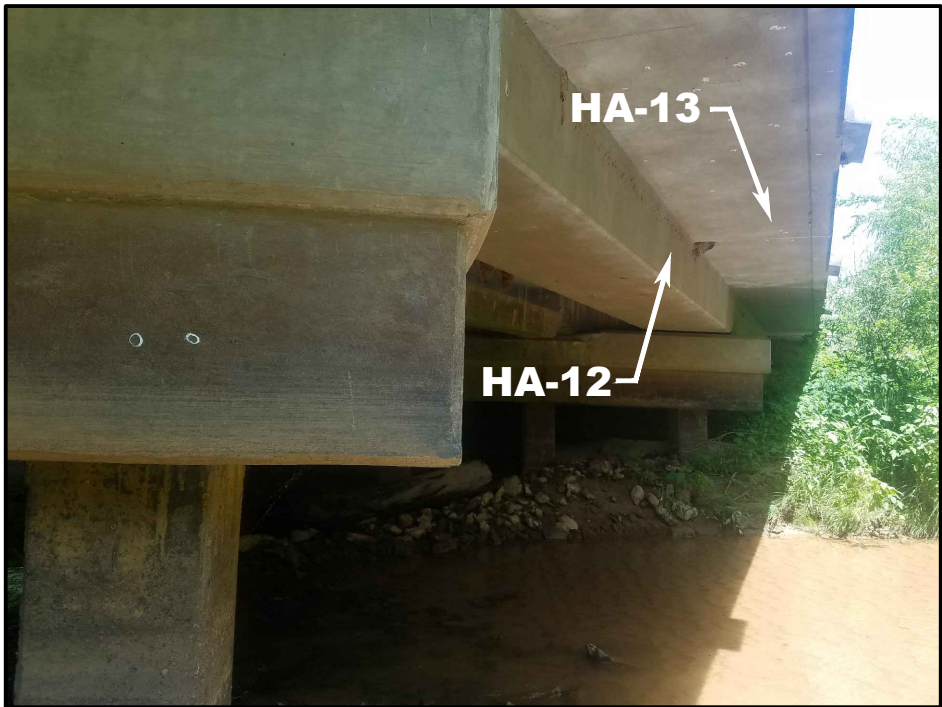
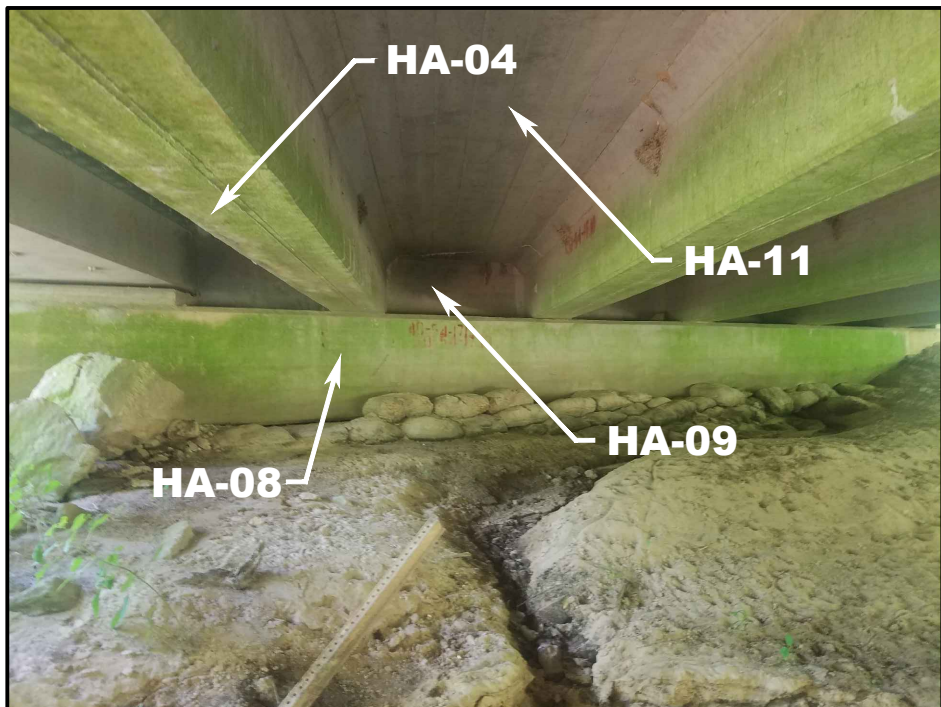
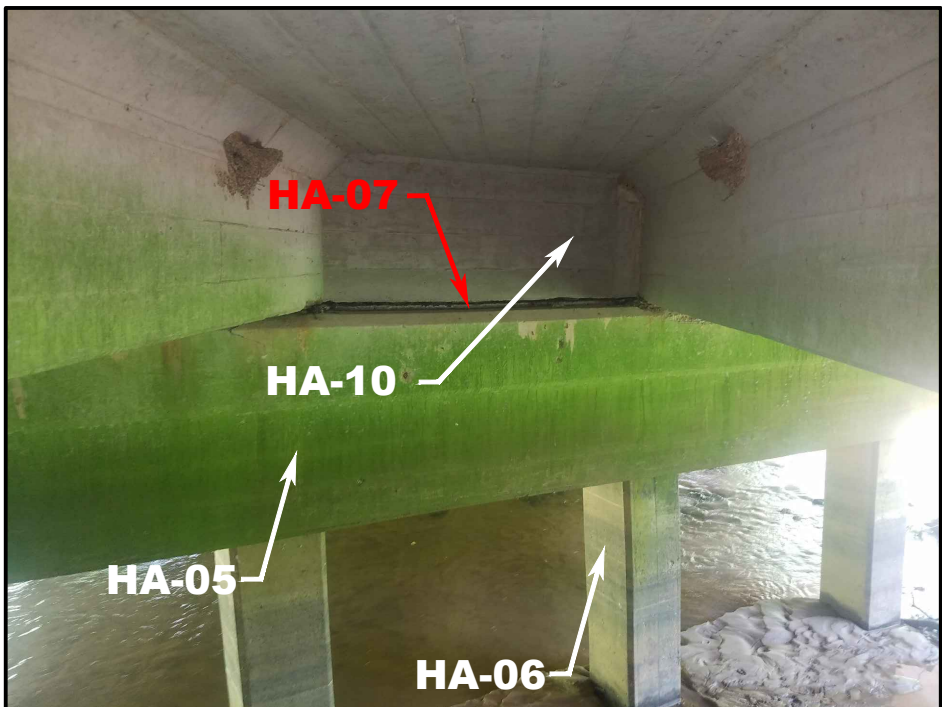
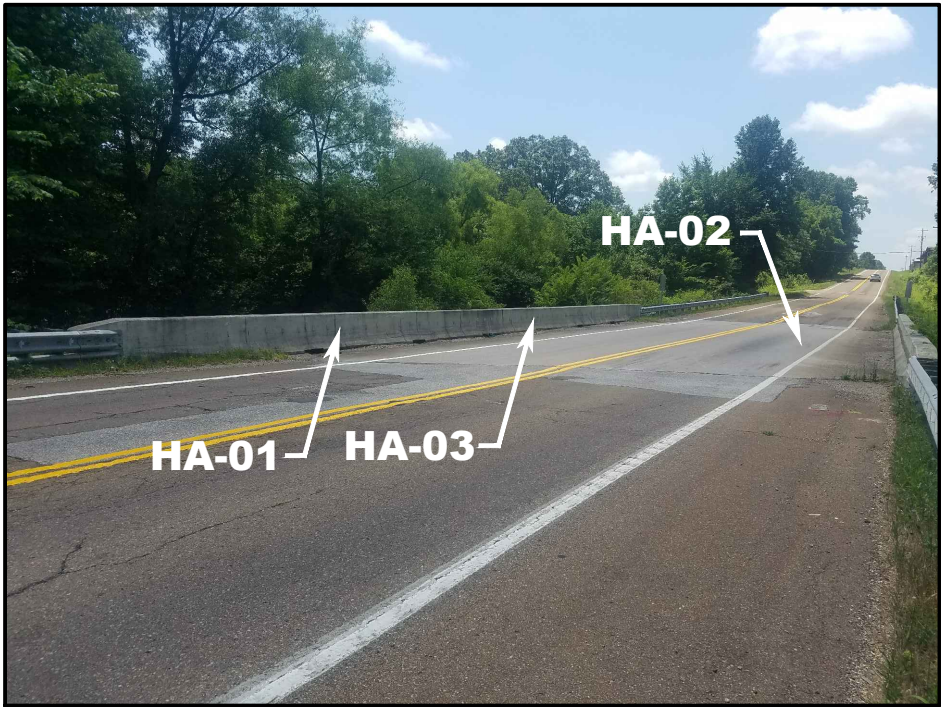
DR ALW CHK DME REV JMP

PREPARED BY:

TRIAD ENVIRONMENTAL CONSULTANTS, INC.
Suite 200, 207 Donelson Pike, Nashville, TN 37214
615-889-6888 fax 615-889-4004

PROJ: 18-TDOT29-01 DATE: 07/04/19 SHEET 1 OF 1

N:\coba\DOT\18-TDOT29-01 - Henry County 3 Bridges\DRAWINGS\BRIDGE 1\2001-FIG-2-HENRY CO-1.dwg
SAVED: 7/5/2019 3:09 PM BY: AWATTS



HOMOGENEOUS AREAS

HA-01 - PARAPET	HA-08 - ABUTMENT
HA-02 - TOP OF DECKING	HA-09 - END WALL
HA-03 - PARAPET COATING	HA-10 - CROSS GIRDER
HA-04 - LONGITUDINAL GIRDER	HA-11 - BOTTOM OF DECKING
HA-05 - BENT HEADER	HA-12 - OUTER LONGITUDINAL GIRDER COATING
HA-06 - BENT	HA-13 - BOTTOM OF DECKING OUTER STRIP
HA-07 - BEARING PAD	

NOTES

- HOMOGENEOUS AREA SAMPLE LOCATIONS ARE GENERALIZED; ACTUAL SAMPLES WERE COLLECTED FROM RANDOM LOCATIONS ACROSS THE STRUCTURE.
- MATERIALS CONTAINING ASBESTOS ARE MARKED IN RED.

FIGURE 2 HOMOGENEOUS AREAS

PIN NO.: 101886.02
SR-54 OVER ROWE CREEK, LM 17.13
BRIDGE NO.: 40SR0540025
HENRY COUNTY, TENNESSEE

SCALE: N.T.S. DR ALW CHK DME REV JMP

PREPARED BY:



ENVIRONMENTAL CONSULTANTS, INC.
Suite 200, 207 Donelson Pike, Nashville, TN 37214
615-889-6888 fax 615-889-4004

PROJ: 18-TDOT29-01 DATE: 07/04/19 SHEET 1 OF 1

Appendix A:
Laboratory Analysis Report

FROST ENVIRONMENTAL SERVICES, LLC

339 ROCKLAND ROAD, SUITE E, HENDERSONVILLE, TENNESSEE 37075

(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



POLARIZED LIGHT MICROSCOPY (PLM) LABORATORY ANALYSIS REPORT (EPA/600/R-93/116 (JUNE 1993))

CLIENT: TRIAD Environmental Consultants

Date Received: 6/28/2019

PROJECT: 18-TDOT29-01 Rowe Creek

Date Analyzed: 7/2/2019

LOCATION: Henry County

Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-01-01	Parapet	Gray Cementitious Material	100	None Detected	None Detected
		White Coating	100	None Detected	None Detected
HA-01-02	Parapet	Gray Cementitious Material	100	None Detected	None Detected
		White Coating	100	None Detected	None Detected
HA-01-03	Parapet	Gray Cementitious Material	100	None Detected	None Detected
		White Coating	100	None Detected	None Detected
HA-02-04	Top of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-02-05	Top of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-02-06	Top of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-03-07	Parapet Coating	White Coating	100	None Detected	None Detected
HA-03-08	Parapet Coating	White Coating	100	None Detected	None Detected
HA-03-09	Parapet Coating	White Coating	100	None Detected	None Detected
HA-04-10	Longitudinal Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-04-11	Longitudinal Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-04-12	Longitudinal Girder	Gray Cementitious Material	100	None Detected	None Detected

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asbestos in Bulk Building Materials.

FROST ENVIRONMENTAL SERVICES, LLC

339 ROCKLAND ROAD, SUITE E, HENDERSONVILLE, TENNESSEE 37075

(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



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Date Analyzed: 7/2/2019

LOCATION: Henry County

Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-05-13	Bent Header	Gray Cementitious Material	100	None Detected	None Detected
		Green Coating	100	None Detected	None Detected
HA-05-14	Bent Header	Gray Cementitious Material	100	None Detected	None Detected
		Green Coating	100	None Detected	None Detected
HA-05-15	Bent Header	Gray Cementitious Material	100	None Detected	None Detected
		Green Coating	100	None Detected	None Detected
HA-06-16	Bent	Gray Cementitious Material	100	None Detected	None Detected
		Green Coating	100	None Detected	None Detected
HA-06-17	Bent	Gray Cementitious Material	100	None Detected	None Detected
		Green Coating	100	None Detected	None Detected
HA-06-18	Bent	Gray Cementitious Material	100	None Detected	None Detected
		Green Coating	100	None Detected	None Detected
HA-07-19	Bearing Bad	Black Tar Material	87	10-Cellulose	3-Chrysotile
HA-07-20	Bearing Bad	Black Tar Material	88	10-Cellulose	2-Chrysotile
HA-07-21	Bearing Bad	Black Tar Material	87	10-Cellulose	3-Chrysotile

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asbestos in Bulk Building Materials.

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(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



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CLIENT: TRIAD Environmental Consultants

Date Received: 6/28/2019

PROJECT: 18-TDOT29-01 Rowe Creek

Date Analyzed: 7/2/2019

LOCATION: Henry County

Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-08-22	Abutment	Gray Cementitious Material	100	None Detected	None Detected
HA-08-23	Abutment	Gray Cementitious Material	100	None Detected	None Detected
HA-08-24	Abutment	Gray Cementitious Material	100	None Detected	None Detected
HA-09-25	End Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-09-26	End Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-09-27	End Wall	Gray Cementitious Material	100	None Detected	None Detected
HA-10-28	Cross Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-10-29	Cross Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-10-30	Cross Girder	Gray Cementitious Material	100	None Detected	None Detected
HA-11-31	Bottom Of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-11-32	Bottom Of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-11-33	Bottom Of Decking	Gray Cementitious Material	100	None Detected	None Detected
HA-12-34	Outer Longitudinal Girder Coating	Tan Coating	100	None Detected	None Detected
HA-12-35	Outer Longitudinal Girder Coating	Tan Coating	100	None Detected	None Detected
HA-12-36	Outer Longitudinal Girder Coating	Tan Coating	100	None Detected	None Detected

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asebstos in Bulk Building Materials.

FROST ENVIRONMENTAL SERVICES, LLC

339 ROCKLAND ROAD, SUITE E, HENDERSONVILLE, TENNESSEE 37075

(615) 562-2669 office - (615) 473-9047 cell - email: lab@frostenvironmental.com



POLARIZED LIGHT MICROSCOPY (PLM) LABORATORY ANALYSIS REPORT (EPA/600/R-93/116 (JUNE 1993))

CLIENT: TRIAD Environmental Consultants

Date Received: 6/28/2019

PROJECT: 18-TDOT29-01 Rowe Creek

Date Analyzed: 7/2/2019

LOCATION: Henry County

Date Reported: 7/2/2019

ANALYST: Seth Frost

Sample Number	Location	Material Description	Binder (Non-Fibrous) Material	Non-Asbestos Fiber	Asbestos Type & Percent
HA-13-37	Bottom Of Decking Outer Strip	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-13-38	Bottom Of Decking Outer Strip	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected
HA-13-39	Bottom Of Decking Outer Strip	Gray Cementitious Material	100	None Detected	None Detected
		Tan Coating	100	None Detected	None Detected

Asbestos Containing Material (ACM) is defined as any material containing more than one percent asbestos.

Analysis was performed using EPA/600/R-93/116 (June 1993)), Test Method for the Determination of Asebstos in Bulk Building Materials.



CHAIN OF CUSTODY

PROJECT: 18-TDOT 29-01 Rowe Creek

Report To: David Espy

Company: Tri AD Environmental Consultants

Address: 207 Donelson Pike
Nashville, TN 37214

PROJECT LOCATION: Henry County

Phone: (615) 889-6888

Email: despy@triadenv.com

Turnaround Time Requested: ☐ 2-3 Hour ☐ Same Day ☐ 24 Hour ☒ 2-3 Day

Sample Number	Date Collected	Location	Analysis Requested	Volume
HA-01-01	06/26/19	Parapet	PLM	
HA-01-02	"	"	"	
HA-01-03	"	"	"	
HA-02-04	"	Top of decking	"	
HA-02-05	"	"	"	
HA-02-06	"	"	"	
HA-03-07	"	Parapet coating	"	
HA-03-08	"	"	"	
HA-03-09	"	"	"	
HA-04-10	"	Longitudinal girder	"	
HA-04-11	"	"	"	
HA-04-12	"	"	"	
HA-05-13	"	Bent header	"	
HA-05-14	"	"	"	
HA-05-15	"	"	"	

RELINQUISHED BY David Espy

DATE:

06/28/19

RECEIVED AT LAB BY:

DATE:

[Signature]
6/28/19

FROST ENVIRONMENTAL SERVICES, LLC

339 Rockland Road Suite E, Hendersonville, Tennessee 37075

(615) 562-2669 office • (615)-473-9047 cell • email info@frostenvironmental.com



CHAIN OF CUSTODY

Report To: David Espy

Company: Tri AD Environmental Consultants

Address: 207 Donelson Pike

Nashville, TN 37214

Phone: (615) 889-6888

Email: despy@triadenv.com

PROJECT: 18-TDOT 29-01 Rowe Creek

PROJECT LOCATION: Henry County

Turnaround Time Requested: ☐ 2-3 Hour ☐ Same Day ☐ 24 Hour ☒ 2-3 Day

Sample Number	Date Collected	Location	Analysis Requested	Volume
HA-06-16	06/26/19	Bent	PLM	
HA-06-17	"	"	"	
HA-06-18	"	"	"	
HA-07-19	"	Bearing pad	"	
HA-07-20	"	"	"	
HA-07-21	"	"	"	
HA-08-22	"	Abutment	"	
HA-08-23	"	"	"	
HA-08-24	"	"	"	
HA-09-25	"	End wall	"	
HA-09-26	"	"	"	
HA-09-27	"	"	"	
HA-10-28	"	Cross girder	"	
HA-10-29	"	"	"	
HA-10-30	"	"	"	

RELINQUISHED BY David Espy

DATE:

06/28/19

RECEIVED AT LAB BY:

DATE:

WST/NO
6/28/19



CHAIN OF CUSTODY

Report To: David Espy

Company: Tri AD Environmental Consultants

Address: 207 Donelson Pike
Nashville, TN 37214

Phone: (615) 889-6888

Email: despy@triadenv.com

PROJECT: 18-TDOT 29-01 Rowe Creek

PROJECT LOCATION: Henry County

Turnaround Time Requested: ☐ 2-3 Hour ☐ Same Day ☐ 24 Hour ☒ 2-3 Day

Sample Number	Date Collected	Location	Analysis Requested	Volume
HA-11-31	06/26/19	Bottom of decking	PLM	
HA-11-32	"	"	"	
HA-11-33	"	"	"	
HA-12-34	"	Outer longitudinal girder coating	"	
HA-12-35	"	"	"	
HA-12-36	"	"	"	
HA-13-37	"	Bottom of decking outer strip	"	
HA-13-38	"	"	"	
HA-13-39	"	"	"	
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—


RELINQUISHED BY David Espy
 DATE: 06/28/19


RECEIVED AT LAB BY: [Signature]
 DATE: 6/28/19

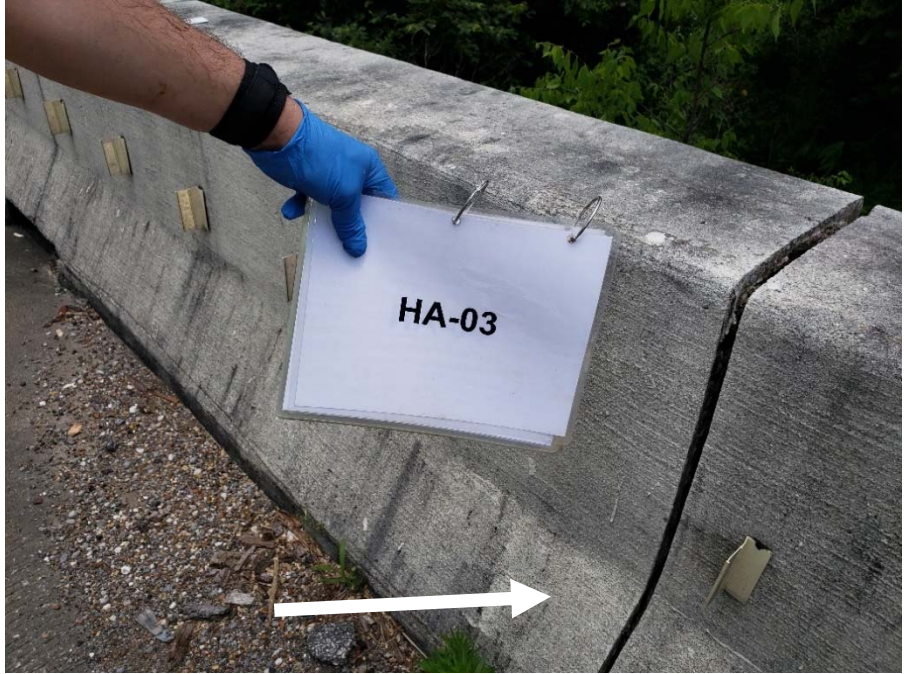
Appendix B:
Asbestos Sampling Photographs

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 1 – West Side of Bridge Facing East	


Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 2 – Bridge Identification Number on Guardrail	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 3 – HA-01 Parapet	

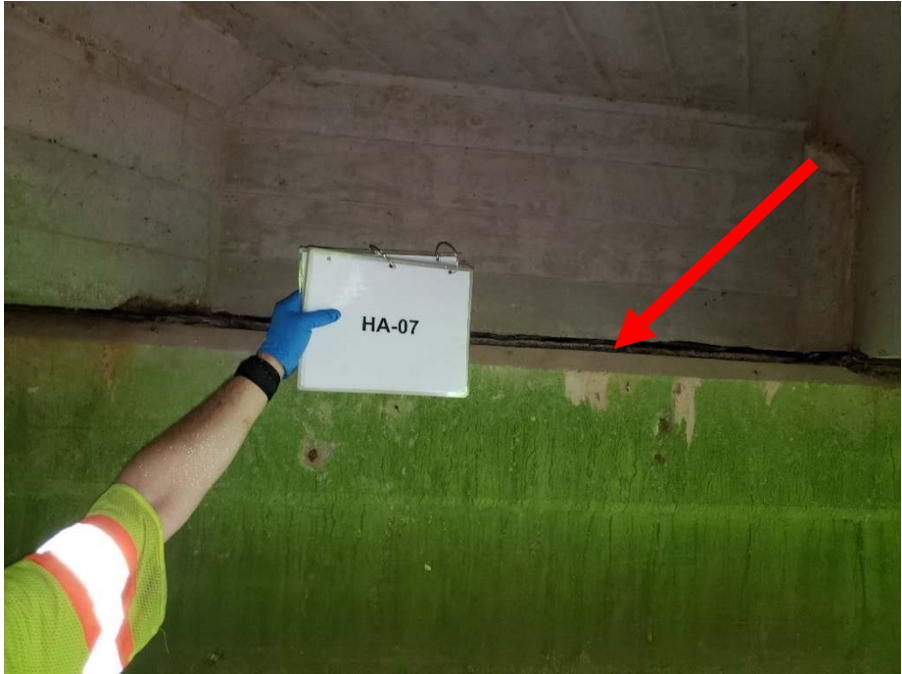
Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 4 – HA-02 Top of Decking	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 5 – HA-03 Parapet Coating	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 6 – HA-04 Longitudinal Girder	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 7 – HA-05 Bent Header	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 8 – HA-06 Bent	

Photographer:	
Date:	
Description:	

Mike Baker

Date:

06/26/2019


Description:

Photograph 9 –

HA-07

Bearing Pad

Samples Contain
3% Chrysotile

Photographer:	
Date:	
Description:	

Mike Baker

Date:

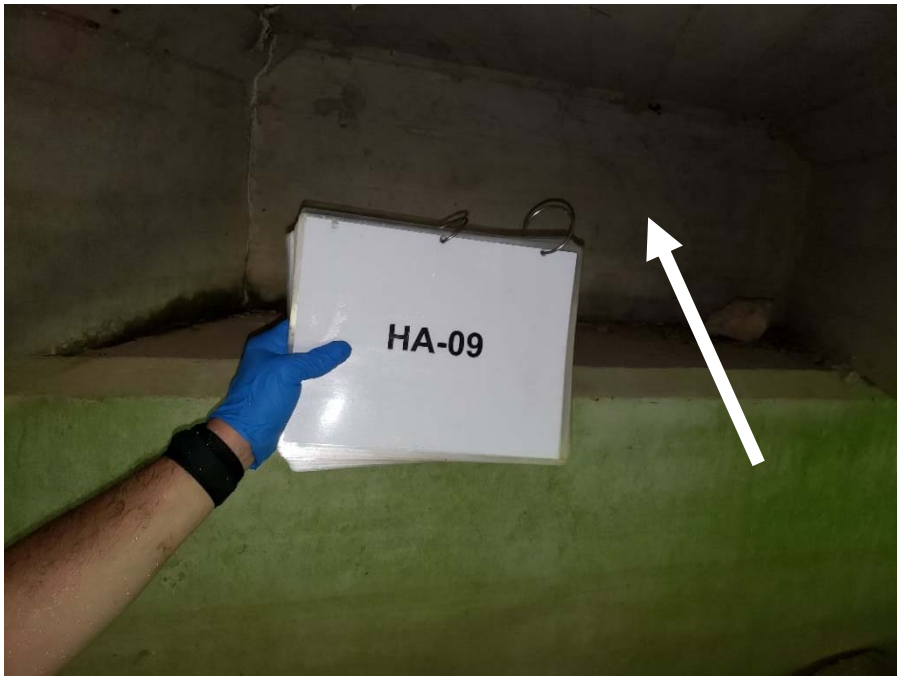
06/26/2019

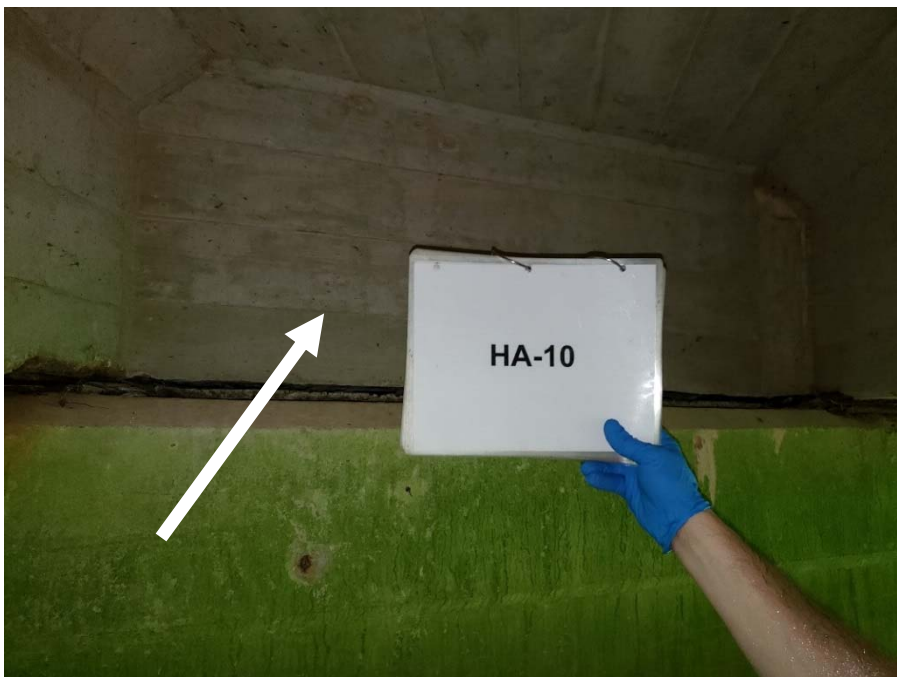
Description:


Photograph 10 –


HA-08

Abutment

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 11 – HA-09 End Wall	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 12 – HA-10 Cross Girder	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 13 – HA-11 Bottom of Decking	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 14 – HA-12 Outer Longitudinal Girder Coating	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 15 – HA-13 Bottom of Decking Outer Strip	

Photographer: Mike Baker	
Date: 06/26/2019	
Description: Photograph 16 – Storm Water Drainage	

Appendix C:
Asbestos Inspection Credentials



THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management

Toxic Substances Program

William R. Snodgrass Tennessee Tower

312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the Company named below is hereby accredited to offer and/or conduct Asbestos activities pursuant to Rule 1200-01-20:

TriAD Environmental Consultants

207 Donelson Pike Ste. 200 Nashville TN, 37214

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee.
This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Initial	A-F-5195-69568	July 03, 2018	July 31, 2019



Given under the Seal of the State of Tennessee in Nashville.

This 2nd Day of July 2018

Division of Solid Waste Management
Toxic Substance Program

CN-1324

(Rev 6/13)

RDA-3020

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

62777-40831



Date Issued: 4/9/20

Re-Accreditation

David M Espy

DOB
18-Sep-1985

Sex
M

HGT
6'0"

WGT
205

Discipline	Accreditation	Expiration
Inspector	A-I-55949-75308	May-31-2020
Management Planner	A-MP-55949-75307	May-31-2020
Project Monitor	A-PM-55949-72889	Jan-31-2020

Asbestos Accreditation

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

111273-38063



Date Issued: 8/21/2018

Initial

Michael B Baker

DOB
19-Jul-1978

Sex
M

HGT
5'10"

WGT
170

Discipline

Accreditation

Expiration

Inspector

A-I-119004-71017

Aug-31-2019

Asbestos Accreditation

Appendix D:
Health and Safety Plan and JSA

HEALTH AND SAFETY PLAN
TDOT PROJECT No. 40003-0224-04

Project Location: Bridge No.: 40SR0540025

Project Description: Asbestos Survey

Project Dates: 06/26/19

TDOT PIN: 101886.02

Project Personnel:

Title	Organization	Name	Phone Number
Project Manager – TDOT (TDOT PM)	Tennessee Dept. of Transportation	Kyle Kirschenmann	615-598-1522
Project Manager – TriAD (TriAD PM)	TriAD Environmental Consultants, Inc.	Jeff Postell	615-889-6888 615-417-8050
Project Safety and Health Manager (SHM)	TriAD Environmental Consultants, Inc.	Chris Scott	615-889-6888 615-417-6154
Site Safety and Health Officer (SSO)	TriAD Environmental Consultants, Inc.	David Espy	615-889-6888 229-347-0516
Emergency Coordinator (EC)	TriAD Environmental Consultants, Inc.	David Espy	615-889-6888 229-347-0516
OSHA Hotline			(800) 321-OSHA

Nearest Hospital: Murray-Calloway County Hospital, Murray, Kentucky

Hospital Phone Number: (270) 762-1100

Map to Hospital: See Attached Page

Health and Safety Plan: See Following Pages

SAFE WORK PERMIT- JSA AND DAILY FIELD REPORT

Site Name/ Work: Bridge No.: 40SR0540025 over Rowe Creek

Date:
06/26/19

Time Permit Issued/Work Started:

12:30

AM / PM

Permit Expires/work stopped:

3:00

AM/ PM

Issued To: David Espy

Job Description: Asbestos Survey

Weather: Sunny 80's

Section: 2 EMERGENCY PLANNING: DISCUSSION AT JOB SITE OR SAFETY TAILGATE MEETING

- | | |
|---|---|
| <input checked="" type="checkbox"/> Site Contact: | <input checked="" type="checkbox"/> Emergency Phone: 911 |
| <input checked="" type="checkbox"/> Evacuation Routes | <input checked="" type="checkbox"/> Alt. Site Emergency Phone:(270) 762-1100 Murray-Calloway ER |
| <input checked="" type="checkbox"/> Staging Area | <input checked="" type="checkbox"/> First Aid/ CPR Trained |
| <input checked="" type="checkbox"/> Emergency Equipment Needed (Retrieval; SCBA; Radio; etc.) | <input checked="" type="checkbox"/> Rescue Procedures Discussion |

Additional Comments: See Map to Hospital and Health and Safety Plan

Section: 3 JOB SAFETY ANALYSIS

JOB STEPS / WORK ACTIVITIES

HAZARDS (LIST)

1. Asbestos Survey

3,5,6,8,11,12,13,15, 17

2.

3.

4

5

6

7

8

SUPERVISOR SIGNATURE: *David Espy*

POTENTIAL HAZARDS

- | | | | |
|-----------------------------|------------------------------|-------------------------------------|---------------------------|
| 1. Fire / Explosion | 5. Strain / Sprain | 9. Thermal Burn | 13. Chemical Contact |
| 2. Pinch Points / Caught In | 6. Struck By/Traffic Hazards | 10. Overhead Work | 14. Asphyxiation |
| 3. Slip / Trip / Fall | 7. Noise | 11. Temperature Extremes | 15. Biological Contact |
| 4. Electric Shock | 8. Cut / Laceration | 12. Inhalation (Dust/ Vapor/ Fumes) | 16. Key Procedure Applies |
| 17. Asbestos Exposure | 18. Other: (Specify) | 19. Other: (Specify) | |

HAZARD MITIGATION For Corresponding Job Step

- | | |
|--|---|
| 1. Wear proper PPE | 6. Ensure good footing and clear egress/ingress |
| 2. Understand the work plan | 7. Practice good housekeeping |
| 3. No solo lifting of greater than 50 pounds | 8. Use proper tools for the task |
| 4. Maintain awareness of surroundings | 9. No smoking |
| 5. Place Warning Signs | 10. Other: (Specify) |

JOB HAZARD REMINDERS (Check All That Apply)

Equipment Operation	Ergonomics/Exposures	Conditions	Other
<input type="checkbox"/> Motor Vehicle Operation	<input type="checkbox"/> Body Positioning	<input checked="" type="checkbox"/> Walking Surfaces	<input type="checkbox"/> Extension Cords / GFCI
<input type="checkbox"/> Ladders	<input type="checkbox"/> Cramped Conditions	<input checked="" type="checkbox"/> Water Hazards	<input type="checkbox"/> Housekeeping
<input type="checkbox"/> Heavy Equipment	<input type="checkbox"/> Elevated Work	<input checked="" type="checkbox"/> Sharp Edges	<input type="checkbox"/> Barricades
<input type="checkbox"/> Overhead Obstructions mark	<input type="checkbox"/> Heavy Lifting	<input type="checkbox"/> Lighting	<input type="checkbox"/> Adverse Weather
<input type="checkbox"/> Underground Utilities mark	<input checked="" type="checkbox"/> Heat Stress/Cold Stress	<input type="checkbox"/> Overhead Work	<input type="checkbox"/> Other
<input type="checkbox"/> Site Conditions (Slope, Stability)	<input checked="" type="checkbox"/> Physical Exertion	<input checked="" type="checkbox"/> Hand & Power Tools	<input type="checkbox"/>
<input type="checkbox"/> Equipment Fueling	<input checked="" type="checkbox"/> Repetitive Motion	<input type="checkbox"/> Hot / Cold Liquids / Surfaces	<input type="checkbox"/>
<input type="checkbox"/> Road Hazards use spotters	<input type="checkbox"/> Suitability for Work	<input type="checkbox"/> Other	<input type="checkbox"/>
<input type="checkbox"/> Man Lifts	<input type="checkbox"/> Communications	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> Training	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> Other	<input type="checkbox"/>	<input type="checkbox"/>

PPE REQUIREMENTS

HES EQUIPMENT

Minimum: Hard Hat, Safety Vest, Safety Glasses, Steel Toed Shoes, Long Pants, Sleeved Shirt

Other PPE Req'd: **Gloves, Resp.**

Fire Extinguisher:

Y / N / **N/R**

Spill Response Mat'l.

Y / N / **N/R**

Eyewash/Shower

Y / N / **N/R**

Air Monitoring:

Y / N / **N/R**

First Aid Kit

Y / N / N/R

Other:

SECTION 4

KEY PROCEDURES

CONTROL OF HAZARDOUS ENERGY (LOCKOUT/ TAGOUT) Needed ☐ Not Needed ☒Individual Lockout ☐ Group Lockout ☐

Group Primary Authorized Employee: _____

Attach Lockout List or Machine Specific Procedure

HOT WORK PERMIT Needed ☐ Not Needed ☒Type of Hot Work: Burning ☐ Welding ☐ Grinding ☐ Fire Watch Req'd.? ☐ YES ☒ NOHot Work Permit Used: Client Permit ☐ Contractor Permit ☐

ELEVATED WORK OR EXCAVATION / TRENCH WORK

Personnel Working <3 Ft below ground level or > 6 Ft. Above Lower Level? ☐ YES ☒ NOProtected By: Guardrail System: ☐ Personal Fall Arrest System: ☐ Other (Specify): ☐

Section: 5

PERMIT-APPROVALS / EMPLOYEE SIGNATURES

Signatures approve only work conducted under the requirements of this permit

Supervisor: David EspeyDate: 06/26/19**Employee(s) /Contractor(s) Names (print):** I have reviewed and understand and will follow all conditions of this completed permit and its attachments. I will report hazardous conditions identified on this job site to my supervisor and/or designee for necessary corrections.1) David Espey
2) Mike Baker

6)

7)

3)

8)

4)

9)

5)

10)

Section: 6

MEET and GREET Job Site Awareness

Visitors and Additional Personnel) Names (print): All employees, visitors and contractors entering the area affected by this permit must meet and exchange information on the scope of work, hazards involved and intentions for the day. All persons on job sites must be aware of all work and the presence of all other persons on the site. Those not authorized on this permit above must list their name below acknowledging awareness of the task authorized by this permit. A representative, such as a contractor foreman, may acknowledge for the group.

Print Name and Company/Organization

1)

2)

3)

4)

5)

6)

7)

8)

9)

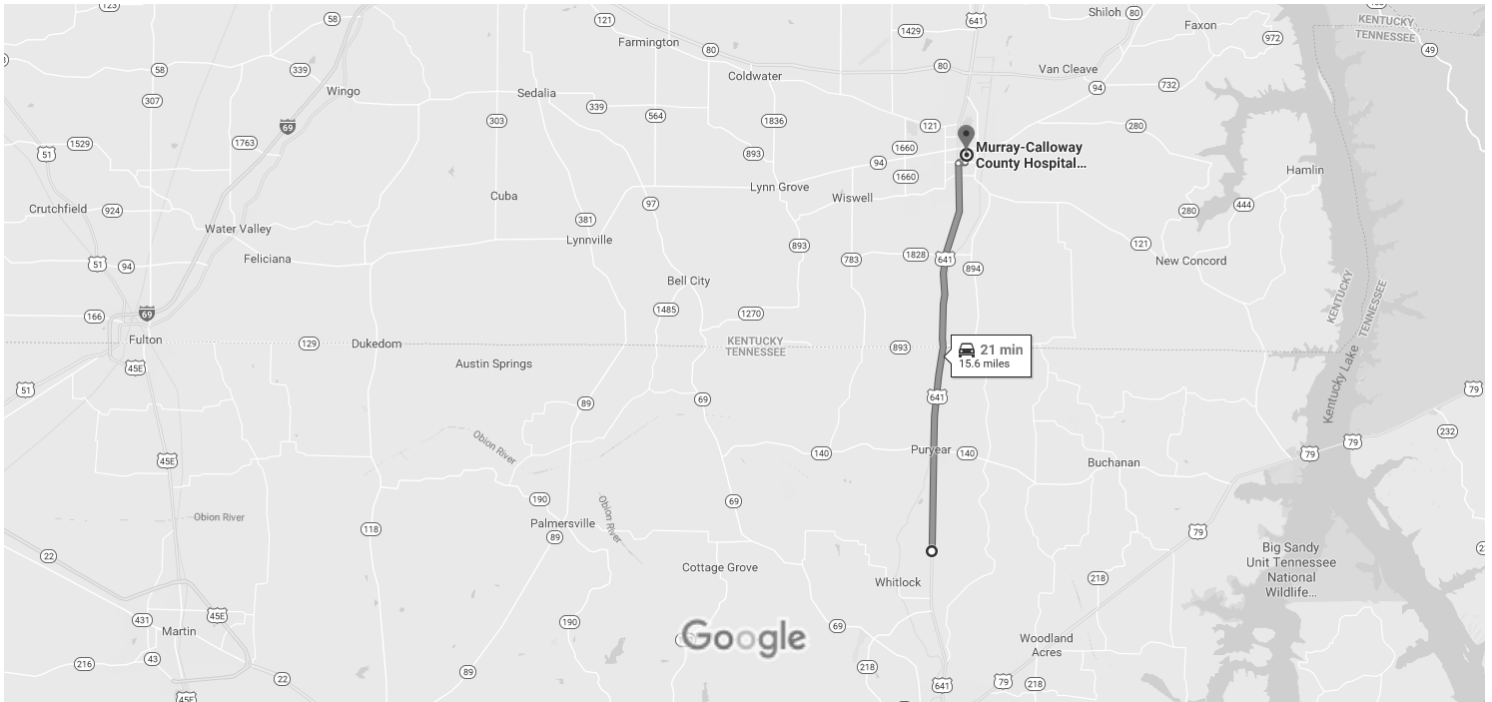
10)

Section: 7

JOB COMPLETE OR PERMIT CLOSED

Signature verifies closure of permit and completion of items checked below.

☒ Job Complete☐ Job Not Complete☒ Review work area to verify job site clean-up and safe conditionSupervisor: David EspeyTime: 3:00



Map data ©2019 Google 2 mi

Henry County

Tennessee 38251

- ↑ 1. Head north on US-641 N toward Granny Ln

ⓘ Entering Kentucky

15.0 mi
- ➔ 2. Turn right onto Sycamore St

0.3 mi
- ⬅ 3. Turn left onto S 9th St

0.3 mi
- ➔ 4. Turn right

ⓘ Destination will be on the right

276 ft

Murray-Calloway County Hospital- Emergency Room

803 Poplar St, Murray, KY 42071

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Right-of-Way Reevaluation State Route 54 (US-641),
From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix H

PIN 101886.02

Ecology

Environmental Studies

Ecology

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Environmental Study

Technical Section

Section: Ecology

Study Results

An Environmental Boundaries Report covering the project location was produced on November 17, 2021 and is available on FileNet. Coordination with TWRA, TDEC, and the USFWS is included in the the EBR.

Commitments

Did the study of this project result in any environmental commitments?

Yes

TDOT has committed to sweep the perennial streams located within the North Fork Obion Drainages for both the State Threatened Crescent crayfish - *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter - *Etheostoma pyrrhogaster* (1994) immediately prior to any instream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.

TDOT has committed to minimize impacts on WTL-9, WTL-10, and WTL-11 due to the presence of the state listed threatened Halberd-Leaf Tearthumb (*Polygonum arifolium*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.

TDOT has committed to minimize impacts to WTL-36, WTL-41, and WTL-42 due to the presence of the state listed threatened water purslane (*Didiplis diandra*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.

Additional Information

Is there any additional information or material included with this study?

Yes

Type: Environmental Boundaries Report (EBR)

Location: FileNet

Certification

Responder: Rita M. Thompson

Title: Transportation Environmental Supervisor

Signature: Rita
Thompson

Digitally signed by Rita
Thompson
Date: 2021.11.17
15:01:35 -06'00'



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

MEMORANDUM

To: Seth Hendren
TDOT Region 4 Project Development

From: Rita Thompson
Environmental Division, Ecology Section *Rita M. Thompson*

Date: November 17, 2021

Subject: Environmental Boundaries For:

**ENVIRONMENTAL BOUNDARIES FOR:
Henry County; SR-54 from Smith Road to Near Howard Road;
P.E. 40003-0200-14; PIN: 101886.02**

An ecological evaluation of the subject project has been conducted with the following results:

SPRINGS/STREAMS

There are 16 perennial streams and six intermittent streams within the project limits. STR-7 (North Fork Obion River) and STR-12 (Rowe Creek) are designated as High Quality by TDEC.

WET WEATHER CONVEYANCES/EPHEMERAL STREAMS

There are 64 wet weather conveyances/ephemeral streams within the project limits.

WETLANDS

There are 44 wetlands within the project limits. The state listed threatened Halberd-Leaf Tearthumb (*Polygonum arifolium*) was observed in wetlands WTL-09, WTL-10, and WTL-11; the state listed threatened water purslane (*Didiplis diandra*) was observed in wetlands WTL-36, WTL-41, and WTL-42 and are therefore high quality due to the presence of rare species. WTL-5, WTL-6, WTL-8, WTL-10, WTL-11, WTL-13, WTL-38, and WTL-39 were determined by TRAM scores to be high quality.

OTHER FEATURES

There are three ponds within the subject project limits.

PROTECTED SPECIES

The Natural Heritage Database was reviewed on 10/28/2020 and the associated table is included in this report. Coordination with USFWS, Division of Natural Heritage and TWRA was conducted and is also included with this report.

PROJECT COMMITMENTS

TDOT has committed to sweep the perennial streams located within the North Fork Obion Drainages for both the State Threatened Crescent crayfish - *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter - *Etheostoma pyrrhogaster* (1994) immediately prior to any in-stream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.

TDOT has committed to minimize impacts on WTL-9, WTL-10, and WTL-11 due to the presence of the state listed threatened Halberd-Leaf Tearthumb (*Polygonum arifolium*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.

TDOT has committed to minimize impacts to WTL-36, WTL-41, and WTL-42 due to the presence of the state listed threatened water purslane (*Didiplis diandra*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.

Your assistance is appreciated. If you have any questions or comments, please contact Rita Thompson in the Environmental Division at 615-253-2459 or rita.m.thompson@tn.gov.

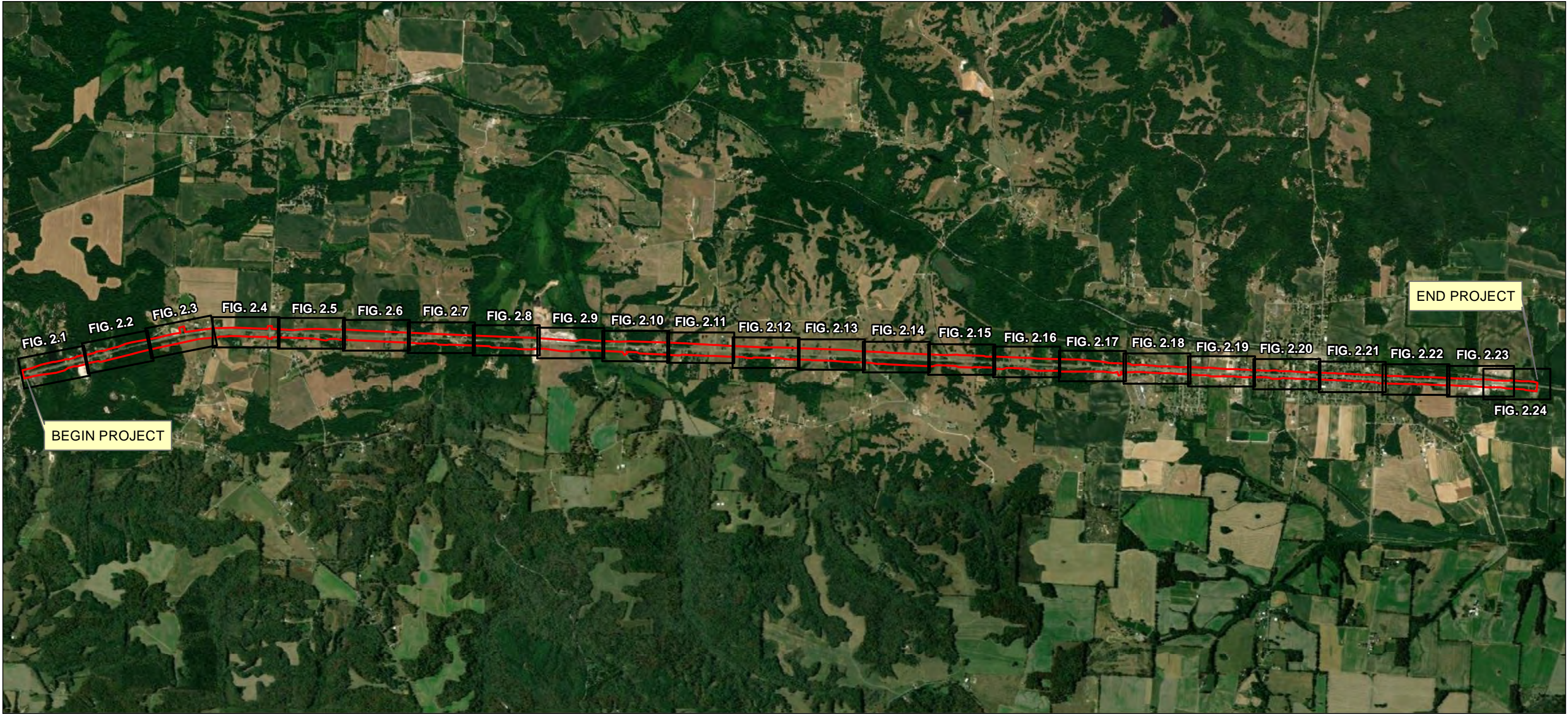
CC:

R4 Env.Tech Office

TDOT Env.Permits

TDOT Env.Mitigation

TDOT Env.NEPA



Legend
 Limits of Investigation

0 2,250 4,500 Feet
(At original document size of 11x17)
1:35,000



Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-06-09
TR by ZB on 2021-06-09
IR Review by MWW on 2021-06-09
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

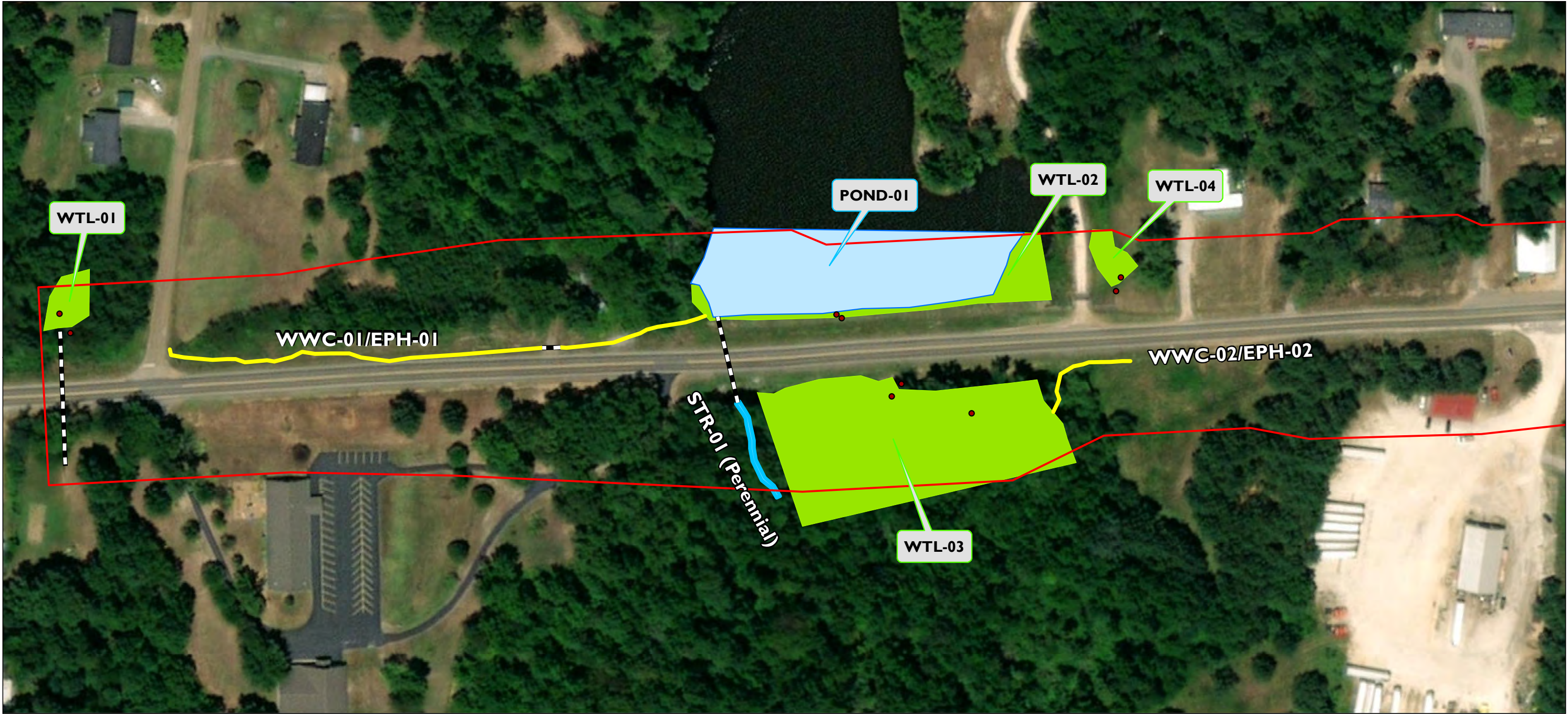
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Title

Project Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



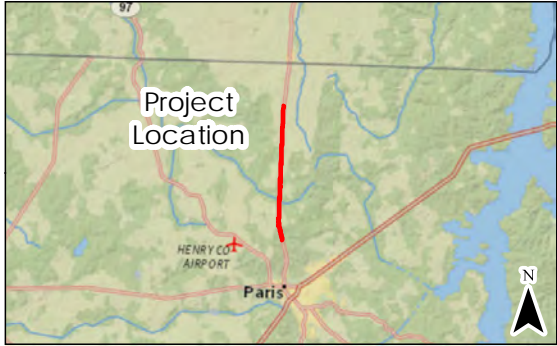
Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWV on 2021-07-26
172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.1
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

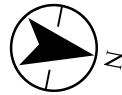
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



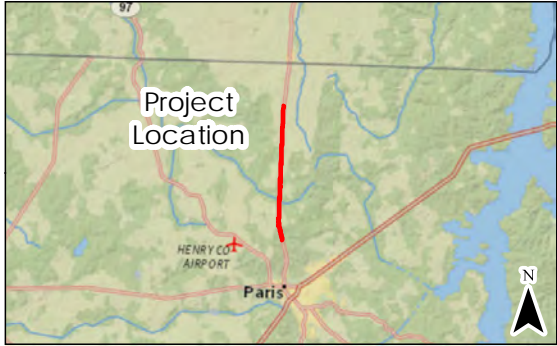
Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.2
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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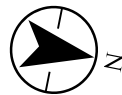


Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



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TDOT
Department of
Transportation

Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26

TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

2.3

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.4
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.5
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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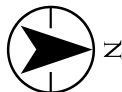


Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
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IR Review by MWV on 2021-07-26
TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

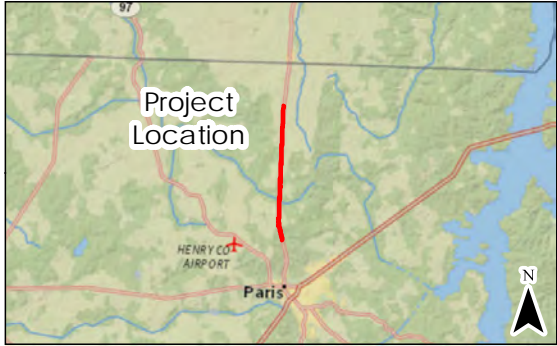
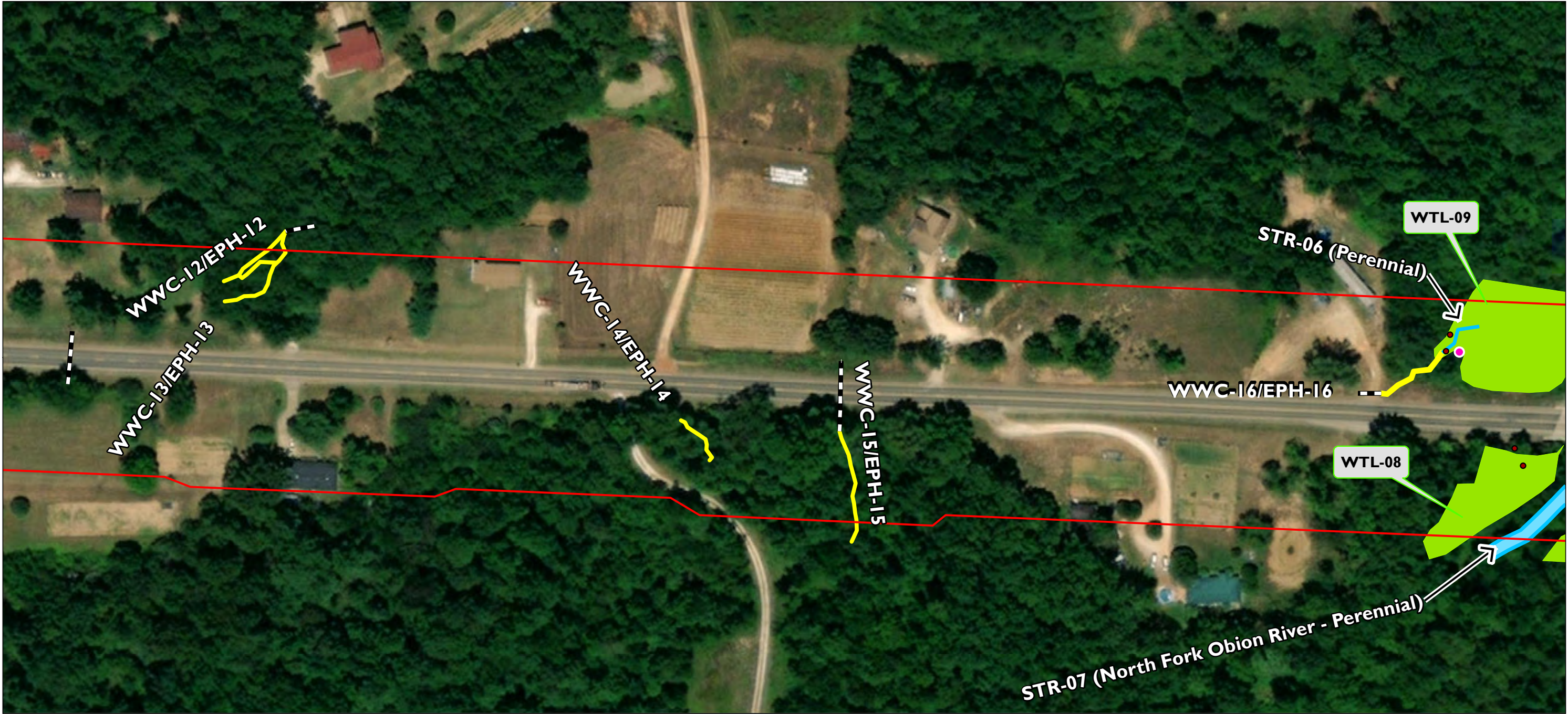
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Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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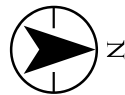
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



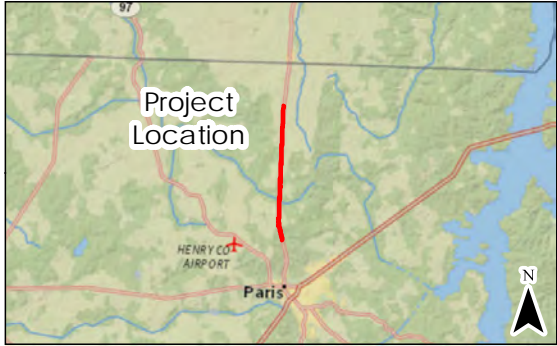
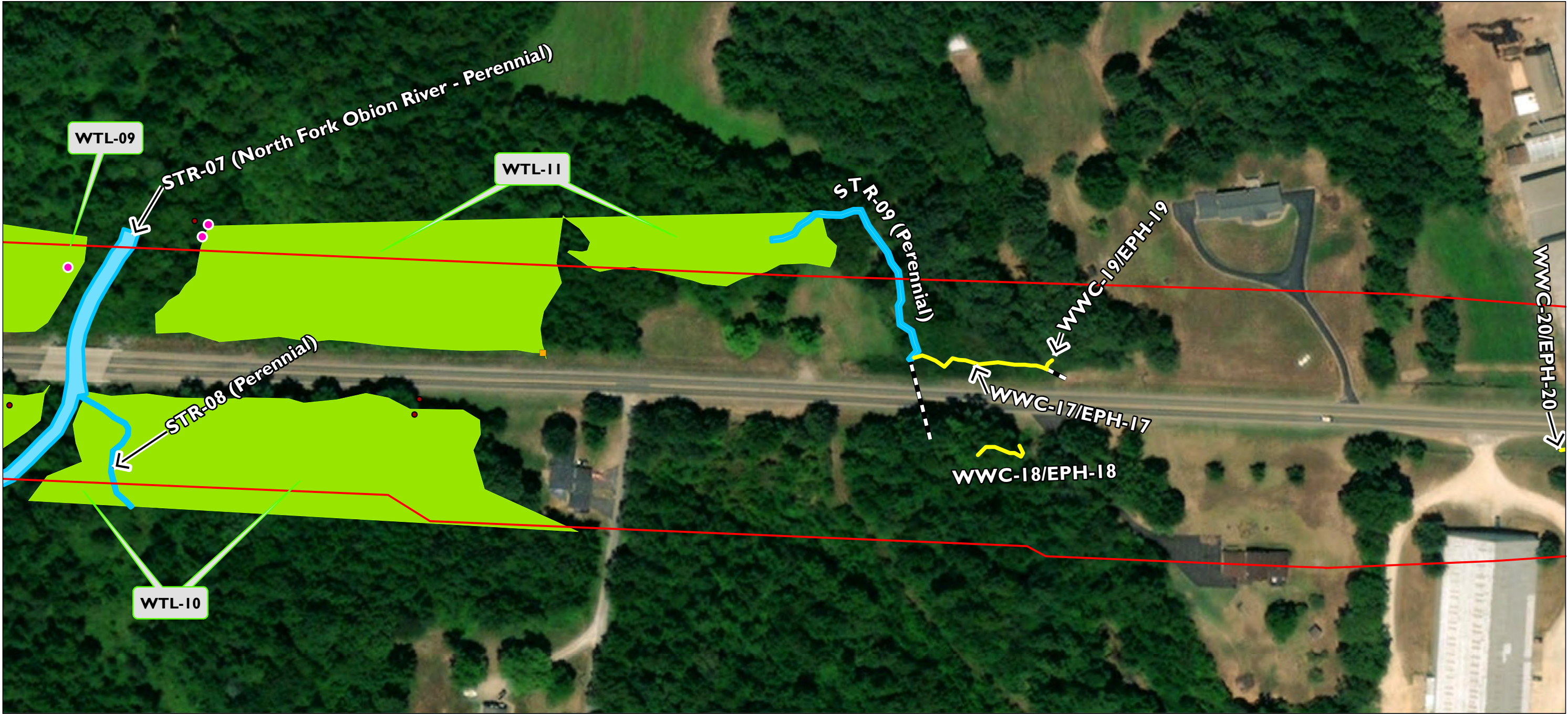
Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.7
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Henry County
PIN: 101886.02
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IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

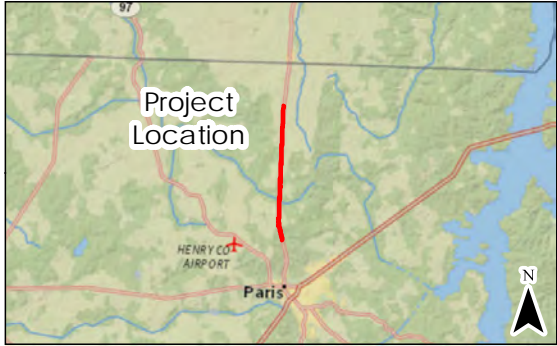
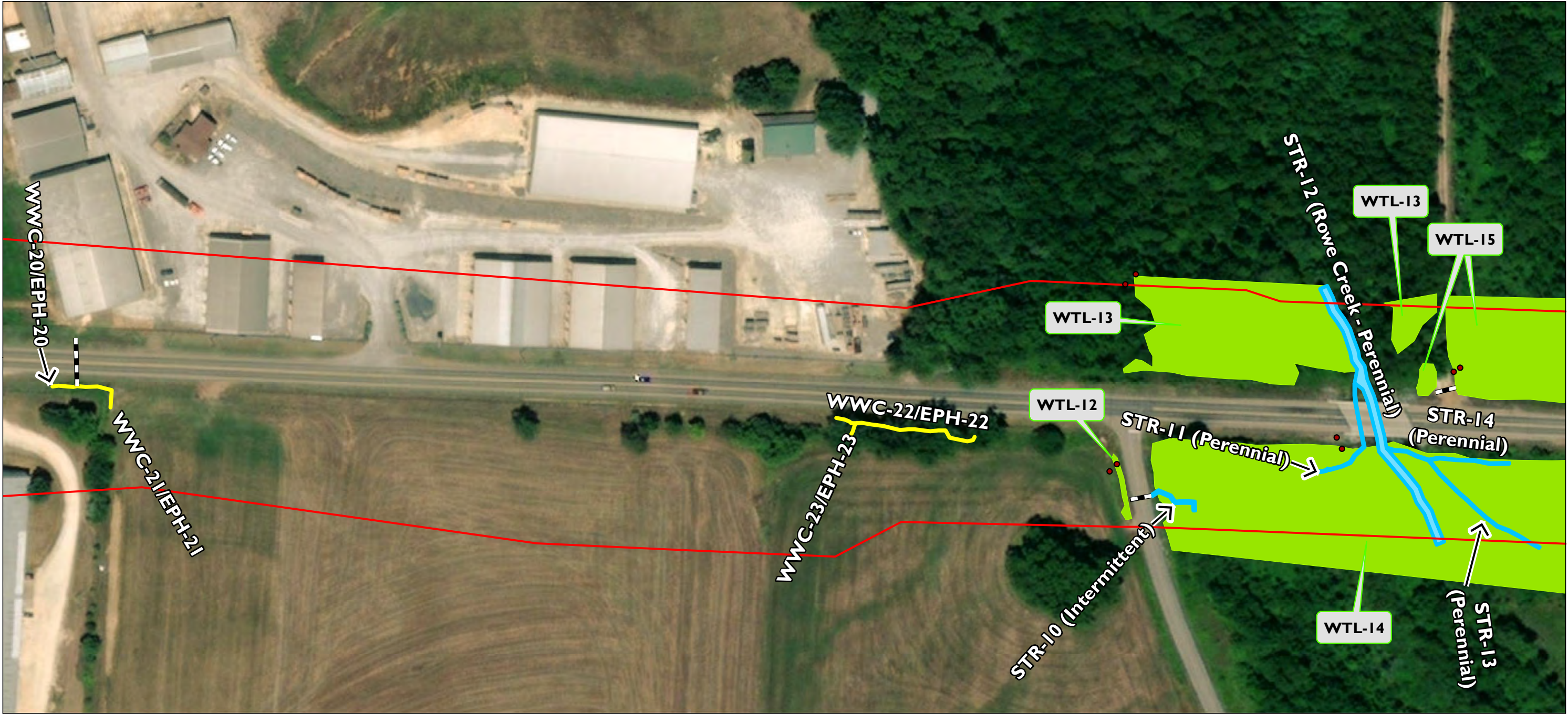
2.8

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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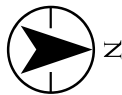
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Henry County
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TN TDOT/SR-54
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Prepared by NV on 2021-07-26
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TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.9
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

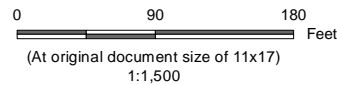
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation



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Henry County
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IR Review by MWW on 2021-07-26
172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

2.10

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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Henry County
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TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

2.11

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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1:1,500



Henry County
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IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.12
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
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TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.13
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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1:1,500



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Department of Transportation

Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
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IR Review by MWV on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

2.14

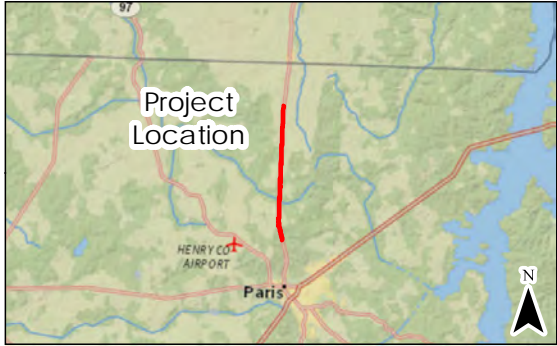
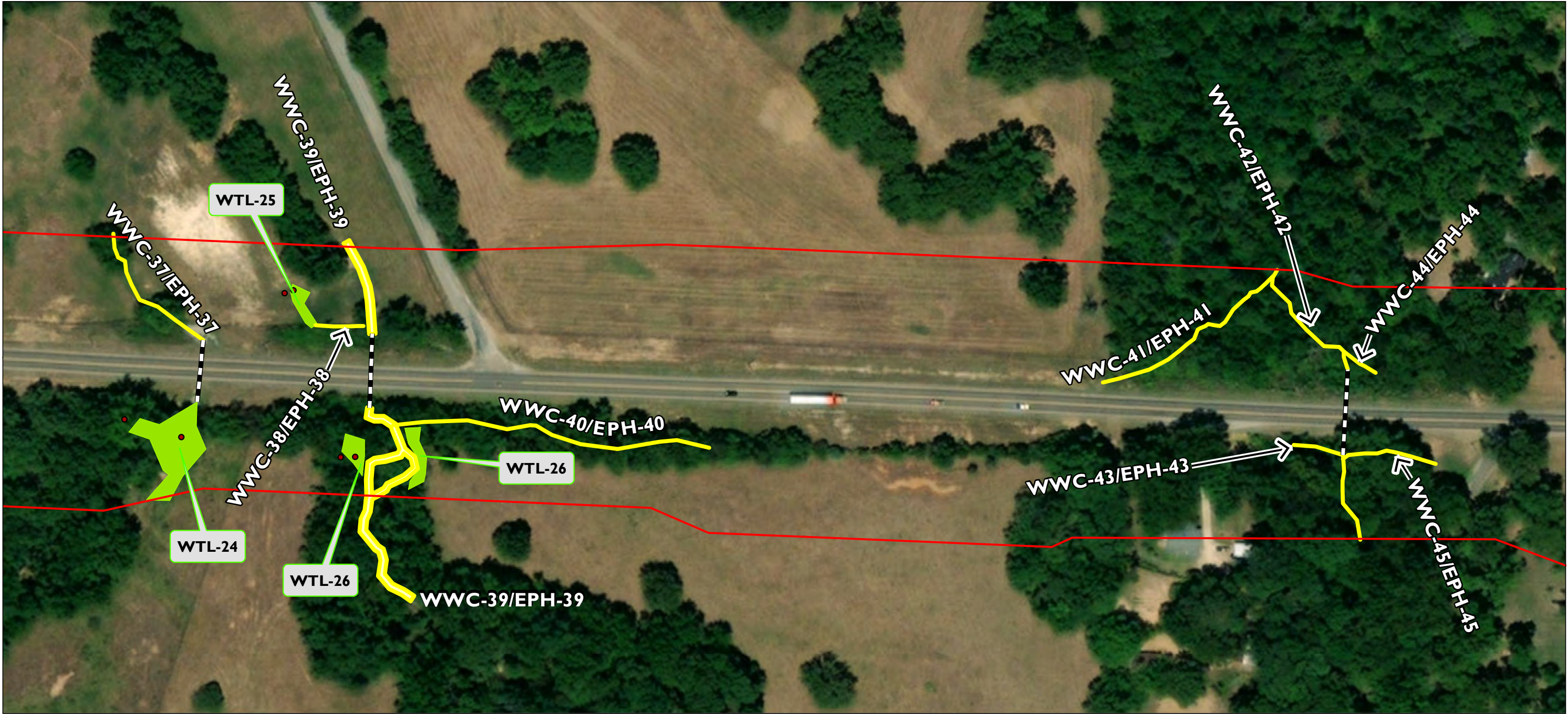
Title

Environmental Boundaries Aerial Map

Notes

- Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
- Data Sources:
- Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



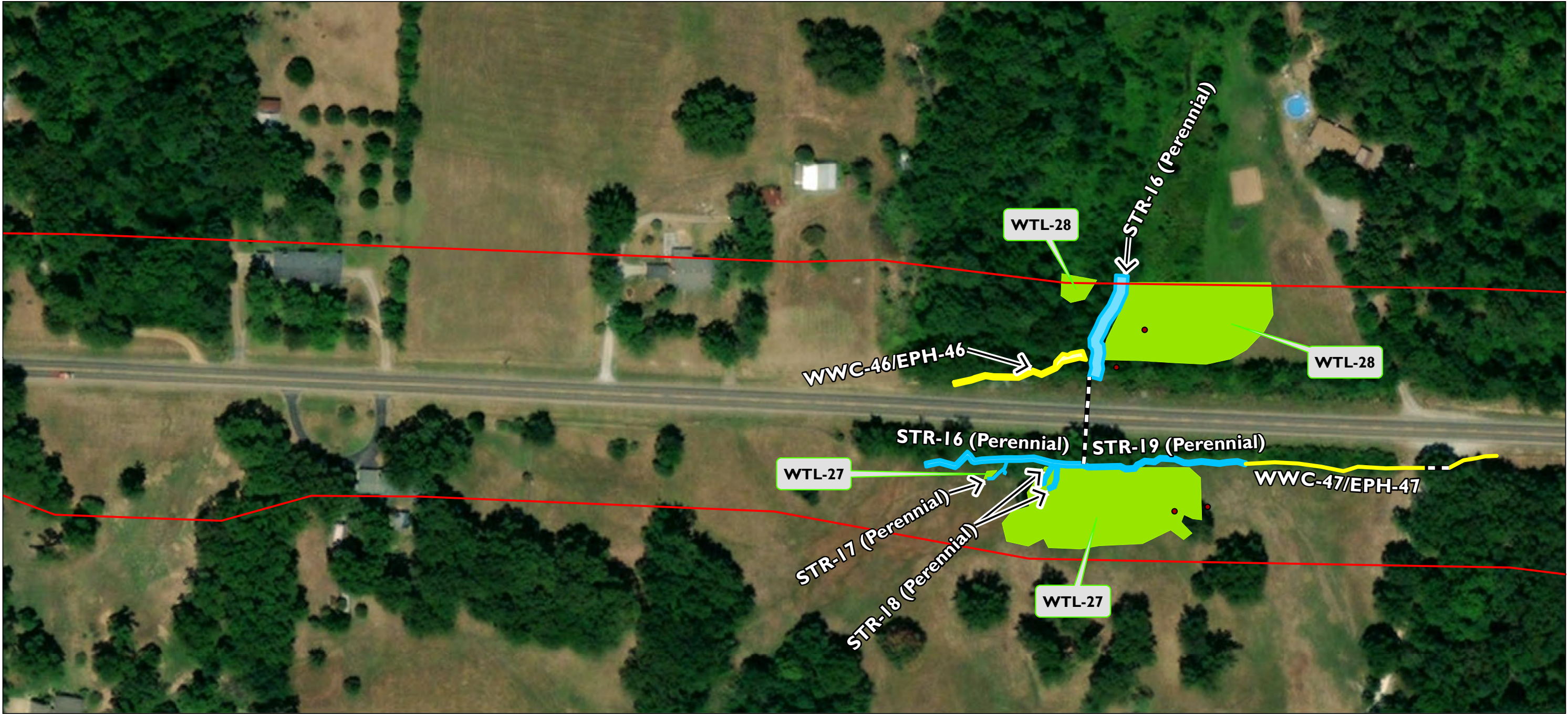
Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.15
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
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TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.16
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Henry County
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TN TDOT/SR-54
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TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.17
Title
Environmental Boundaries Aerial Map

Notes
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2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
TN TDOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

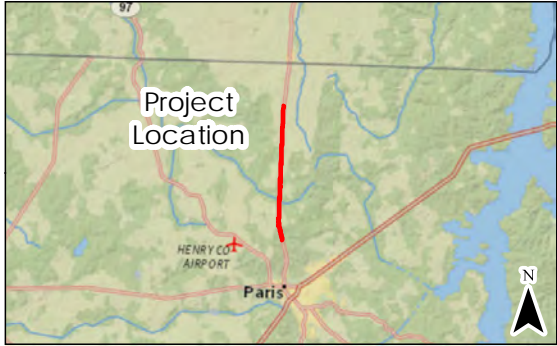
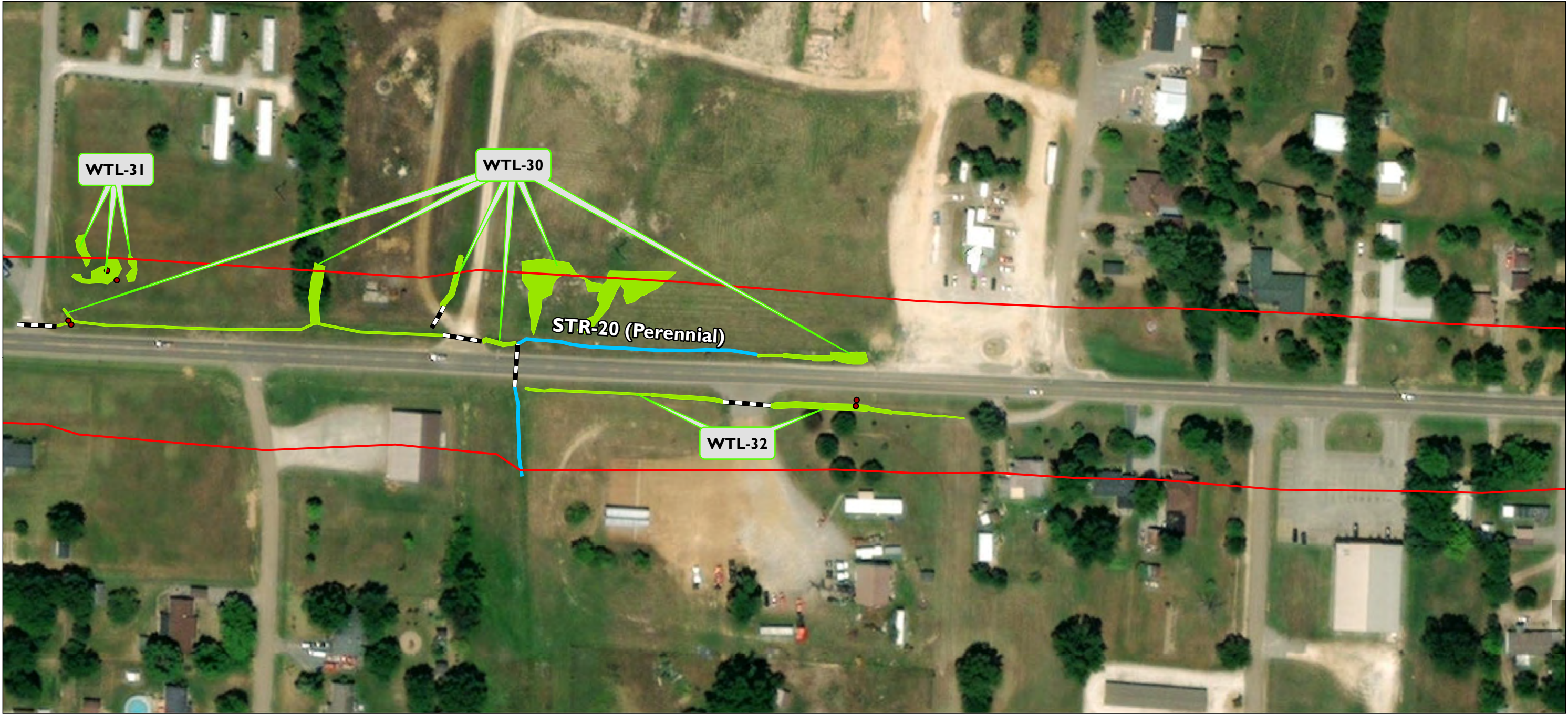
2.18

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

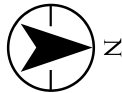
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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



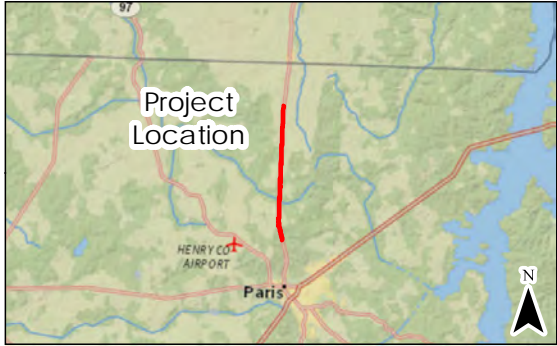
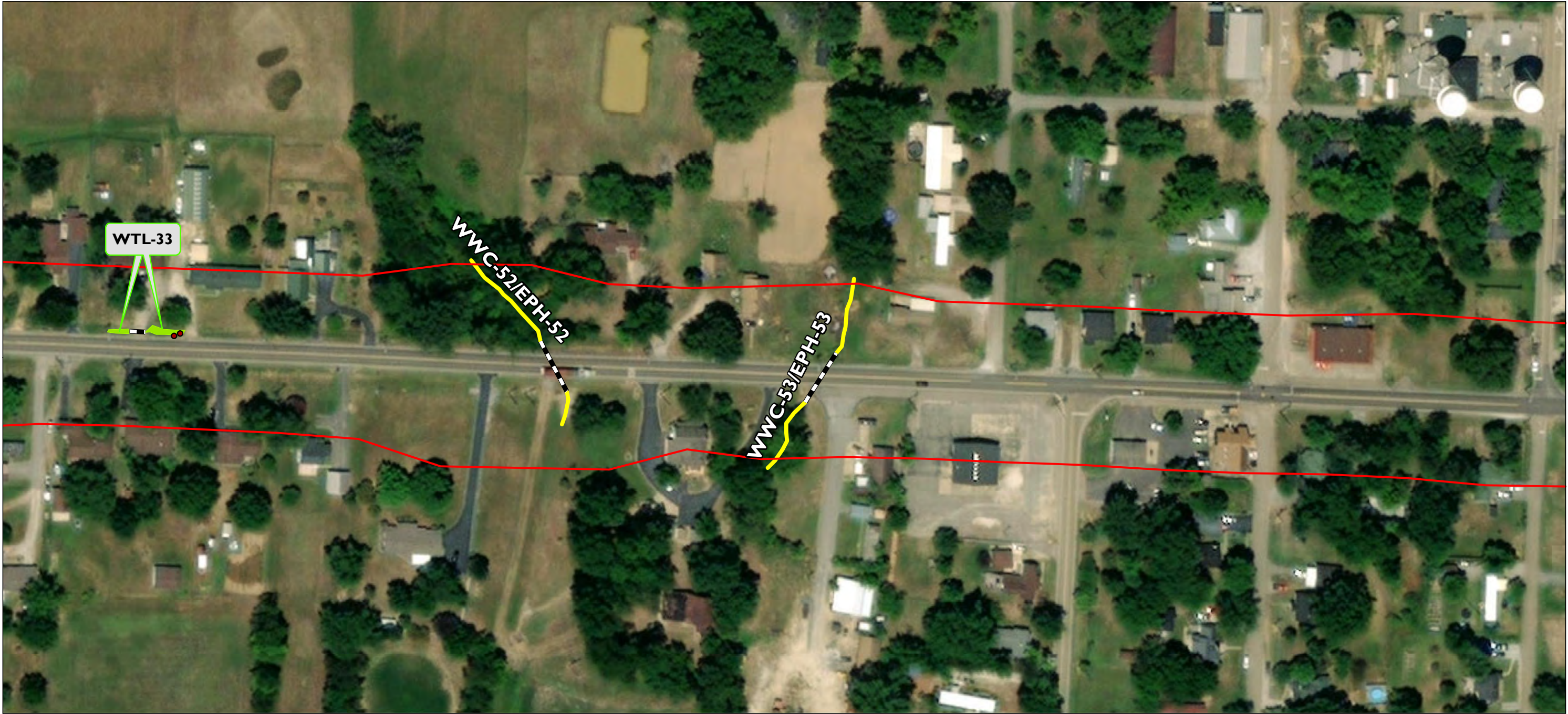
Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWV on 2021-07-26
172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
2.19
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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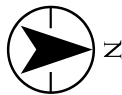


Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

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Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

2.20

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

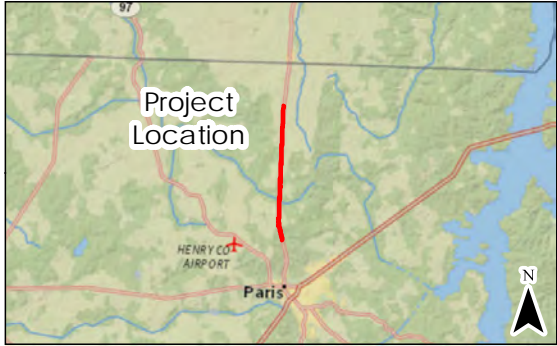
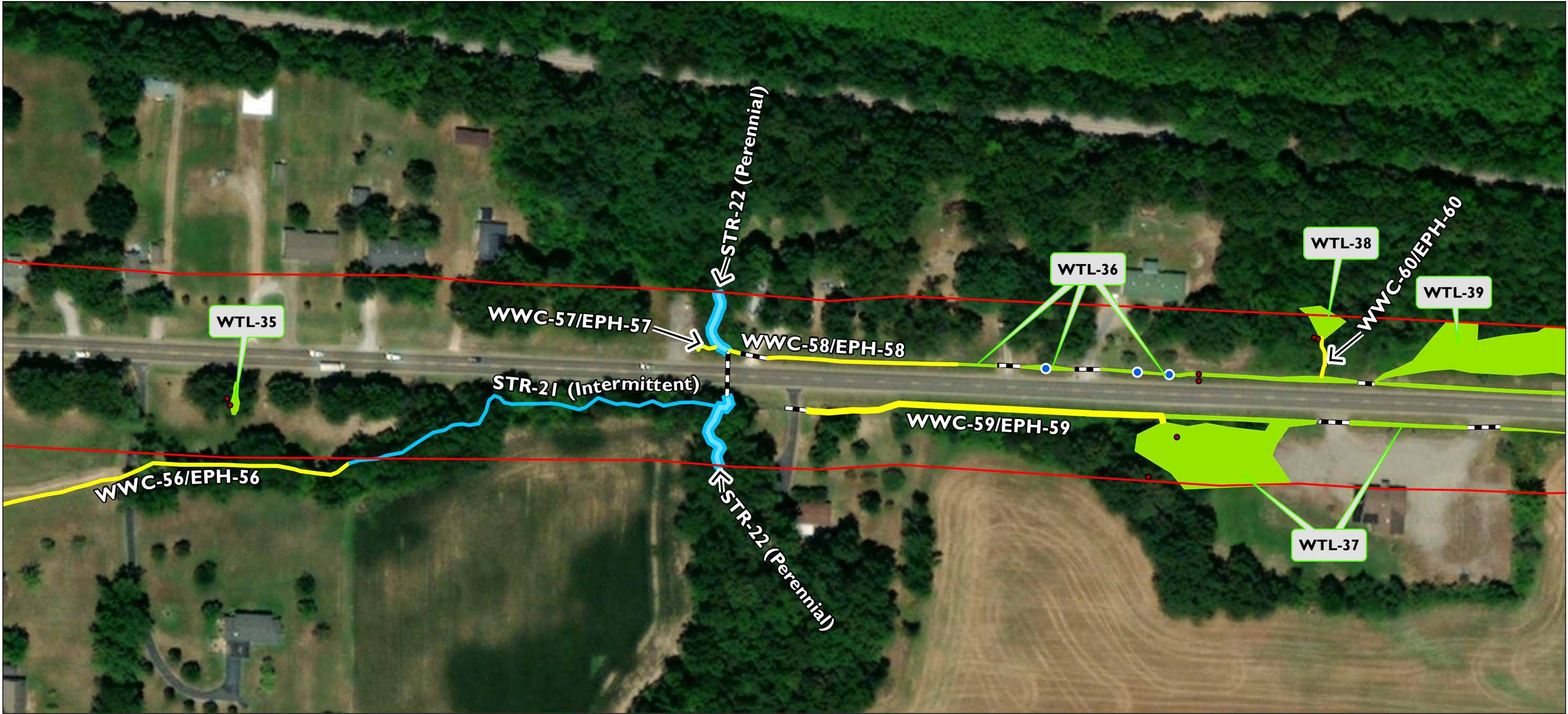
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Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Department of Transportation

Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

2.22

Title

Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

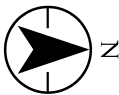
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
TN TDOT/SR-54
172678144

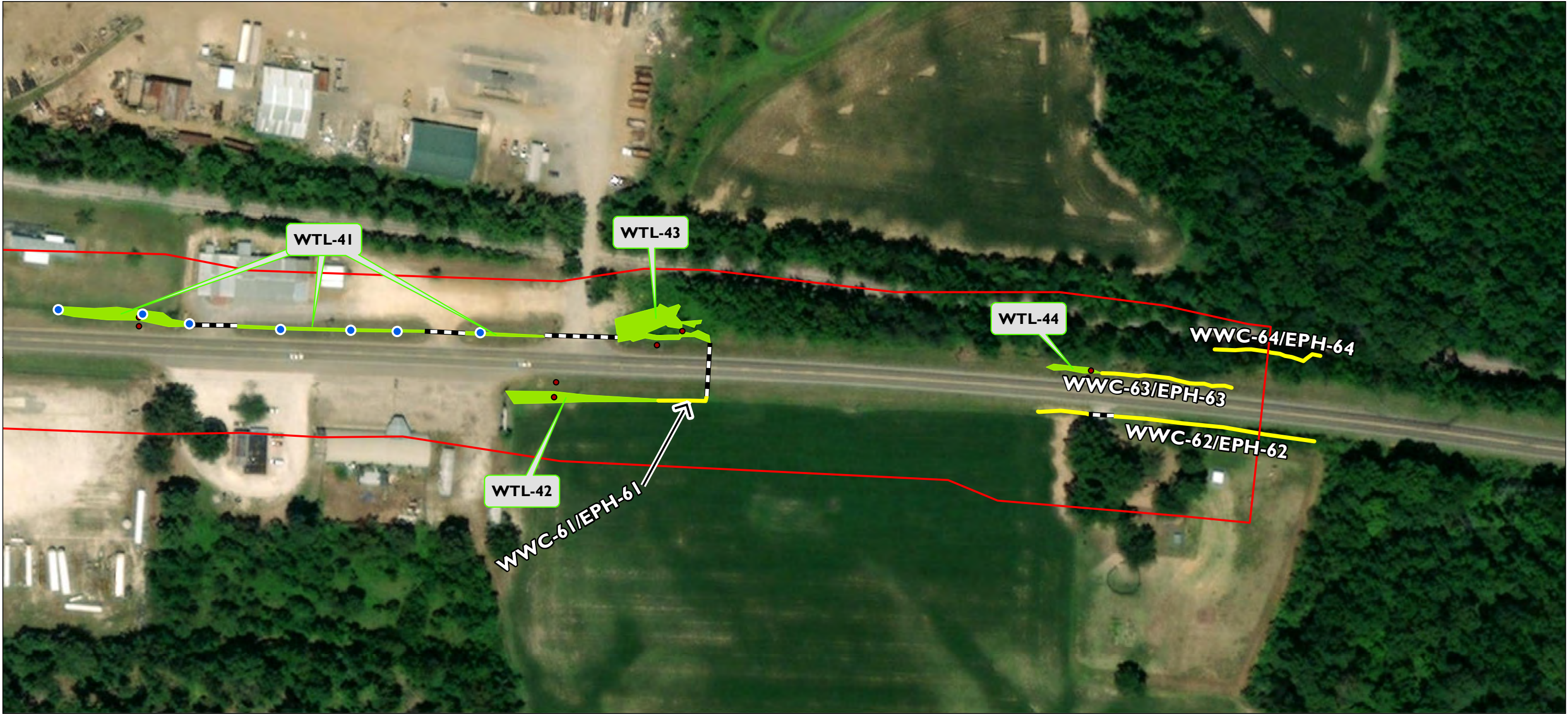
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26

Figure No.
2.23

Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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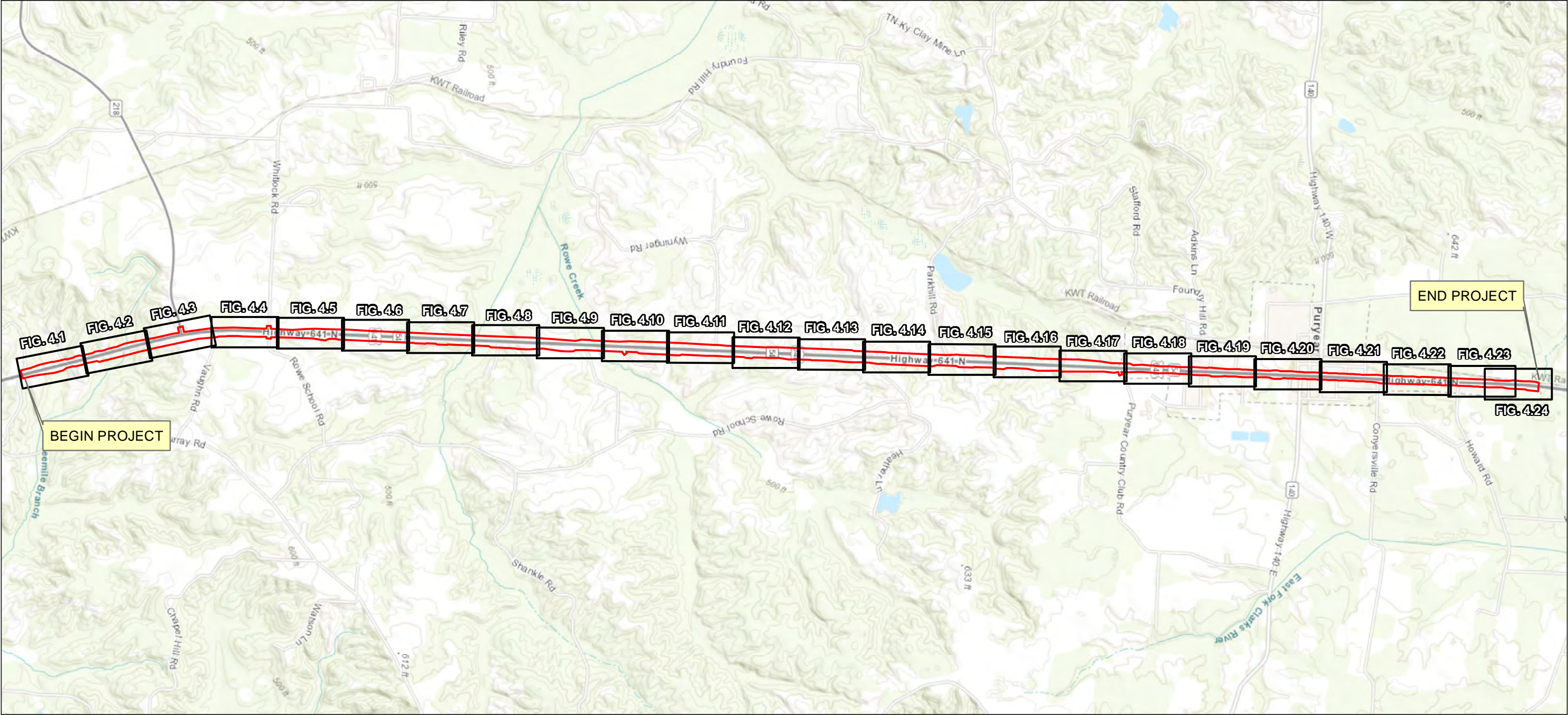
Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

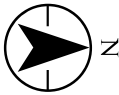
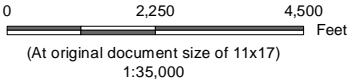
Figure No.
2.24
Title
Environmental Boundaries Aerial Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Legend
 Limits of Investigation



Henry County
PIN: 101886.02
Project: 40003-0200-14
TN TDOT/SR-54
172678144

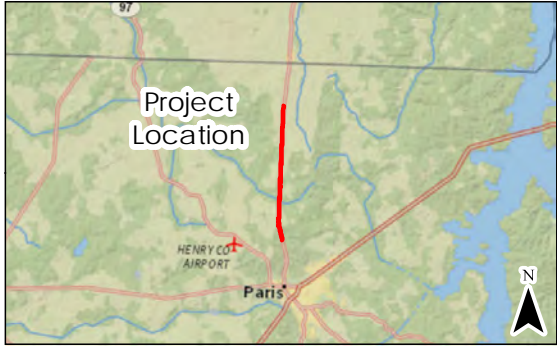
Prepared by NV on 2021-06-09
TR by ZB on 2021-06-09
IR Review by MWW on 2021-06-09

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
3

Title
Project Location Map - Topographic

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,

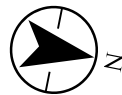


Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
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TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

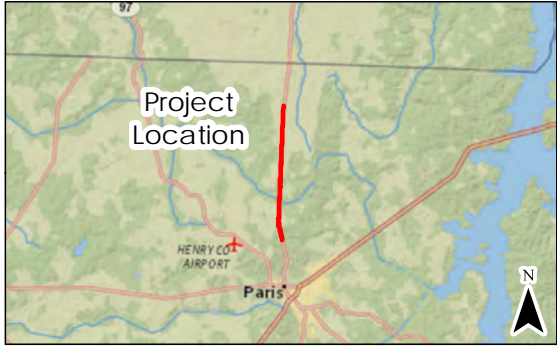
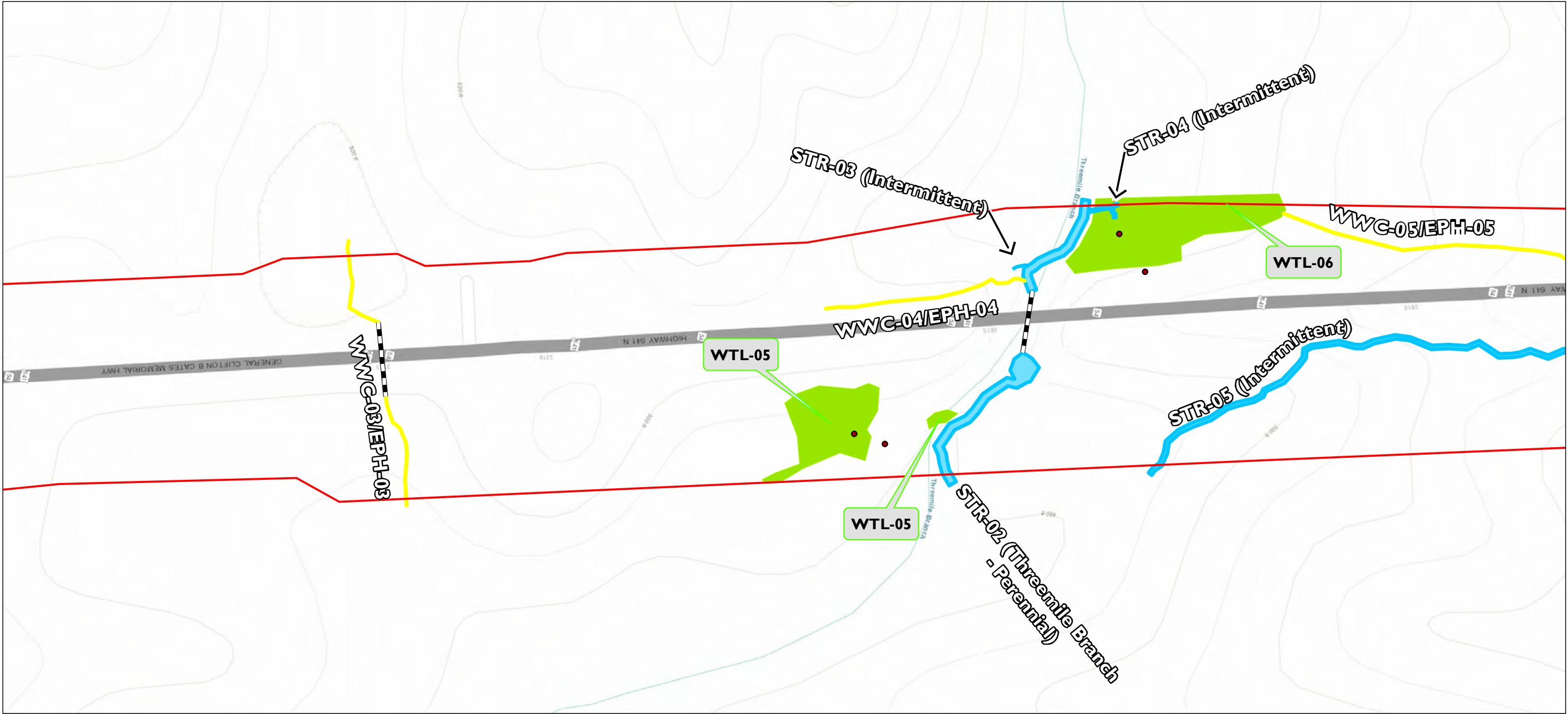
Figure No.

4.1

Title

Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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Henry County
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TN TDOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

4.2

Title

Environmental Boundaries Topographic Map

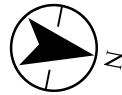
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2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Henry County
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TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

4.3

Title

Environmental Boundaries Topographic Map

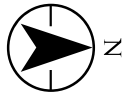
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2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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1:1,500



Henry County
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172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

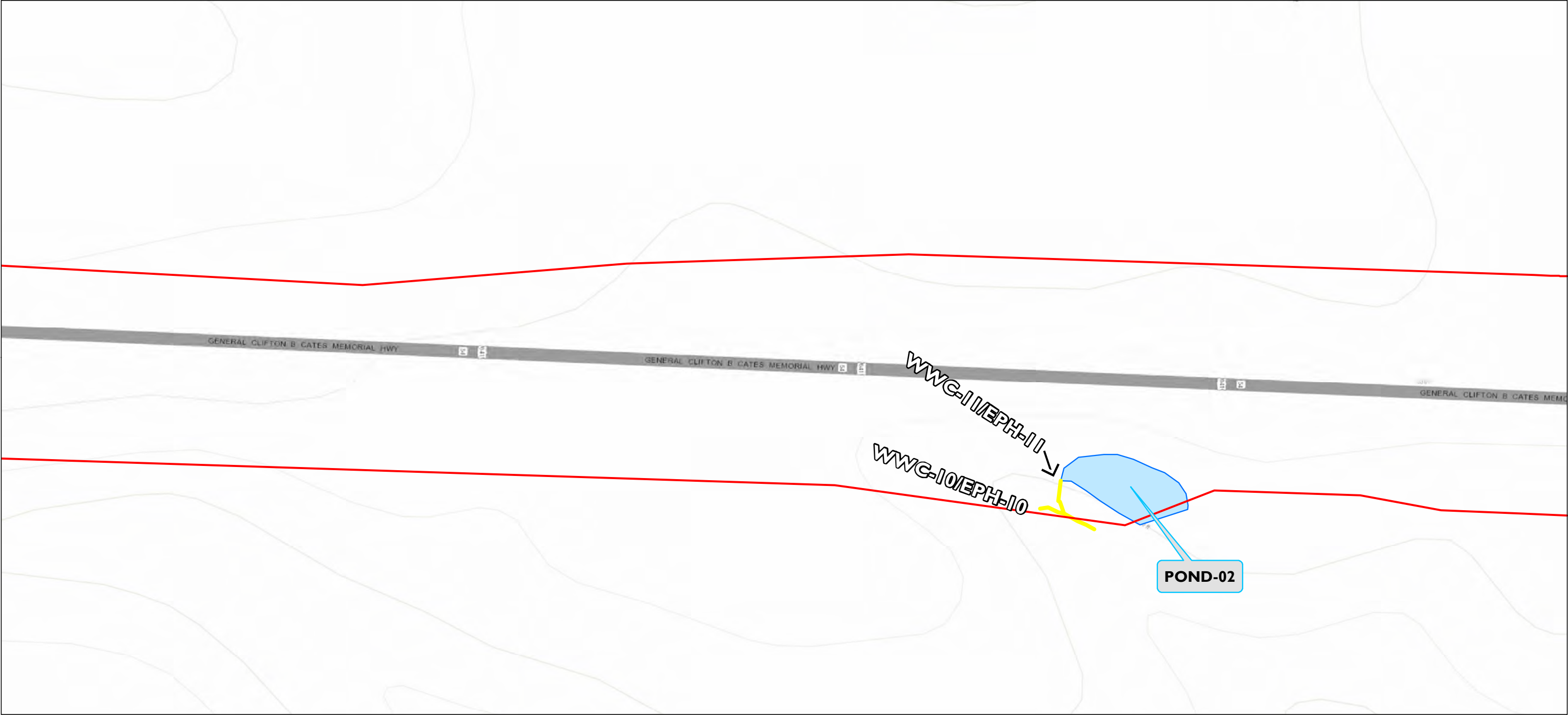
Figure No.

4.4

Title

Environmental Boundaries Topographic Map

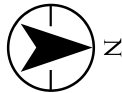
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2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500

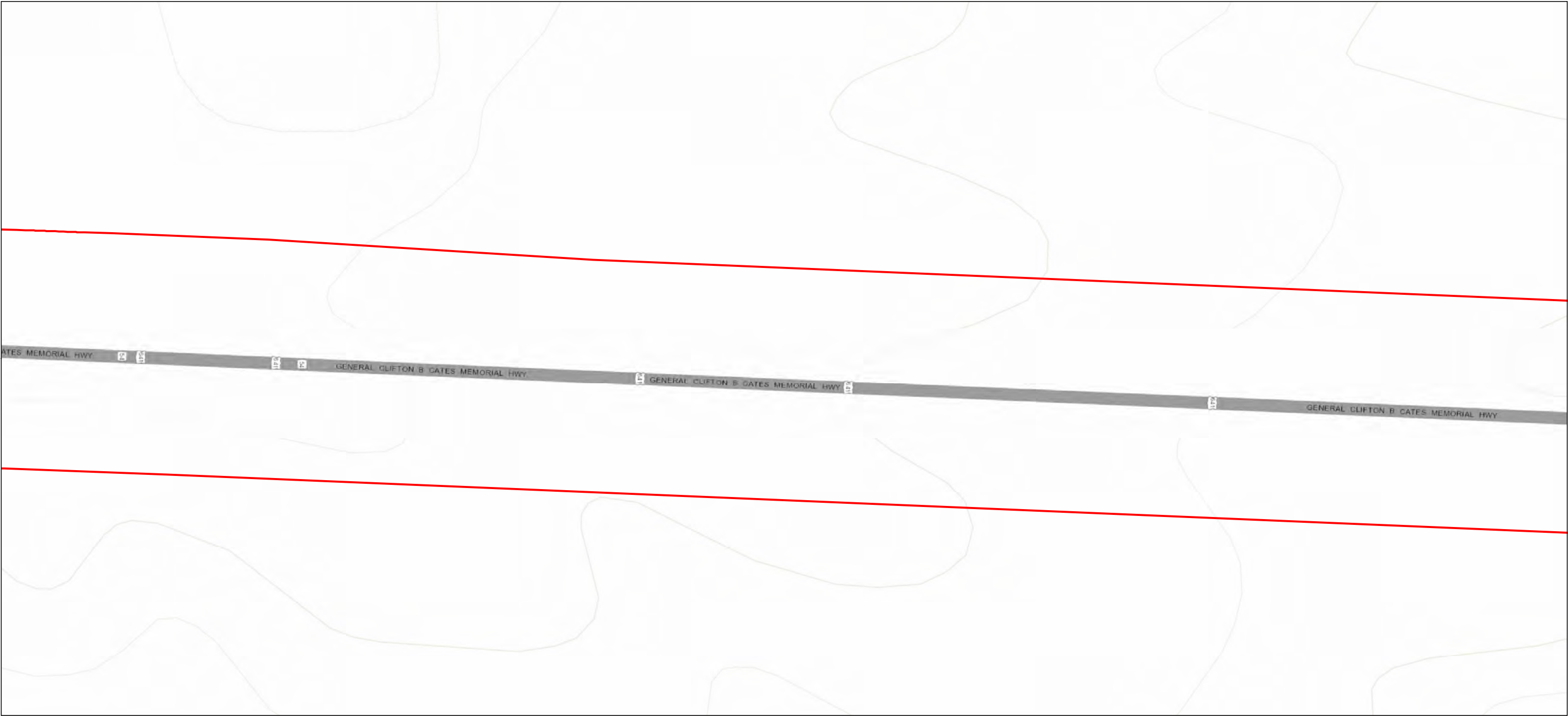


Henry County
PIN: 101886.02
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Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

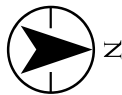
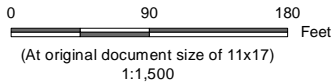
Figure No.
4.5
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

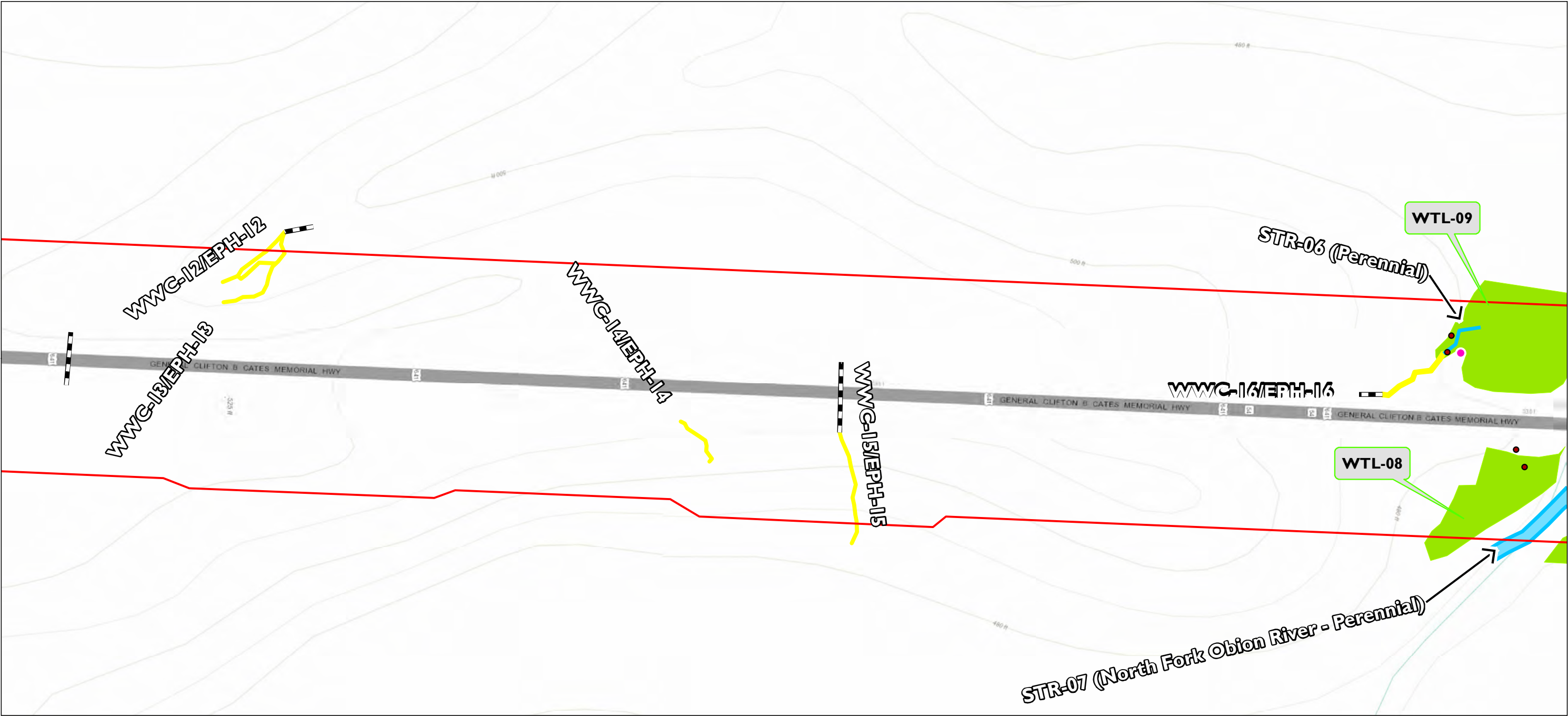


Henry County
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Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
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TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
4.6
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
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Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
172678144

Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
4.7
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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Henry County
PIN: 101886.02
Project: 40003-0200-14
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TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

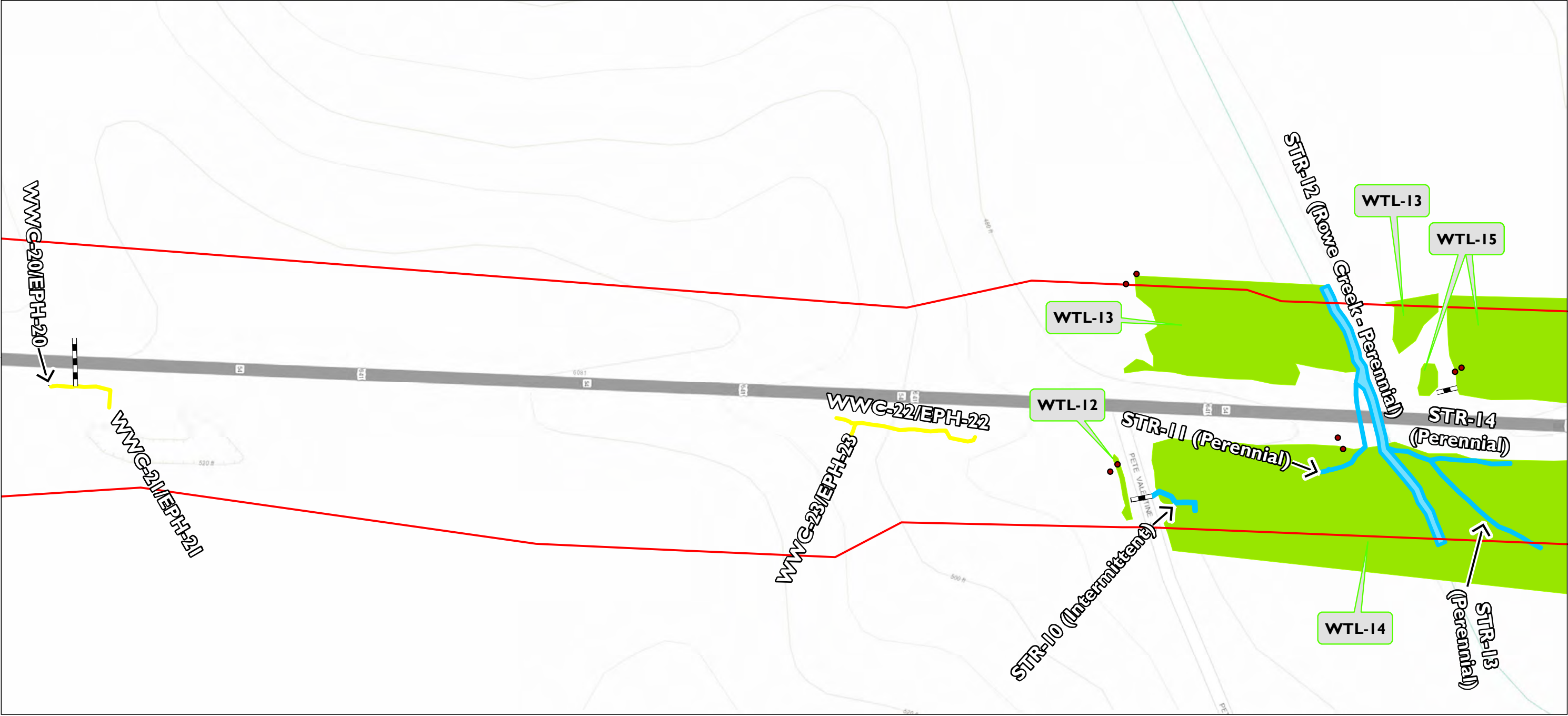
Figure No.

4.8

Title

Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
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 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

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(At original document size of 11x17)
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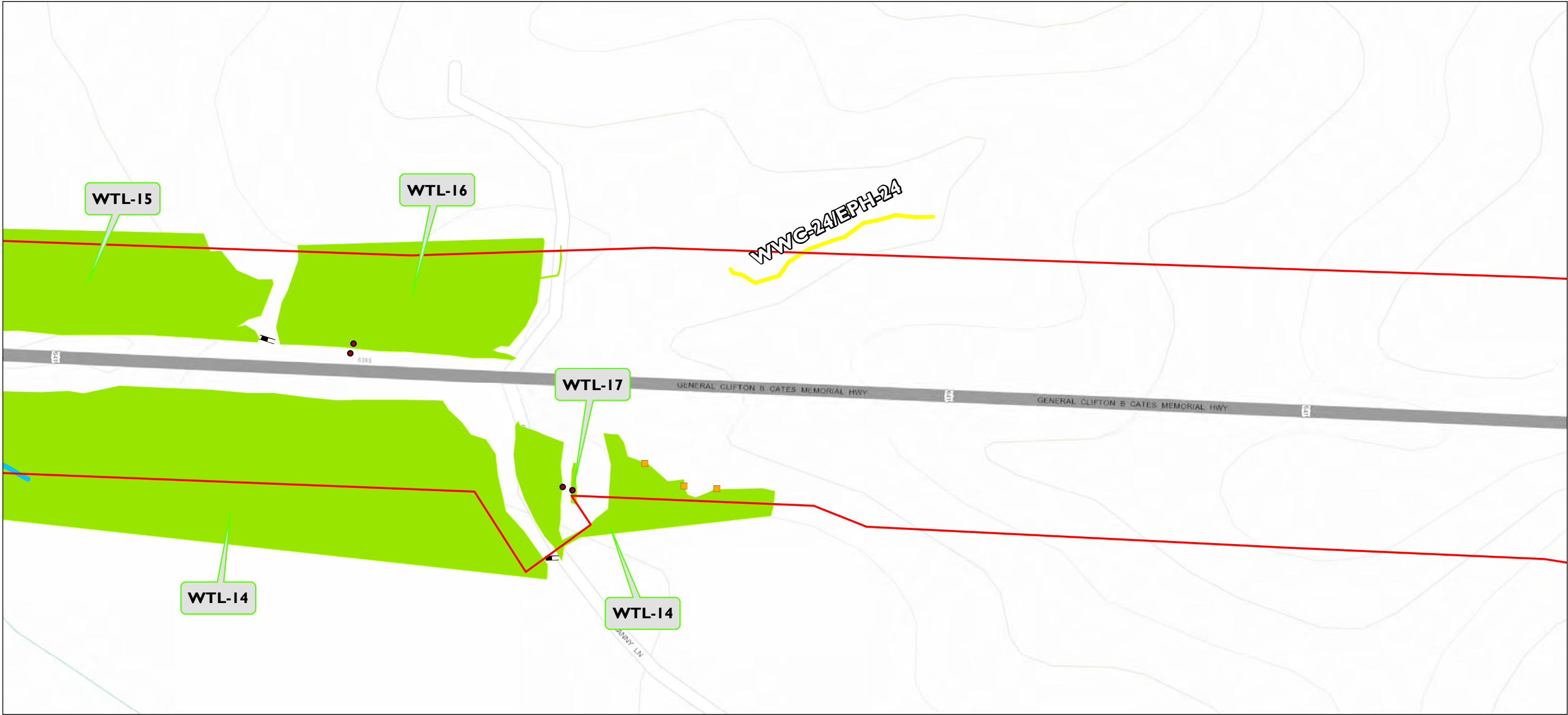
Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
4.9
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
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IR Review by MWW on 2021-07-26
TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

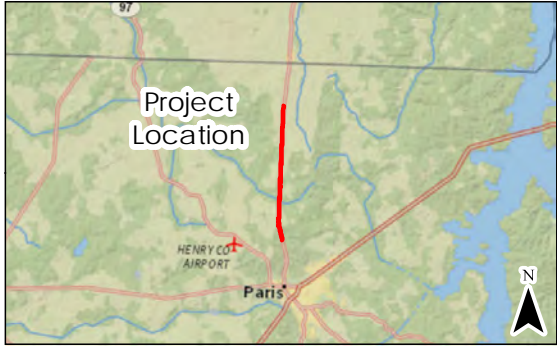
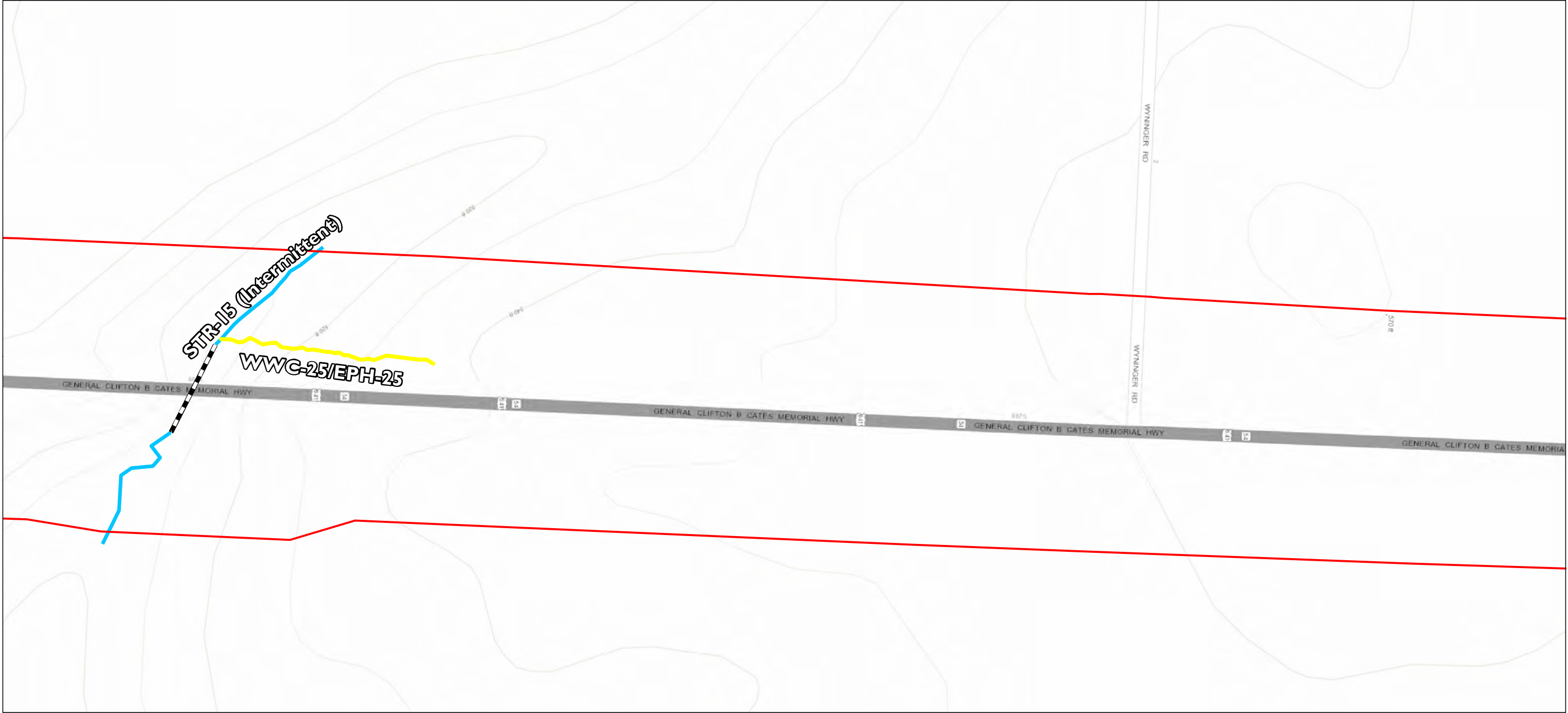
4.10

Title

Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

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TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

4.11

Title

Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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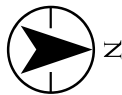


Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
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- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

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(At original document size of 11x17)
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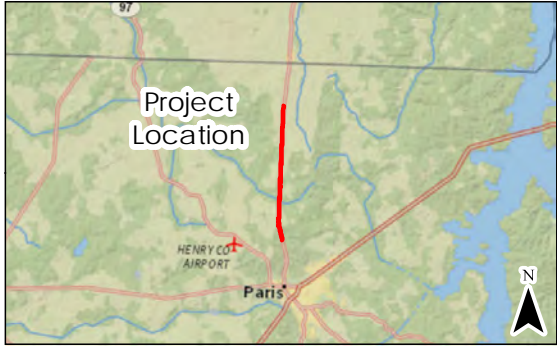
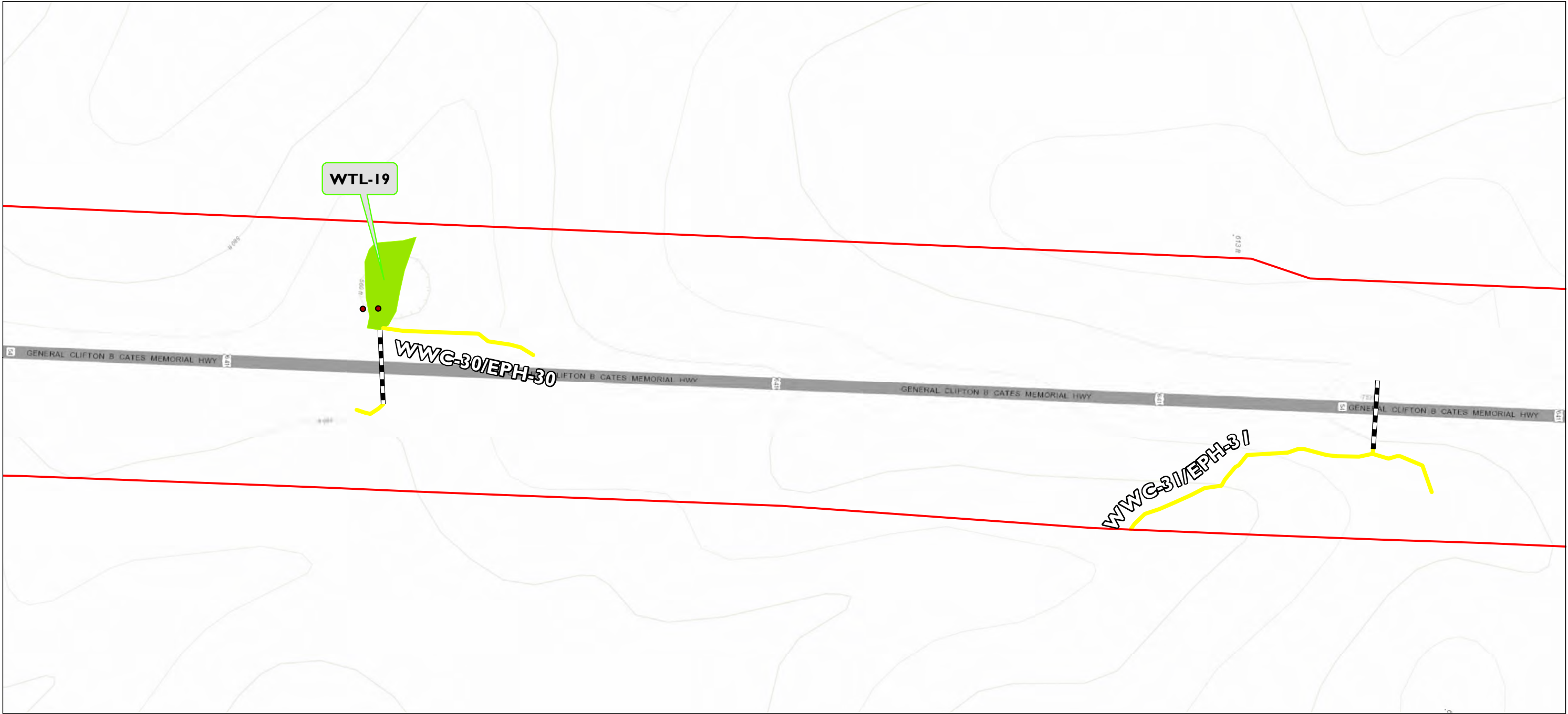
Henry County
PIN: 101886.02
Project: 40003-0200-14
TN DOT/SR-54
172678144

Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26

Figure No.
4.12
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

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- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

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- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

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Henry County
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Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN DOT/SR-54 172678144

TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

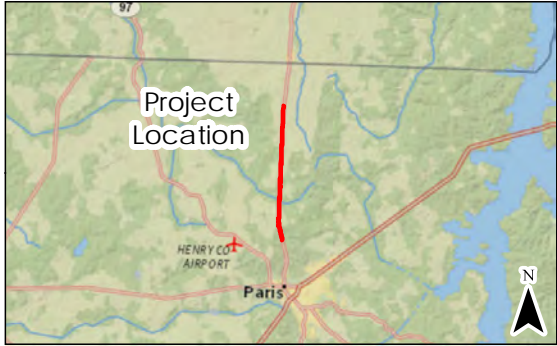
Figure No.

4.13

Title

Environmental Boundaries Topographic Map

Notes
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Legend

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0 90 180 Feet
(At original document size of 11x17)
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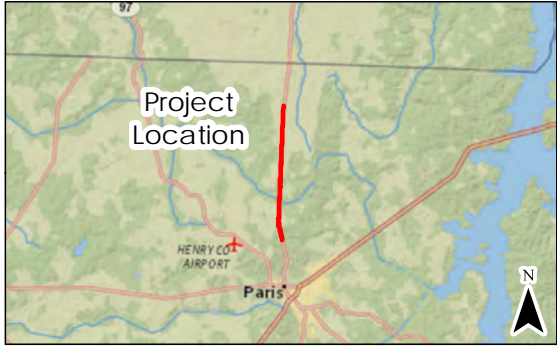
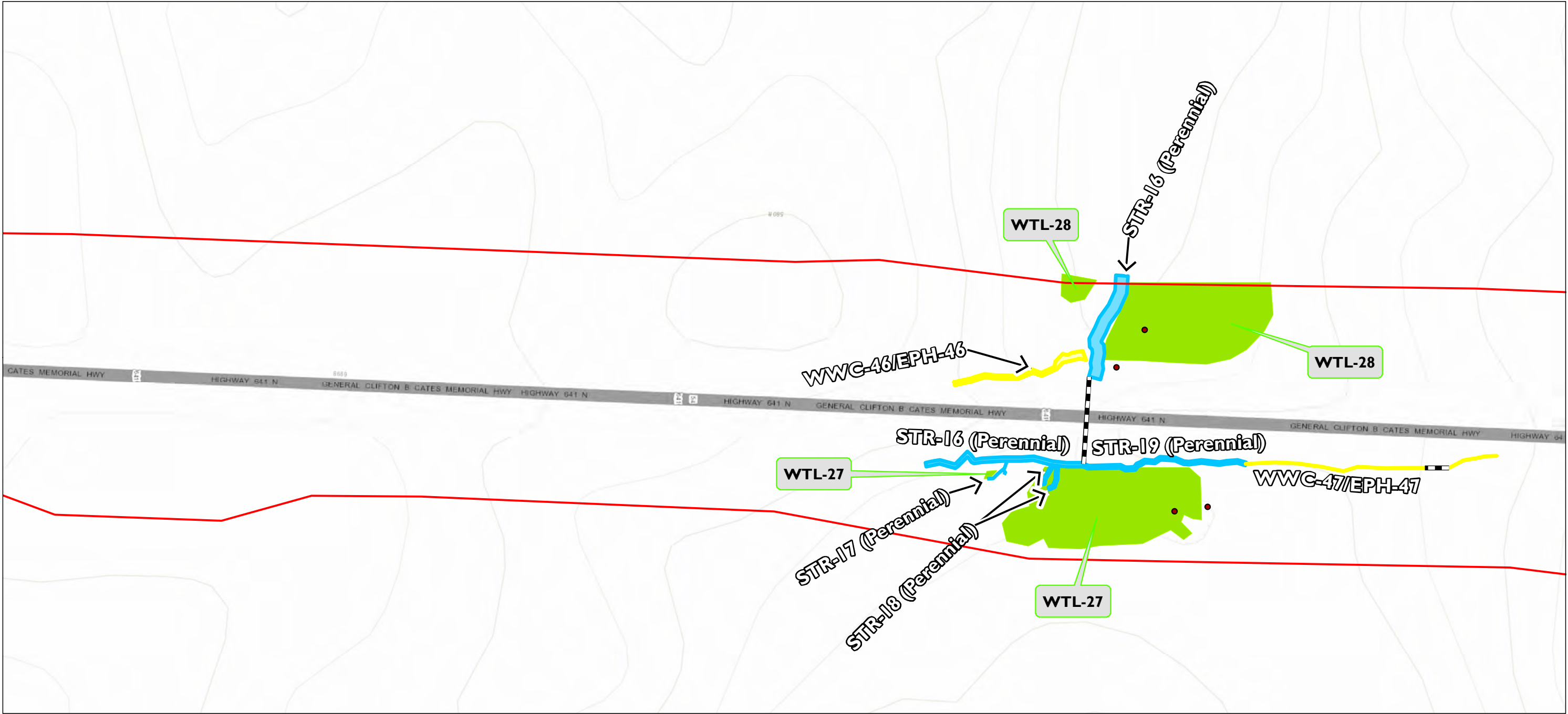


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Figure No.
4.14
Title
Environmental Boundaries Topographic Map

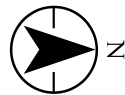
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2. Data Sources:
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- Legend
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 - Wet Weather Conveyance (WWC)
 - Stream (STR)
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 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

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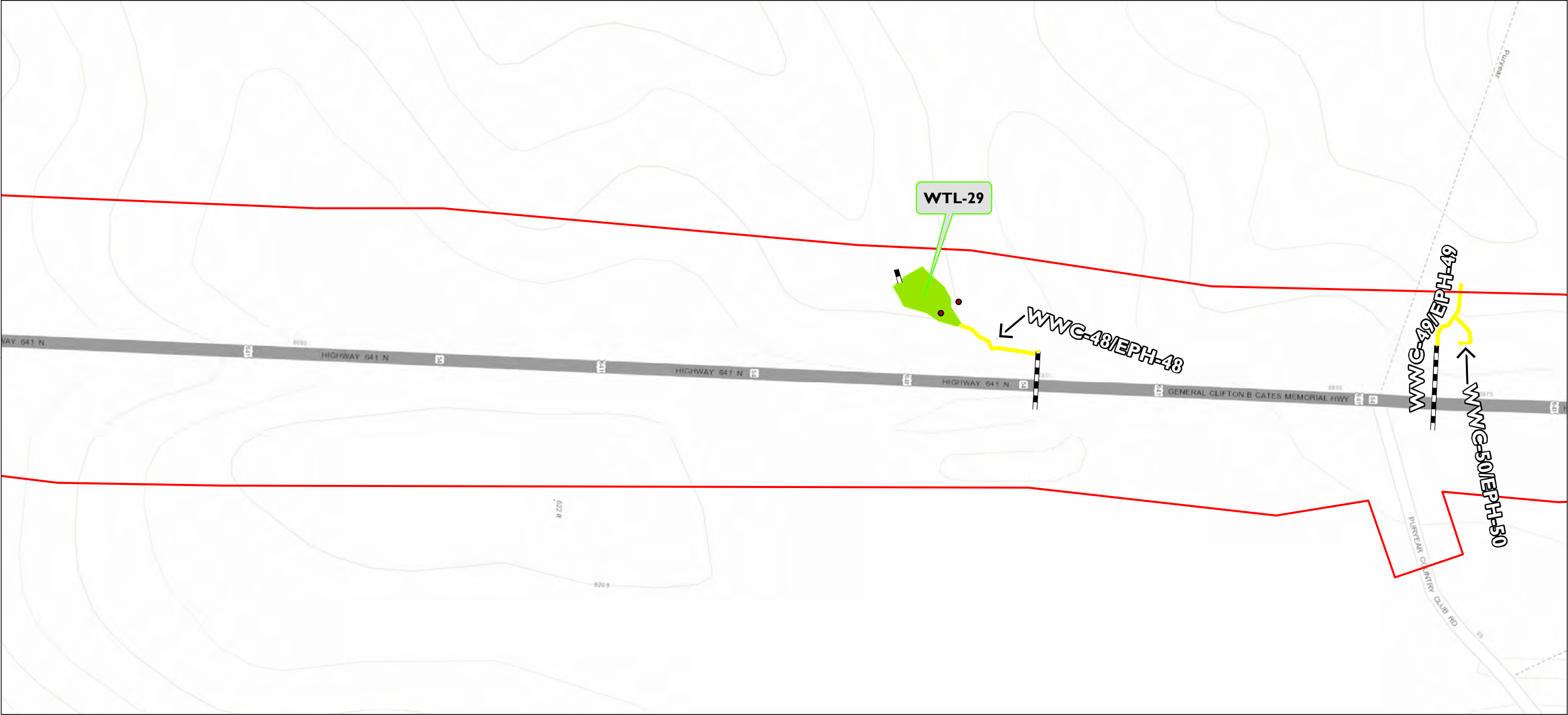
Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
4.16
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Revised: 2021-07-26 By: nvahanian



Legend

- Limits of Investigation
- Pond
- Wetland
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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Henry County
PIN: 101886.02
Project: 40003-0200-14
Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
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TN DOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

4.17

Title

Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

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- Pond
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- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
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0 90 180 Feet
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TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

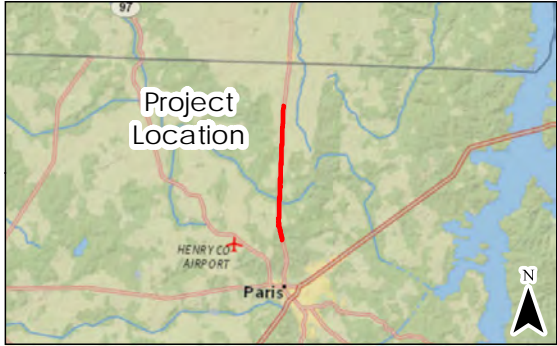
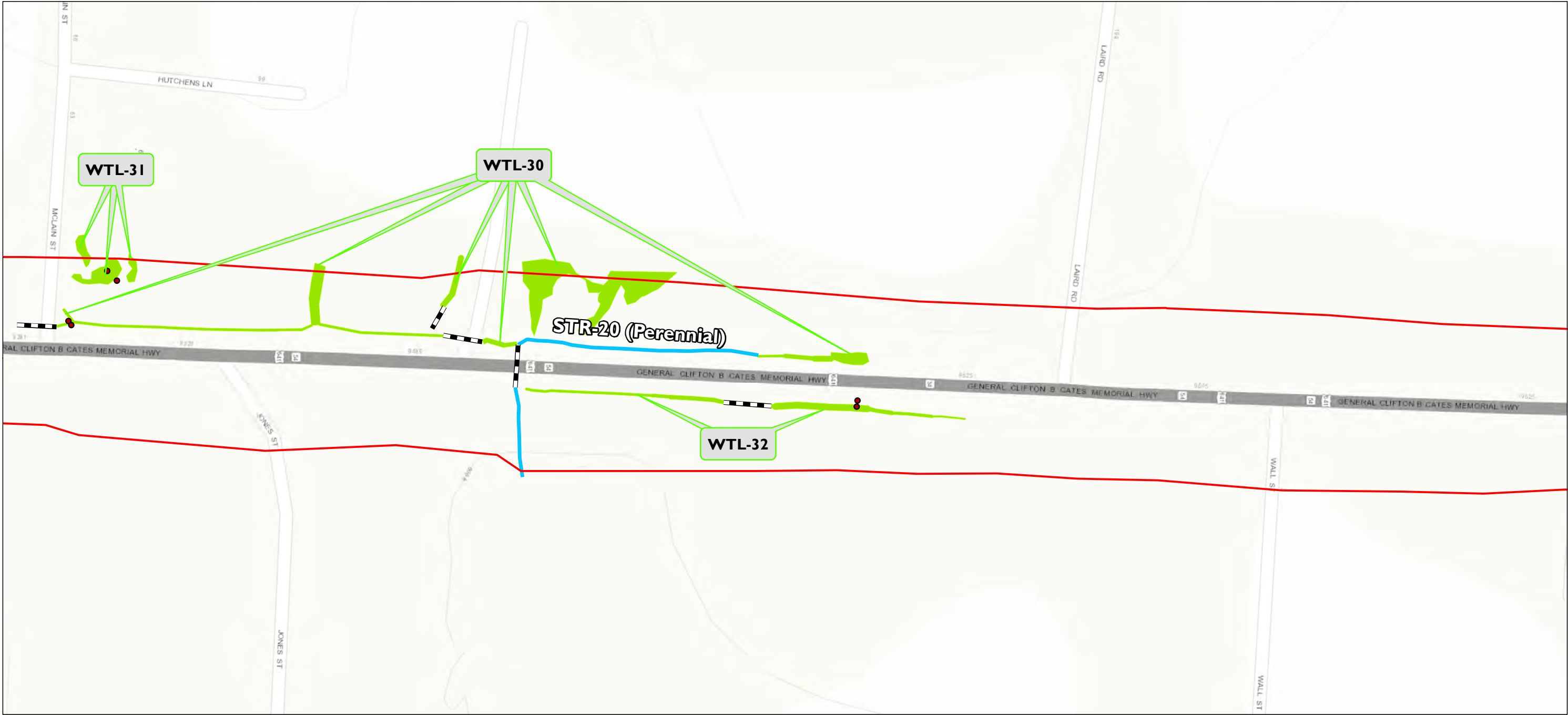
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Title

Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

- Limits of Investigation
- Pond
- Wetland
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- Wet Weather Conveyance (WWC)
- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
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Henry County
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TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.

4.19

Title

Environmental Boundaries Topographic Map

Notes

- Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 - Data Sources:
 - Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

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- Pond
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- Stream (STR)
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- Stream (STR)
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- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
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0 90 180 Feet
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1:1,500



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Henry Co SR-54 from Smith Rd to Near Howard Rd

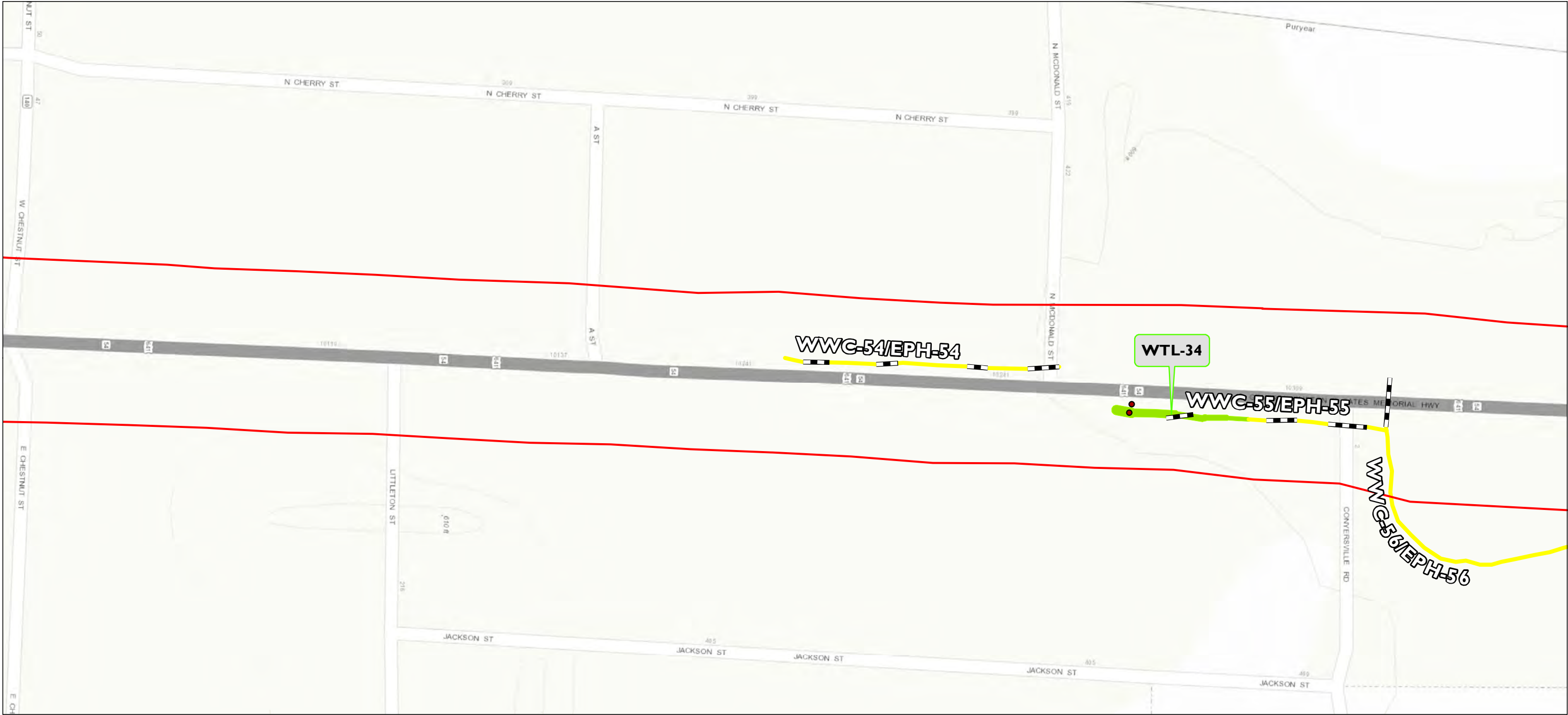
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4.20

Title

Environmental Boundaries Topographic Map

Notes
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2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

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- Wetland
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- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
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0 90 180 Feet
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TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

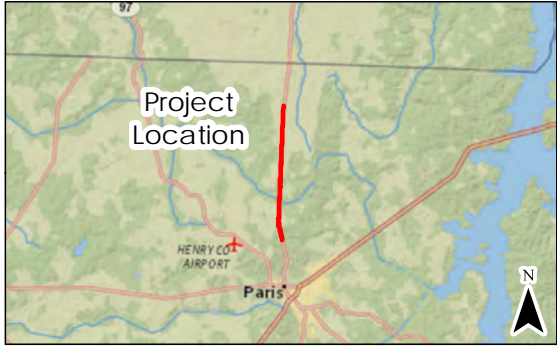
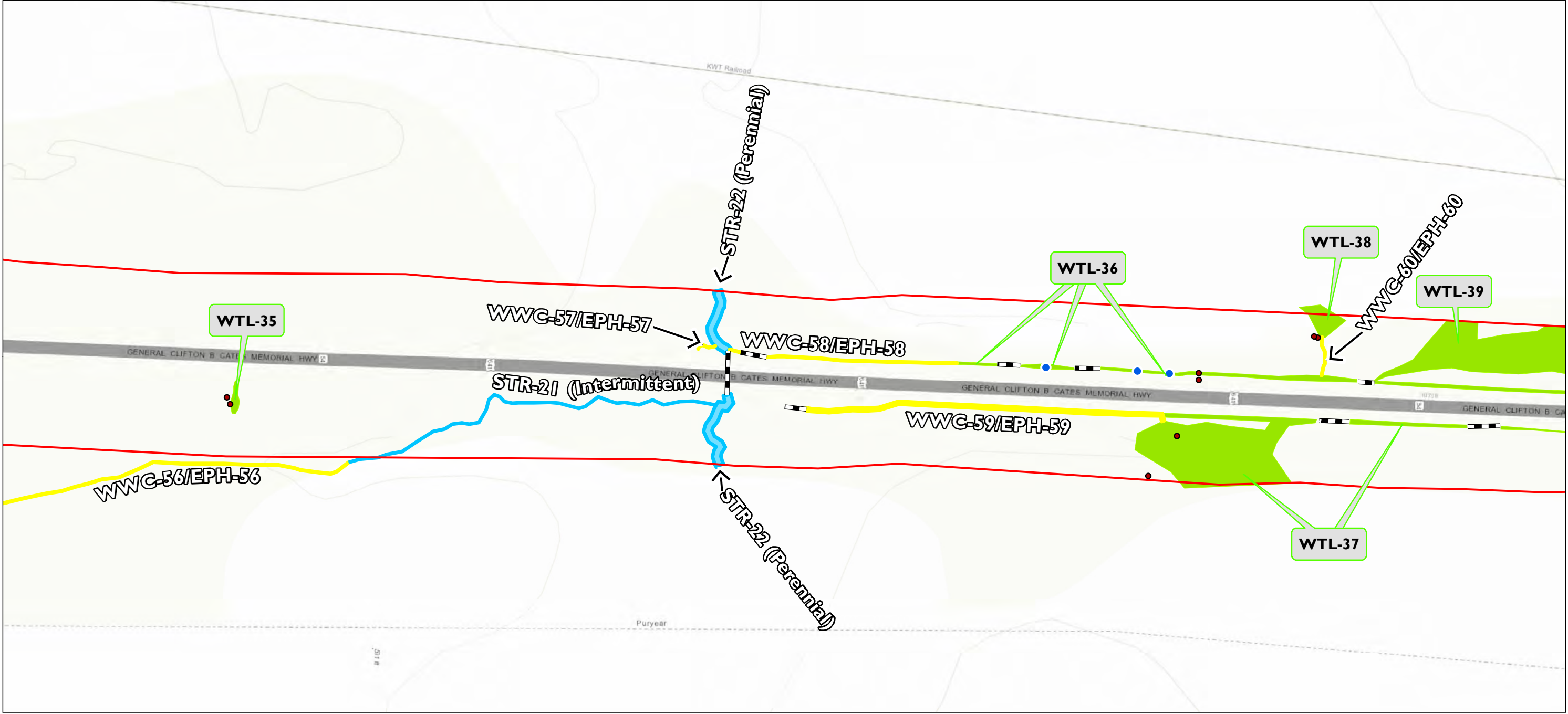
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4.21

Title

Environmental Boundaries Topographic Map

Notes
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2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Legend

- Limits of Investigation
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- Wetland
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- Stream (STR)
- Wet Weather Conveyance (WWC)
- Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



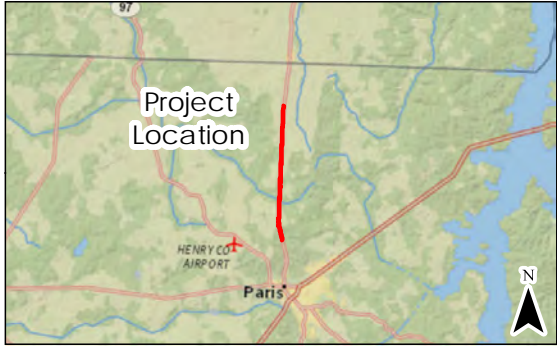
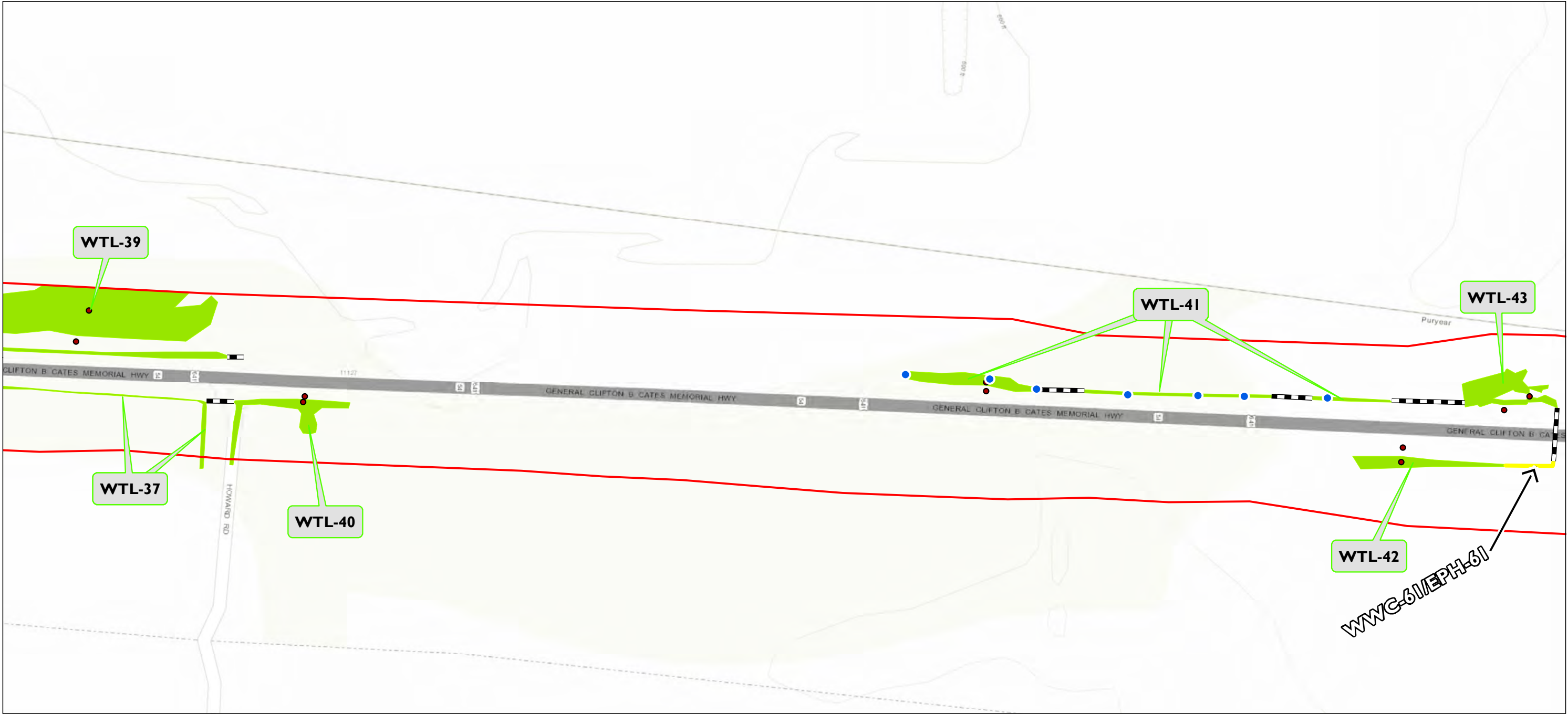
Henry County
PIN: 101886.02
Project: 40003-0200-14
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IR Review by MW on 2021-07-26

Figure No.
4.22

Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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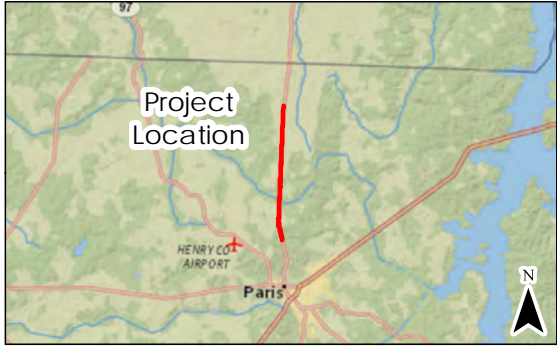
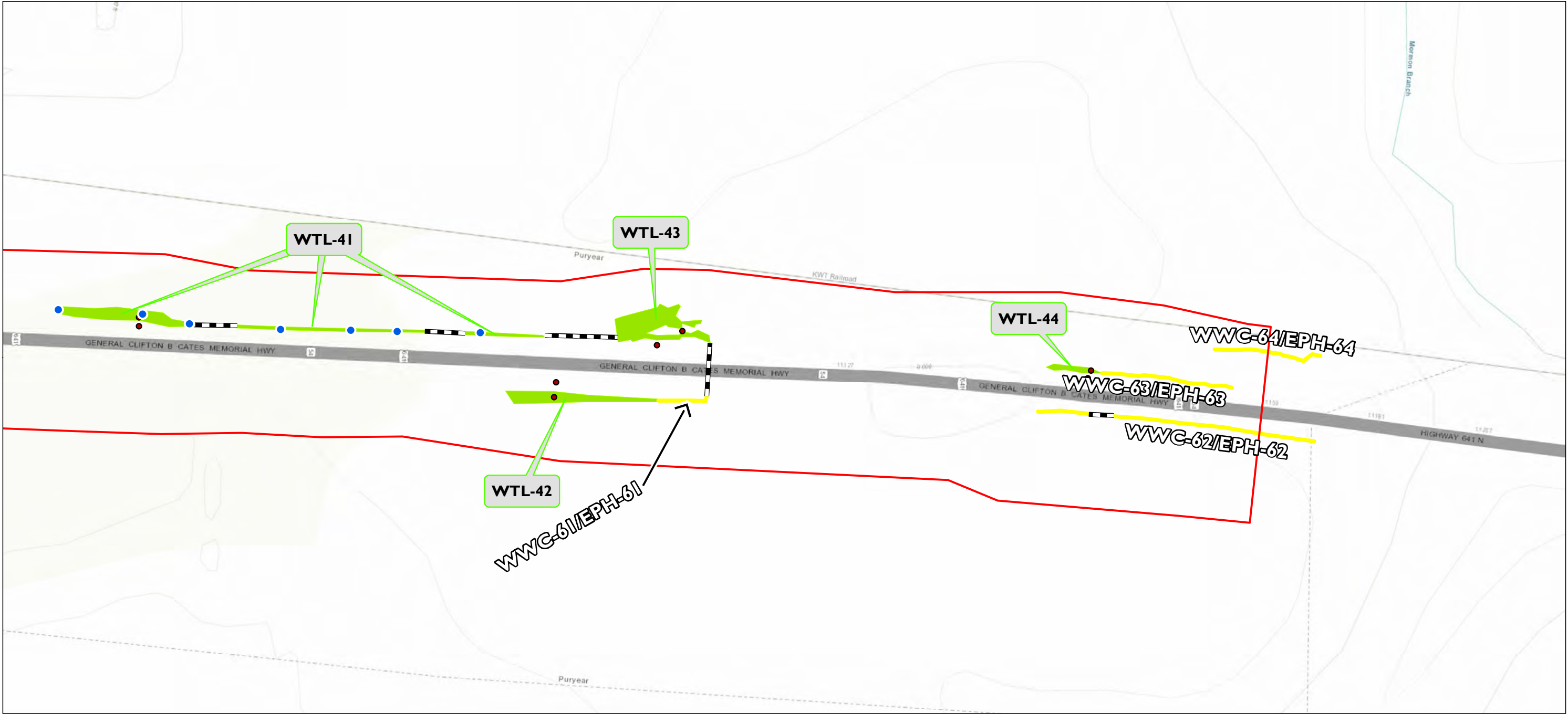


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IR Review by MWW on 2021-07-26
TN TDOT/SR-54 172678144

TN TDOT
Henry Co SR-54 from Smith Rd to Near Howard Rd

Figure No.
4.23
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,



- Legend
- Limits of Investigation
 - Pond
 - Wetland
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Stream (STR)
 - Wet Weather Conveyance (WWC)
 - Culvert

- Soil Data Points
- Spring
- State-Listed Water Purslane (*Didiplis diandra*) Observation
- State-Listed Halberd-Leaf Tearthumb (*Polygonum arifolium*) Observation

0 90 180 Feet
(At original document size of 11x17)
1:1,500



Henry County
PIN: 101886.02
Project: 40003-0200-14
TN TDOT/SR-54
172678144

Prepared by NV on 2021-07-26
TR by ZB on 2021-07-26
IR Review by MWW on 2021-07-26

Figure No.
4.24
Title
Environmental Boundaries Topographic Map

Notes
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Data Sources:
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/17/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-01-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1
 Subregion (LRR or MLRA): LRR P Lat: 36.342246 Long: -88.329857 Datum: NAD83 TN
 Soil Map Unit Name: SeE2 - Smithdale loam 12-25% slope eroded NWI classification: PSS/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: PSS/PFO wetland located west of SR-54 at toe of slope. Flows to culvert beneath road.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-01-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u><i>Acer negundo</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>20.0</u> = Total Cover																				
50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>25</u></td> <td>x 1 = <u>25</u></td> </tr> <tr> <td>FACW species <u>12</u></td> <td>x 2 = <u>24</u></td> </tr> <tr> <td>FAC species <u>78</u></td> <td>x 3 = <u>234</u></td> </tr> <tr> <td>FACU species <u>7</u></td> <td>x 4 = <u>28</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>122</u> (A)</td> <td><u>311</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.5</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>25</u>	x 1 = <u>25</u>	FACW species <u>12</u>	x 2 = <u>24</u>	FAC species <u>78</u>	x 3 = <u>234</u>	FACU species <u>7</u>	x 4 = <u>28</u>	UPL species <u>0</u>	x 5 = _____	Column Totals: <u>122</u> (A)	<u>311</u> (B)	Prevalence Index = B/A = <u>2.5</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>25</u>	x 1 = <u>25</u>																			
FACW species <u>12</u>	x 2 = <u>24</u>																			
FAC species <u>78</u>	x 3 = <u>234</u>																			
FACU species <u>7</u>	x 4 = <u>28</u>																			
UPL species <u>0</u>	x 5 = _____																			
Column Totals: <u>122</u> (A)	<u>311</u> (B)																			
Prevalence Index = B/A = <u>2.5</u>																				
1. <u><i>Lingustrum sinense</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC																	
2. <u><i>Salix nigra</i></u>	<u>25</u>	<input checked="" type="checkbox"/>	OBL																	
3. <u><i>Acer negundo</i></u>	<u>5</u>	_____	FAC																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>40.0</u> = Total Cover																				
50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
1. <u><i>Solidago sp.</i></u>	<u>5</u>	_____	NA																	
2. <u><i>Carex vulpinoidea</i></u>	<u>12</u>	<input checked="" type="checkbox"/>	FACW																	
3. <u><i>Juncus tenuis</i></u>	<u>8</u>	_____	FAC																	
4. <u><i>Microstegium vimineum</i></u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC																	
5. <u><i>Andropogon virginicus</i></u>	<u>5</u>	_____	FAC																	
6. <u><i>Lonicera japonica</i></u>	<u>5</u>	_____	FACU																	
7. <u><i>Parthenocissus quinquefolia</i></u>	<u>2</u>	_____	FACU																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>67.0</u> = Total Cover																				
50% of total cover: <u>33.5</u> 20% of total cover: <u>13.4</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WTL-01-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 4/3	100					Loam	
2-4	10YR 4/4	70	7.5YR 4/6	30	C	M	Clay Loam	
4-10	10YR 4/2	87	7.5YR 4/6	10	C	PL & M	Clay Loam	
			7.5YR 3/3	3	D			
10-18	10YR 5/2	30					Silty Clay Loam	
	7.5YR 4/6	70						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/17/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-01-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.342298 Long: -88.329786 Datum: NAD83 TN
 Soil Map Unit Name: SeE2 - Smithdale loam, 12-25% slopes eroded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-01.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-01-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>2</u> (B)																
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)																
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>2</u></td> <td>x 5 = <u>10</u></td> </tr> <tr> <td>Column Totals: <u>42</u> (A)</td> <td><u>170</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>2</u>	x 5 = <u>10</u>	Column Totals: <u>42</u> (A)	<u>170</u> (B)	Prevalence Index = B/A = <u>4.0</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>2</u>	x 5 = <u>10</u>																			
Column Totals: <u>42</u> (A)	<u>170</u> (B)																			
Prevalence Index = B/A = <u>4.0</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Digitaria ciliaris</u>	<u>40</u>	<input checked="" type="checkbox"/>	FACU																	
2. <u>Trifolium incarnatum</u>	<u>10</u>	_____	NA																	
3. <u>Trifolium campestre</u>	<u>5</u>	_____	NA																	
4. <u>Festuca subverticillata</u>	<u>40</u>	<input checked="" type="checkbox"/>	NA																	
5. <u>Lepidium virginicum</u>	<u>2</u>	_____	UPL																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>																
<u>97.0</u> = Total Cover 50% of total cover: <u>48.5</u> 20% of total cover: <u>19.4</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WTL-01-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	2.5YR 4/8	50					Sandy clay	
	10YR 4/3	50					Silty clay loam	
6-18	10YR 4/3	90	5YR 4/6	10	C	M	Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/17/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-01

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input checked="" type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 50

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 20

C = Percentage low density residential, construction, or similar 20

D = Percentage high density residential, or similar 10

E = Percentage urban, commercial, industrial, or similar 10

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.751}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☒ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☒ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI = 0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input checked="" type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input checked="" type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.287

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.33

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (WETDEPTH) V3 0.5 (TSIZE) V5 _____ (SCOV) V7 0.287 (COMP) V9 0.33 (BUFFER)

V2 0.751 (WSHEDINT) V4 0.75 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-01

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.75
	Function: Biogeochemical Processes	0.781
	Function: Retain Particulates	N/A
	Function: Plant Community	0.592
	Function: Wildlife Community	0.526
	Quantitative Score (Average of FCIs x 100)	66.2
	Value Added (Significant Size) Total	0
	TOTAL SCORE	66.2
Total of Quantitative and Value Added Scores		

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 05/17/2021
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-01		
HUC (12 digit): 060400050602		Lat/Long: 36.343002 °N
Previous Rainfall (7-days) : 1 inch		-88.329858 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.1 acres		County: Henry
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes		Source: NRCS
Surrounding Land Use : Roadside, residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [8.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = <u>2.5</u>)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = <u>0</u>)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = <u>6</u>)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 8.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Bed and bank continuous for some of the reach, a large portion is silt fenced and becomes terraced flat sandy areas. It flows down rip rap into PND-01. No water present at time of survey and very little sorting or structure present.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/17/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-01							
3-Latitude/Longitude		36.343002, -88.329858							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		8.5							
-OHWM indicators		bed & banks <input type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		3 feet				-top of bank width		4 feet	
-width at ordinary high water mark		3 feet							
-bank height		LDB - 1 foot				RDB - 1 foot			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB:							
------(LDB /RDB)-----		RDB:							
-date of PJD request									
5-photo numbers		4 - 9							
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>At the time of the survey this roadside ditch had BMPs installed due to the active construction to the south. This channel had a large amount of sediment built up within these BMPs.</p>							
Substrate		Sand and silt.							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05/17/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-02-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Pond fringe Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.344832 Long: -88.330560 Datum: NAD83 TN
 Soil Map Unit Name: Us - Udorthents, loamy, hydric NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Emergent wetland fringe abutting Smiths Lake.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-02-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																																
2. _____	_____	_____	NA																																	
3. _____	_____	_____	NA																																	
4. _____	_____	_____	NA																																	
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td colspan="2">Total % Cover of:</td> <td colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u>55</u></td> <td>x 1 =</td> <td><u>55</u></td> </tr> <tr> <td>FACW species</td> <td><u>17</u></td> <td>x 2 =</td> <td><u>34</u></td> </tr> <tr> <td>FAC species</td> <td><u>0</u></td> <td>x 3 =</td> <td><u>0</u></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>72</u></td> <td>(A)</td> <td><u>89</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>1.2</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	<u>55</u>	x 1 =	<u>55</u>	FACW species	<u>17</u>	x 2 =	<u>34</u>	FAC species	<u>0</u>	x 3 =	<u>0</u>	FACU species	<u>0</u>	x 4 =	<u>0</u>	UPL species	<u>0</u>	x 5 =	<u>0</u>	Column Totals:	<u>72</u>	(A)	<u>89</u> (B)	Prevalence Index = B/A = <u>1.2</u>			
Total % Cover of:		Multiply by:																																		
OBL species	<u>55</u>	x 1 =	<u>55</u>																																	
FACW species	<u>17</u>	x 2 =	<u>34</u>																																	
FAC species	<u>0</u>	x 3 =	<u>0</u>																																	
FACU species	<u>0</u>	x 4 =	<u>0</u>																																	
UPL species	<u>0</u>	x 5 =	<u>0</u>																																	
Column Totals:	<u>72</u>	(A)	<u>89</u> (B)																																	
Prevalence Index = B/A = <u>1.2</u>																																				
6. _____	_____	_____	NA																																	
7. _____	_____	_____	NA																																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																																				
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																																
2. _____	_____	_____	NA																																	
3. _____	_____	_____	NA																																	
4. _____	_____	_____	NA																																	
5. _____	_____	_____	NA																																	
6. _____	_____	_____	NA																																	
7. _____	_____	_____	NA																																	
8. _____	_____	_____	NA																																	
9. _____	_____	_____	NA																																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																																				
Herb Stratum (Plot size: <u>5 ft</u>)																																				
1. <u>Carex scoparia</u>	<u>5</u>	_____	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																																
2. <u>Carex stipata</u>	<u>25</u>	<input checked="" type="checkbox"/>	OBL																																	
3. <u>Carex lupulina</u>	<u>20</u>	<input checked="" type="checkbox"/>	OBL																																	
4. <u>Eleocharis palustris</u>	<u>5</u>	_____	OBL																																	
5. <u>Impatiens capensis</u>	<u>2</u>	_____	FACW																																	
6. <u>Alnus serrulata</u>	<u>10</u>	_____	FACW																																	
7. <u>Juncus effusus</u>	<u>5</u>	_____	OBL																																	
8. _____	_____	_____	NA																																	
9. _____	_____	_____	NA																																	
10. _____	_____	_____	NA																																	
11. _____	_____	_____	NA																																	
<u>72.0</u> = Total Cover 50% of total cover: <u>36.0</u> 20% of total cover: <u>14.4</u>																																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																																				
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																
2. _____	_____	_____	NA																																	
3. _____	_____	_____	NA																																	
4. _____	_____	_____	NA																																	
5. _____	_____	_____	NA																																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																																				
Remarks: (Include photo numbers here or on a separate sheet.)																																				

SOIL

Sampling Point: WTL-02-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/8	100					Silty clay loam	
3-15	2.5Y 4/2	85	10YR 4/4	15	C	M	Silty clay loam	
15-18	2.5Y 5/1	65	5Y 6/6	5	C	M	Sandy clay	
	10YR 4/1	30						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05/17/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-02-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.344851 Long: -88.330550 Datum: NAD83 TN
 Soil Map Unit Name: Ua, Udorthents, loamy NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-02.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-02-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	NA	
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>50</u> (A) <u>185</u> (B) Prevalence Index = B/A = <u>3.7</u>
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. _____	_____	_____	NA	
2. _____	_____	_____	NA	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
8. _____	_____	_____	NA	
9. _____	_____	_____	NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Plantago lanceolata</u>	<u>25</u>	<input checked="" type="checkbox"/>	FACU	
2. <u>Trifolium campestre</u>	<u>15</u>	<input checked="" type="checkbox"/>	NA	
3. <u>Allium canadense</u>	<u>5</u>	_____	FACU	
4. <u>Valerianella radiata</u>	<u>10</u>	_____	FAC	
5. <u>Lonicera japonica</u>	<u>5</u>	_____	FACU	
6. <u>Erigeron strigosus</u>	<u>5</u>	_____	FAC	
7. <u>Geranium carolinianum</u>	<u>15</u>	<input checked="" type="checkbox"/>	NA	
8. _____	_____	_____	NA	
9. _____	_____	_____	NA	
10. _____	_____	_____	NA	
11. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.
<u>80.0</u> = Total Cover 50% of total cover: <u>40.0</u> 20% of total cover: <u>16.0</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____	_____	_____	NA	
2. _____	_____	_____	NA	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-02-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/4	100					Silty clay loam	
3-12	7.5YR 4/6	30					Silty clay loam	
	10YR 4/4	70						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock
Depth (inches): 12

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT RIVERINE WETLANDS

Date: 05/17/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-02

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: River Connection (RIVCON)

- | | | |
|--|---|--|
| <p>1. Overbank flooding has not been impacted (SI = 1.0)</p> <p><input checked="" type="checkbox"/> - no artificial levee(s), spoil piles, roads, or other obstructions</p> <p><input checked="" type="checkbox"/> - no channelization; channel is naturally meandering</p> <p><input type="checkbox"/> - no channel downcutting</p> | <p>- no lateral cutting and no bank failure</p> <p>- flood frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>2. Overbank flooding slightly impacted (SI = 0.75)</p> <p><input type="checkbox"/> - levee(s) etc. present but most overbank flooding occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - slight channel downcutting</p> | <p>- slight lateral cutting and bank failure</p> <p>- flooding frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>3. Overbank flooding moderately impacted (SI = 0.5)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - moderate channel downcutting</p> | <p>- moderate lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>4. Overbank flooding significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - significant channel downcutting</p> | <p>- significant lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>5. Overbank flooding severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - levee(s) etc. have eliminated overbank flooding</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - severe channel downcutting</p> | <p>- severe lateral cutting and bank failure</p> <p>- natural flood regime no longer occurs</p> | <p>- local knowledge</p> <p>- gauge data</p> |

V2: Hydroperiod (HYDRO)

- | | |
|---|---|
| <p>1. Hydrologic storage not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p><input type="checkbox"/> - no artificial levees or other structures that cause prolonged ponding</p> | <p>- no land leveling</p> |
| <p>2. Hydrologic storage slightly impacted (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - ditches/drainage tiles present over portion of site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>3. Hydrologic storage moderately impacted (SI = 0.50)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - widely spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>4. Hydrologic storage significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - moderately spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>5. Hydrologic storage severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill, excessive sediment, or leveling</p> <p><input type="checkbox"/> - closely spaced ditches/tiles present over entire site</p> <p><input type="checkbox"/> - entire site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of entire site</p> |

N/A

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☒ > 16 in. (SI = 1.0) ☐ 10 – 16 in. (SI = 0.75) ☐ 5 – 9 in. (SI = 0.5) ☐ 3 – 4 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

N/A

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☒ 8 – 16 (SI = 1.0) ☐ 17 – 50 (SI = 0.75) ☐ > 50 (SI = 0.5) ☐ 3 – 7 (SI = 0.5) ☐ 1 – 2 (SI = 0.25)

N/A



N/A



V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)

☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum.*

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> American elm	<input type="checkbox"/> River birch	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Overcup oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Boxelder	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> Water hickory	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Deciduous holly	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Pin oak	<input type="checkbox"/> Honey locust	<input type="checkbox"/> Red maple	<input type="checkbox"/> Sugarberry	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Black willow	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/>	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Green ash	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/>	0 Number native shrub spp.		
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp.		

2. Using the checked dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7

0.574

* In some Riverine wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases where this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. ☐

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Tract Size (TRACT)

1. Area (acres) of adjacent wetland and upland forest that is contiguous with the WAA. These values are for western Tennessee are negligible unless greater than the value added section limits for the remainder of the state.

☐ > 7,000 (SI = 1.0)

☒ >200 – 1,000 (SI = 0.5)

☐ < 1 (SI = 0.00)

☐ >1,000 – 7,000 (SI = 0.75)

☐ 1 – 200 (SI = 0.25)

☐ In Eastern or Central Tennessee (SI=1.0)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-02

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.866
	Function: Biogeochemical Processes	0.589
	Function: Retain Particulates	0.622
	Function: Plant Community	0.271
	Function: Wildlife Community	0.327
	Quantitative Score (Average of FCIs x 100)	53.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	53.5

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB, KD		Affiliation:	Stantec		Date:	5/17/2021			
1-Station: from plans	N/A									
2-Map label and name	PND-01									
3-Latitude/Longitude										
4-Feature description:	Pond									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>			
-HD score (if applicable)										
-OHWM indicators	bed & banks <input type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
	change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width					-top of bank width					
-width at ordinary high water mark										
-bank height	LDB -				RDB -					
-riffle/pool complex or other specialized habitat present?										
-dominant riparian species:	LDB: Manv carex species. rice cut grass. tag alder									
----- (LDB / RDB) -----	RDB:									
-date of PJD request										
5-photo numbers										
6-HUC -8 Code & Name										
7-Assessed	yes <input type="checkbox"/>		no <input type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>		no <input type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		<input type="checkbox"/>	
	no <input type="checkbox"/>									
10-Notes	Smiths Lake. OCS on southeast corner of the lake.									
Substrate										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 05/17/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-01		
HUC (12 digit): 060400050602		Lat/Long: 36.344644 °N
Previous Rainfall (7-days) : 1 inch		-88.329930 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 155.4 acres	County: Henry	
Soil Type(s) / Geology : Eb - Enville-Bibb complex, 0-2% slopes, frequently flooded		Source: NRCS
Surrounding Land Use : Residential, forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **0**

Justification / Notes :

Many fish, flows from outlet control structure located in the south east corner of Smiths Lake.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 0)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 0)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB, KD	Affiliation:	Stantec	Date:	05/17/21					
1-Station: from plans	N/A									
2-Map label and name	STR-01									
3-Latitude/Longitude	36.344643 / -88.329948									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	n/a									
-OHWM indicators	bed & banks	<input type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input checked="" type="checkbox"/>
-channel bottom width	4.5 ft			-top of bank width			5 ft			
-width at ordinary high water mark	4 ft									
-bank height	LDB - 3 ft				RDB - 3 ft					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: Carex sp. Juncus effusus, Salix nigra									
----- (LDB / RDB) -----	RDB: Carex sp. Juncus effusus, Salix nigra									
-date of PJD request										
5-photo numbers	15 - 16									
6-HUC -8 Code & Name	06040005				TN Western Valley - Kentucky Lake					
7-Assessed	yes	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input checked="" type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	<p>Flows from outlet control structure located in the south east corner of Pond-01 through a culvert beneath SR-54.</p>									
Substrate	Boulder, cobble, gravel									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05/17/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-03-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.345075 Long: -88.330273 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy, hydric NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Emergent portion of wetland 03 abutting STR-01.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-03-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>75</u></td> <td>x 1 = <u>75</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>120</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.3</u>	Total % Cover of:	Multiply by:	OBL species <u>75</u>	x 1 = <u>75</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>120</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>75</u>	x 1 = <u>75</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>15</u>	x 3 = <u>45</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>120</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Microstegium vimineum</u>	<u>15</u>	_____	FAC															
2. <u>Juncus effusus</u>	<u>10</u>	_____	OBL															
3. <u>Carex lupulina</u>	<u>65</u>	<u>✓</u>	OBL	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-03-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-5	10YR 5/1	85	5YR 5/8	15	C	M	Sandy clay loam	
5-10	5YR 5/8	85					Silty clay loam	
	10YR 5/2	65	5Y 6/6				Silty clay loam	
10-18	10YR 5/1	85	5YR 5/8	15	C	M	Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05/17/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-03-WET2
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.345353 Long: -88.330276 Datum: NAD83 TN
 Soil Map Unit Name: Eb Enville-Bibb complex, 0-2% slopes, frequently flooded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Forested portion of WTL-03.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>5</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-03-WET2

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Fraxinus pennsylvanica</u>	<u>10</u>		FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. <u>Ulmus americana</u>	<u>40</u>	✓	FAC	
3. <u>Acer rubrum</u>	<u>40</u>	✓	FAC	Total Number of Dominant Species Across All Strata: <u>7</u> (B)
4. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71.4</u> (A/B)
5. _____			NA	
6. _____			NA	
7. _____			NA	
<u>90.0</u> = Total Cover				Prevalence Index worksheet:
50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Total % Cover of: _____ Multiply by: _____
1. <u>Fraxinus pennsylvanica</u>	<u>35</u>	✓	FACW	OBL species <u>0</u> x 1 = <u>0</u>
2. <u>Ulmus americana</u>	<u>15</u>	✓	FAC	FACW species <u>55</u> x 2 = <u>110</u>
3. _____			NA	FAC species <u>100</u> x 3 = <u>300</u>
4. _____			NA	FACU species <u>30</u> x 4 = <u>120</u>
5. _____			NA	UPL species <u>0</u> x 5 = <u>0</u>
6. _____			NA	Column Totals: <u>185</u> (A) <u>530</u> (B)
7. _____			NA	Prevalence Index = B/A = <u>2.9</u>
8. _____			NA	
9. _____			NA	Hydrophytic Vegetation Indicators:
<u>50.0</u> = Total Cover				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>				<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
				<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Parthenocissus quinquefolia</u>	<u>20</u>	✓	FACU	Definitions of Four Vegetation Strata:
2. <u>Lonicera japonica</u>	<u>10</u>	✓	FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
3. <u>Toxicodendron radicans</u>	<u>5</u>		FAC	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
4. <u>Fraxinus pennsylvanica</u>	<u>10</u>	✓	FACW	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
5. _____			NA	Woody vine – All woody vines greater than 3.28 ft in height.
6. _____			NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____
7. _____			NA	
8. _____			NA	
9. _____			NA	
10. _____			NA	
<u>45.0</u> = Total Cover				
50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____			NA	
2. _____			NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
<u>0.0</u> = Total Cover				
50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-03-WET2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	90	10YR 4/4	10	C	M	Silty clay loam	
4-6	10YR 4/1	85	10YR 4/6	15	C	M	Silty clay loam	
6-9	10YR 5/1	95	10YR 4/6	5	C	M	Silty clay loam	
9-18	10YR 5/1	90	10YR 5/6	10	C	M	Sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05/17/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-03-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.345098 Long: -88.330334 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy, hydric NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-03.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-03-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>45</u></td> <td>x 3 = <u>135</u></td> </tr> <tr> <td>FACU species <u>17</u></td> <td>x 4 = <u>68</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>62</u> (A)</td> <td><u>203</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>45</u>	x 3 = <u>135</u>	FACU species <u>17</u>	x 4 = <u>68</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>62</u> (A)	<u>203</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>45</u>	x 3 = <u>135</u>																	
FACU species <u>17</u>	x 4 = <u>68</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>62</u> (A)	<u>203</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Trifolium campestre</u>	<u>10</u>	<input checked="" type="checkbox"/>	NA															
3. <u>Campsis radicans</u>	<u>5</u>	<input type="checkbox"/>	FAC															
4. <u>Valerianella radiata</u>	<u>5</u>	<input type="checkbox"/>	FAC															
5. <u>Lonicera japonica</u>	<u>5</u>	<input type="checkbox"/>	FACU															
6. <u>Erigeron strigosus</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC															
7. <u>Geranium carolinianum</u>	<u>5</u>	<input type="checkbox"/>	NA															
8. <u>Microstegium vimineum</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
9. <u>Securigera varia</u>	<u>5</u>	<input type="checkbox"/>	NA															
10. <u>Liriodendron tulipifera</u>	<u>2</u>	<input type="checkbox"/>	FACU															
11. <u>Smilax rotundifolia</u>	<u>5</u>	<input type="checkbox"/>	FAC															
<u>82.0</u> = Total Cover 50% of total cover: <u>41.0</u> 20% of total cover: <u>16.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-03-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/4	100					Silty clay	
12-18	5YR 4/6	100					Silty clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)****Indicators for Problematic Hydric Soils³:**

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|---|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 05/17/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-03

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|-----------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |

2. Wetland depth slightly impacted (SI = 0.75)

- | | | |
|---|--------------------------|--------------------|
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |

3. Wetland depth moderately impacted (SI = 0.5)

- | | | |
|---|-------------------------|-----------------------|
| <input checked="" type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

4. Wetland depth significantly impacted (SI = 0.25)

- | | | |
|---|-------------------------|--------------------------|
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

5. Wetland depth severely impacted (SI = 0.1)

- | | | |
|--|--------------------------|---------------------------|
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 80

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 5

C = Percentage low density residential, construction, or similar 15

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.9125}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☒ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input checked="" type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input checked="" type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.469

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**

☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**

☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**

☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.33

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.5 (WETDEPTH) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.469 (COMP) V9 0.33 (BUFFER)

V2 0.9125 (WSHEDINT) V4 1 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-03

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.675
	Function: Biogeochemical Processes	0.796
	Function: Retain Particulates	N/A
	Function: Plant Community	0.718
	Function: Wildlife Community	0.621
	Quantitative Score (Average of FCIs x 100)	70.3
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	70.3

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-02		
HUC (12 digit): 060400050602		Lat/Long: 36.345642 °N
Previous Rainfall (7-days) : 0 inches		-88.330548 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.5 acres	County: Maury	
Soil Type(s) / Geology : Ua - Udorthents, loamy		Source: NRCS
Surrounding Land Use : Forested, roadside		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **9**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

One small and two large headcuts, one at start of channel, no water. Vegetation begins after second headcut. Visible roots throughout the channel, some sorting of rocks but mostly sediment. Mostly riffle other than large scour pools below the two large headcuts. Some plants occasionally in the thalweg.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-02							
3-Latitude/Longitude		36.345642, -88.330548							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		9							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		2.5 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 1.5 ft				RDB - 1.5 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Trifolium campestre, Securigera varia, Valerianella radiata, Acer negundo							
----- (LDB /RDB) -----		RDB: Trifolium campestre, Securigera varia, Valerianella radiata, Acer negundo							
-date of PJD request									
5-photo numbers		20 - 23							
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Silt/Sediment							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-04 WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.345749 Long: 88.330971 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-04 is an emergent, depressional wetland on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-04 WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>75</u></td> <td>x 1 = <u>75</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>130</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.4</u>	Total % Cover of:	Multiply by:	OBL species <u>75</u>	x 1 = <u>75</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>130</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>75</u>	x 1 = <u>75</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>15</u>	x 3 = <u>45</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>130</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Carex lupulina</u>	<u>75</u>	<input checked="" type="checkbox"/>	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Juncus tenuis</u>	<u>15</u>	_____	FAC															
3. <u>Hypericum mutilum</u>	<u>5</u>	_____	FACW															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
95.0 = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-04 WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 5/1	100					Sandy loam	
2-6	2.5Y 6/1	100					Sand	
6-9	2.5Y 5/1	90	5YR 5/8	10	C	M/PL	Sandy clay loam	
9-11	2.5Y 7/1	98	7.5YR 5/6	2	C	M	Sand	
11-18	2.5Y 6/1	50	5YR 4/6	50	C	M	Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|--|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-04-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2%
 Subregion (LRR or MLRA): LRR P Lat: 36.345743 Long: -88.330911 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-04.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-04-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>50</u></td> <td>x 5 = <u>250</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>425</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>4.5</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>50</u>	x 5 = <u>250</u>	Column Totals: <u>95</u> (A)	<u>425</u> (B)	Prevalence Index = B/A = <u>4.5</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>5</u>	x 3 = <u>15</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>50</u>	x 5 = <u>250</u>																			
Column Totals: <u>95</u> (A)	<u>425</u> (B)																			
Prevalence Index = B/A = <u>4.5</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Trifolium dubium</u>	<u>35</u>	<input checked="" type="checkbox"/>	FACU																	
2. <u>Schedonorus arundinaceus</u>	<u>5</u>	_____	FAC																	
3. <u>Digitaria ischaemum</u>	<u>50</u>	<input checked="" type="checkbox"/>	UPL																	
4. <u>Plantago lanceolata</u>	<u>5</u>	_____	FACU																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>																

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.

Woody vine – All woody vines greater than 3.28 ft in height.

SOIL

Sampling Point: WTL-04-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 4/3	100					Sandy loam	
2-10	7.5YR 5/4	100					Sandy clay loam	
10-18	7.5YR 6/4	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-04

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | |
|--|---|
| <input checked="" type="checkbox"/> - no fill material or sediment
<input checked="" type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered
- no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased
- minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod
- moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod
- significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod
- entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 90
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar _____
 C = Percentage low density residential, construction, or similar 10
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar _____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.95}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☒ 13 ≥ 13 in. (SI = 1.0) ☐ 10 10 – 12 in. (SI = 0.75) ☐ 6 6 – 9 in. (SI = 0.5) ☐ 4 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☒ 3 3 – 7 (SI = 1.0) ☐ 8 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☒ 20 ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ 70 ≥ 70 (SI = 1.0) ☐ 55 55 – 69 (SI = 0.75) ☐ 45 45 – 54 (SI = 0.5) ☐ 30 30 – 44 (SI = 0.25) ☐ 20 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	0 _____ Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 _____ Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☒ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.066

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.066 (BUFFER)

V2 0.95 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-04

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.980
	Function: Biogeochemical Processes	0.626
	Function: Retain Particulates	N/A
	Function: Plant Community	0.265
	Function: Wildlife Community	0.273
	Quantitative Score (Average of FCIs x 100)	53.6
	Value Added (Significant Size) Total	0
	TOTAL SCORE	53.6
Total of Quantitative and Value Added Scores		

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-03		
HUC (12 digit): 060400050602		Lat/Long: 36.348431 °N
Previous Rainfall (7-days) : 0 inches		-88.331395 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 23.2 acres		County: Henry
Soil Type(s) / Geology : Ua - Udorthents, loamy/Ok - Ochlockenoe fine sandy loam 0-3% slop Source: NRCS		
Surrounding Land Use : Forested/residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [11.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 1.25)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel begins with a headcut just outside the project boundary with no water. Pooling begins below a PVC pipe that appears to drain a residential yard. Pooled water only, no flow. Vegetation throughout with no sorting observed. Debris piles of leaves and pine needles begin at a headcut as the channel turns towards a culvert passing under SR-54. On the downstream side (east of SR-54), there are wetland plants in the channel as well as more dense upland vegetation.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-03							
3-Latitude/Longitude		36.348431, -88.331395							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		10.75							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		2.5 ft	
-width at ordinary high water mark		2 ft							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Microstegium vimineum, Galium sp., Ambrosia trifida, Acer rubrum							
----- (LDB / RDB) -----		RDB: Microstegium vimineum, Galium sp., Ambrosia trifida							
-date of PJD request									
5-photo numbers		26 - 29							
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Silt/Sediment							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-05-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.350007 Long: -88.331723 Datum: NAD83 TN
 Soil Map Unit Name: Ea - Enville silt loam, 0-2% slopes, occasionally flooded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-05 is a forested wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-05-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____			NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0</u> (A/B)														
2. <u>Acer rubrum</u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Liriodendron tulipifera</u>	<u>10</u>		FACU															
4. _____			NA															
5. _____			NA															
6. _____			NA															
7. _____			NA															
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>15</u></td> <td>x 1 = <u>15</u></td> </tr> <tr> <td>FACW species <u>80</u></td> <td>x 2 = <u>160</u></td> </tr> <tr> <td>FAC species <u>85</u></td> <td>x 3 = <u>255</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>205</u> (A)</td> <td><u>530</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.6</u>	Total % Cover of:	Multiply by:	OBL species <u>15</u>	x 1 = <u>15</u>	FACW species <u>80</u>	x 2 = <u>160</u>	FAC species <u>85</u>	x 3 = <u>255</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>205</u> (A)	<u>530</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>15</u>	x 1 = <u>15</u>																	
FACW species <u>80</u>	x 2 = <u>160</u>																	
FAC species <u>85</u>	x 3 = <u>255</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>205</u> (A)	<u>530</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Lindera benzoin</u>	<u>60</u>	<input checked="" type="checkbox"/>	FACW															
2. <u>Liquidambar styraciflua</u>	<u>15</u>		FAC															
3. <u>Quercus bicolor</u>	<u>5</u>		FACW															
4. _____			NA															
5. _____			NA															
6. _____			NA															
7. _____			NA															
8. _____			NA															
9. _____			NA															
<u>80.0</u> = Total Cover 50% of total cover: <u>40.0</u> 20% of total cover: <u>16.0</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Onoclea sensibilis</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACW															
2. <u>Toxicodendron radicans</u>	<u>5</u>		FAC															
3. <u>Persicaria virginiana</u>	<u>5</u>		FAC															
4. <u>Lonicera japonica</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU															
5. <u>Lindera benzoin</u>	<u>5</u>		FACW															
6. <u>Saururus cernuus</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
7. <u>Parthenocissus quinquefolia</u>	<u>5</u>		FACU															
8. _____			NA															
9. _____			NA															
10. _____			NA															
11. _____			NA															
<u>55.0</u> = Total Cover 50% of total cover: <u>27.5</u> 20% of total cover: <u>11.0</u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____			NA															
2. _____			NA															
3. _____			NA															
4. _____			NA															
5. _____			NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

Hydrophytic Vegetation Present? Yes ☒ No ☐

SOIL

Sampling Point: WTL-05-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 5/1	98	5YR 4/6	2	C	M	Silt loam	
4-12	10YR 6/1	65	5YR 4/4	10	C	M	Clay loam	
	10YR 3/2	25					Clay loam	
12-18	2.5Y 6/1	90	7.5YR 5/8	10	C	M	Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-05-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2%
 Subregion (LRR or MLRA): LRR P Lat: 36.350109 Long: -88.331704 Datum: NAD83 TN
 Soil Map Unit Name: Enville silt loam, 0 to 2 percent slopes, occasionally flooded (Ea) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-05.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-05-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Fagus grandifolia</i></u>	<u>40</u>	<input checked="" type="checkbox"/>	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u><i>Nyssa sylvatica</i></u>	<u>25</u>	<input checked="" type="checkbox"/>	FAC	Total Number of Dominant Species Across All Strata: <u>8</u> (B)
3. <u><i>Liriodendron tulipifera</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>37.5</u> (A/B)
4. <u><i>Liquidambar styraciflua</i></u>	<u>10</u>		FAC	
5. _____			NA	
6. _____			NA	
7. _____			NA	
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>60</u> x 2 = <u>120</u> FAC species <u>37</u> x 3 = <u>111</u> FACU species <u>89</u> x 4 = <u>356</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>186</u> (A) <u>587</u> (B) Prevalence Index = B/A = <u>3.2</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u><i>Lindera benzoin</i></u>	<u>50</u>	<input checked="" type="checkbox"/>	FACW	
2. <u><i>Fraxinus pennsylvanica</i></u>	<u>5</u>		FACW	
3. _____			NA	
4. _____			NA	
5. _____			NA	
6. _____			NA	
7. _____			NA	
8. _____			NA	
9. _____			NA	
<u>55.0</u> = Total Cover 50% of total cover: <u>27.5</u> 20% of total cover: <u>11.0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.
1. <u><i>Lonicera japonica</i></u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU	
2. <u><i>Lindera benzoin</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FACW	
3. <u><i>Polystichum acrostichoides</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU	
4. <u><i>Podophyllum peltatum</i></u>	<u>2</u>		FACU	
5. <u><i>Botrypus virginianus</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU	
6. <u><i>Parthenocissus quinquefolia</i></u>	<u>2</u>		FACU	
7. <u><i>Persicaria virginiana</i></u>	<u>2</u>		FAC	
8. _____			NA	
9. _____			NA	
10. _____			NA	
11. _____			NA	
<u>36.0</u> = Total Cover 50% of total cover: <u>18.0</u> 20% of total cover: <u>7.2</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____			NA	
2. _____			NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-05-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Loam	
5-18	10YR 4/4	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-05

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 95

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 5

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.9875}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☒ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input checked="" type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	1 _____ Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 _____ Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.741

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☒ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.75

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.741 (COMP) V9 0.75 (BUFFER)

V2 0.9875 (WSHEDINT) V4 1 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	Yes	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-05

Exceptional Status Wetlands	Check if applicable	
1. ONRW	<input type="checkbox"/>	
2. ETW	<input type="checkbox"/>	
3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>	
COMMENTS/NOTES:		
Quantitative Rating scores	Function: Hydrologic Regime	0.994
	Function: Biogeochemical Processes	0.965
	Function: Retain Particulates	N/A
	Function: Plant Community	0.885
	Function: Wildlife Community	0.775
	Quantitative Score (Average of FCIs x 100)	90.5
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	TOTAL SCORE

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-04		
HUC (12 digit): 060400050602		Lat/Long: 36.350148 °N
Previous Rainfall (7-days) : 0 inches		-88.332345 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.8 acres	County: Henry	
Soil Type(s) / Geology : Ea - Enville silt loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **13.75**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 13.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel begins at a culvert on the west side of the road with poorly defined bed and bank for about 30 feet and then its more defined. There is some rocks and sorting but mostly sediment. There are multiple small roots acting as grade controls as well as a section of large rocks. There are small pools occasionally but no flow. Alluvial deposits present. No plants in the thalweg.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	ZB, KD		Affiliation:	Stantec		Date:	5/18/21		
1-Station: from plans	N/A								
2-Map label and name	WWC-04								
3-Latitude/Longitude	36.350148, -88.332345								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	13.75								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	1 ft				-top of bank width		2 ft		
-width at ordinary high water mark	1 ft								
-bank height	LDB - 1 ft					RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species:	LDB: Valerianella radiata, Festuca perennis, Geranium maculatum, P. acrostichoides								
----- (LDB /RDB) -----	RDB: Valerianella radiata, Festuca perennis, Geranium maculatum, P. acrostichoides								
-date of PJD request									
5-photo numbers	32 - 35								
6-HUC -8 Code & Name	06040005				TN Western Valley - Kentucky Lake				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		
	no <input type="checkbox"/>								
10-Notes									
Substrate	Silt/Sediment								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Three Mile Branch		Date/Time: 5/18/2021
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-02 (Threemile Branch)		
HUC (12 digit): 060400050602		Lat/Long: 36.350521 °N
Previous Rainfall (7-days) : 0 inches		-88.332097 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 226.4 acres	County: Henry	
Soil Type(s) / Geology : Ea - Enville silt loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Forested/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **27.25**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 16)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes <input checked="" type="checkbox"/> = 3	

B. Hydrology (Subtotal = 5.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 6)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 27.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Three Mile Branch.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/2021	
1-Station: from plans		N/A							
2-Map label and name		STR-02 (Threemile Branch)							
3-Latitude/Longitude		36.350532, -88.332177							
4-Feature description:									
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>	
-HD score (if applicable)		27.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		6 ft				-top of bank width		10 ft	
-width at ordinary high water mark		5 ft							
-bank height		LDB - 2 ft				RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: P. acrostichoides, L. styraciflua, A. rubrum, L. tulipifera, L. japonica, L. benzoin							
----- (LDB / RDB) -----		RDB: P. acrostichoides, L. styraciflua, A. rubrum, L. tulipifera, L. japonica, L. benzoin							
-date of PJD request									
5-photo numbers		36 -37							
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input checked="" type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input checked="" type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sand							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/2021
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-03		
HUC (12 digit): 060400050602		Lat/Long: 36.350426 °N
Previous Rainfall (7-days) : 0 inches		-88.332558 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.2 acres	County: Henry	
Soil Type(s) / Geology : Ea - Enville silt loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **18**

Justification / Notes :

A low gradient feature with poorly defined channel but overall determination is stream due to groundwater connection

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = <u>7</u>)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = <u>3.5</u>)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = <u>7.5</u>)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 18

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel originates from a seep and flows into STR-02. Bed and bank present but poorly defined. No rooted plants or debris piles. Two roots acting as grade control, one bar is present. The entire channel is orange with iron oxidizing bacteria.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21			
1-Station: from plans		N/A									
2-Map label and name		STR-03									
3-Latitude/Longitude		36.350426, -88.334558									
4-Feature description:											
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input checked="" type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>			
-HD score (if applicable)		18									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		1.5 ft			
-width at ordinary high water mark		1 ft									
-bank height		LDB - 6 in				RDB - 6 in					
-riffle/pool complex or other specialized habitat present?		No									
-dominant riparian species:		LDB: Toxicodendron radicans, Polystichum acrostichoides, Ligustrum sinense, F. grandifolia									
----- (LDB / RDB) -----		RDB: Toxicodendron radicans, Polystichum acrostichoides, Ligustrum sinense, F. grandifolia									
-date of PJD request											
5-photo numbers		38 - 39									
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes		Channel originates from a seep and flows into STR-02.									
Substrate		Sand/sediment									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/2021
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-04		
HUC (12 digit): 060400050602		Lat/Long: 36.350615 °N
Previous Rainfall (7-days) : 0 inches		-88.332848 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.4 acres	County: Henry	
Soil Type(s) / Geology : Ea - Enville silt loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **19.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = <u>7</u>)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = <u>5</u>)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

☒

C. Biology (Subtotal = <u>7.5</u>)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 19.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel originates from a seep and flows into STR-02. Bed and bank present but poorly defined. No rooted plants or debris piles. Two roots acting as grade control, one bar is present. The entire channel is orange with iron oxidizing bacteria.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB, KD	Affiliation:	Stantec	Date:	5/18/21					
1-Station: from plans	N/A									
2-Map label and name	STR-04									
3-Latitude/Longitude	36.350615, -88.332848									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	19.5									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	1.5 ft			-top of bank width			3 ft			
-width at ordinary high water mark	1 ft									
-bank height	LDB - 1 ft				RDB - 1ft					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: Toxicodendron radicans, Polystichum acrostichoides, Ligustrum sinense, F. grandifolia									
----- (LDB /RDB) -----	RDB: Toxicodendron radicans, Polystichum acrostichoides, Ligustrum sinense, F. grandifolia									
-date of PJD request										
5-photo numbers	40 - 42									
6-HUC -8 Code & Name	06040005				TN Western Valley - Kentucky Lake					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Channel originates from a seep and flows into STR-02.									
Substrate	Sand/sediment									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-06-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.350740 Long: -88.332787 Datum: NAD83 TN
 Soil Map Unit Name: Ea - Enville silt loam, 0-2% slopes, occasionally flooded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-06 is a forested wetland on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>17</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-06-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u>Liquidambar styraciflua</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)																
2. <u>Acer rubrum</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC																	
3. <u>Liriodendron tulipifera</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU	Total Number of Dominant Species Across All Strata: <u>8</u> (B)																
4. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0</u> (A/B)																
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>50.0</u> = Total Cover 50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>108</u></td> <td>x 2 = <u>216</u></td> </tr> <tr> <td>FAC species <u>45</u></td> <td>x 3 = <u>135</u></td> </tr> <tr> <td>FACU species <u>19</u></td> <td>x 4 = <u>76</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>172</u> (A)</td> <td><u>427</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.5</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>108</u>	x 2 = <u>216</u>	FAC species <u>45</u>	x 3 = <u>135</u>	FACU species <u>19</u>	x 4 = <u>76</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>172</u> (A)	<u>427</u> (B)	Prevalence Index = B/A = <u>2.5</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>108</u>	x 2 = <u>216</u>																			
FAC species <u>45</u>	x 3 = <u>135</u>																			
FACU species <u>19</u>	x 4 = <u>76</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>172</u> (A)	<u>427</u> (B)																			
Prevalence Index = B/A = <u>2.5</u>																				
1. <u>Lindera benzoin</u>	<u>85</u>	<input checked="" type="checkbox"/>	FACW																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>85.0</u> = Total Cover 50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
1. <u>Onoclea sensibilis</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACW																	
2. <u>Toxicodendron radicans</u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC																	
3. <u>Persicaria virginiana</u>	<u>2</u>	_____	FACU																	
4. <u>Lonicera japonica</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU																	
5. <u>Lindera benzoin</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACW																	
6. <u>Botrypus virginianus</u>	<u>2</u>	_____	FACU																	
7. <u>Sambucus nigra</u>	<u>3</u>	_____	FACW																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>37.0</u> = Total Cover 50% of total cover: <u>18.5</u> 20% of total cover: <u>7.4</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WTL-06-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Clay loam	
4-10	10YR 6/2	85	5YR 4/6	15	C	M	Clay loam	
10-13	7.5YR 4/4	100					Sandy clay loam	
13-18	10YR 6/1	90	5YR 5/6	10	C	M	Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-06-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2%
 Subregion (LRR or MLRA): LRR P Lat: 36.350854 Long: -88.332654 Datum: NAD83 TN
 Soil Map Unit Name: Ea - Enville silt loam, 0-2% slopes, occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-06.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-06-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>280</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.1</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>280</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>80</u>	x 3 = <u>240</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>280</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Valerianella radiata</u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Polystichum acrostichoides</u>	<u>10</u>	_____	FACU															
3. <u>Microstegium vimineum</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
4. <u>Securigera varia</u>	<u>2</u>	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>92.0</u> = Total Cover 50% of total cover: <u>46.0</u> 20% of total cover: <u>18.4</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present?														
				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

SOIL

Sampling Point: WTL-06-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/3	100					Sandy loam	
5-18	5YR 4/6	100					Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-06

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 45

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 40

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar 15

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.7515}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☒ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)
- ☐

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input checked="" type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input checked="" type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input checked="" type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.609

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☒ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.5

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.609 (COMP) V9 0.5 (BUFFER)

V2 0.7515 (WSHEDINT) V4 1 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-06

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.867
	Function: Biogeochemical Processes	0.902
	Function: Retain Particulates	N/A
	Function: Plant Community	0.813
	Function: Wildlife Community	0.735
	Quantitative Score (Average of FCIs x 100)	82.9
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	82.9

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-05		
HUC (12 digit): 060400050602		Lat/Long: 36.351613 °N
Previous Rainfall (7-days) : 0 inches		-88.332537 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 8.0 acres	County: Henry	
Soil Type(s) / Geology : HgF - Hapludults-Gullied land complex/Ng - Nugent loamy sand		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **25.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 12.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 6)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 25.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Many woody grade controls and moderate headcuts, flowing water in downstream portion, debris piles throughout.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		STR-05							
3-Latitude/Longitude		36.351642, -88.332565							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input checked="" type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>	
-HD score (if applicable)		25.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		4 ft				-top of bank width		5 ft	
-width at ordinary high water mark		3 ft							
-bank height		LDB - 2 ft				RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: L. benzoin, P. acrostichoides, L. japonica, P. quinquefolia, L. tulipifera							
----- (LDB / RDB) -----		RDB: L. benzoin, P. acrostichoides, L. japonica, P. quinquefolia, L. tulipifera							
-date of PJD request									
5-photo numbers		45 - 46							
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sandy clay							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-05		
HUC (12 digit): 060400050602		Lat/Long: 36.351671 °N
Previous Rainfall (7-days) : 0 inches		-88.332973 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 8.0 acres	County: Henry	
Soil Type(s) / Geology : HgF - Hapludults-Gullied land complex, very steep		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **14.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 10.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-05							
3-Latitude/Longitude		36.351671, -88.332973							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		14.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Parthenocissus quinquefolia, Microstegium vimineum, Valerianella radiata							
----- (LDB /RDB) -----		RDB: Parthenocissus quinquefolia, Microstegium vimineum, Valerianella radiata							
-date of PJD request									
5-photo numbers		47 - 48							
6-HUC -8 Code & Name		06040005				TN Western Valley - KY Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sand, gravel							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Threemile Branch		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-06		
HUC (12 digit): 060400050602		Lat/Long: 36.352659 °N
Previous Rainfall (7-days) : 0 inches		-88.332630 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.7 acres	County: Henry	
Soil Type(s) / Geology : HgF - Hapludults-Gullied land complex/SeE2 - Smithdale loam		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **13.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 13.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	ZB, KD	Affiliation:	Stantec	Date:	5/18/21				
1-Station: from plans	N/A								
2-Map label and name	WWC-06								
3-Latitude/Longitude	36.352659, -88.332630								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	13.5								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input checked="" type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input checked="" type="checkbox"/>	veg absent, bent, matted <input type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input checked="" type="checkbox"/>	leaf litter disturbed or absent <input type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	2 ft		-top of bank width		3 ft				
-width at ordinary high water mark	1.5 ft								
-bank height	LDB - 6 in			RDB - 6 in					
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species:	LDB: Platanus occidentalis, Liriodendron tulipifera, Polystichum acrostichoides								
----- (LDB / RDB) -----	RDB: Platanus occidentalis, Liriodendron tulipifera, Polystichum acrostichoides								
-date of PJD request									
5-photo numbers	49 - 50								
6-HUC -8 Code & Name	06040005			TN Western Valley - Kentucky Lake					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes									
Substrate	Sandy clay								

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-07-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.356580 Long: -88.333990 Datum: NAD83 TN
 Soil Map Unit Name: Felician silt loam, 2 to 5 percent slopes, moderately eroded, northern phase (FeB2) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-07 is an isolated emergent wetland on the road side east of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-07-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>20</u> (A)</td> <td><u>60</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>20</u> (A)	<u>60</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>20</u>	x 3 = <u>60</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>20</u> (A)	<u>60</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Rumex crispus</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Ranunculus bulbosa</u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
20.0 = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-07-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	98	5YR 5/8	2	C	M	Silty clay	
3-15	10YR 5/1	90	5YR 5/8	5	C	M	Silty clay	
			10YR 2/1	5	D	M	Silty clay	
15-18	7.5YR 4/6	98	10YR 2/1	2	D	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/18/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-07-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2%
 Subregion (LRR or MLRA): LRR P Lat: 36.356341 Long: -88.333972 Datum: NAD83 TN
 Soil Map Unit Name: Feliciana silt loam, 2 to 5 percent slopes, moderately eroded, northern phase (FeB2) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-07.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-07-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>5</u> (A)</td> <td><u>20</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>5</u> (A)	<u>20</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>5</u>	x 4 = <u>20</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>5</u> (A)	<u>20</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Trifolium campestre</u>	<u>60</u>	<input checked="" type="checkbox"/>	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Plantago lanceolata</u>	<u>5</u>	_____	FACU															
3. <u>Bromus tectorum</u>	<u>2</u>	_____	NA															
4. <u>Securigera varia</u>	<u>2</u>	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>69.0</u> = Total Cover 50% of total cover: <u>34.5</u> 20% of total cover: <u>13.8</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-07-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	5YR 5/4	100					Sand	Road fill with gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|---|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 4

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-07

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|--|---|--|
| <input type="checkbox"/> - no fill material or sediment
<input type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered | - no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased | - minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input checked="" type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod | - entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 10
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 80
 C = Percentage low density residential, construction, or similar 5
 D = Percentage high density residential, or similar
 E = Percentage urban, commercial, industrial, or similar 5

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.7255}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.05

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.5 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.05 (BUFFER)

V2 0.7255 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-07

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.602
	Function: Biogeochemical Processes	0.491
	Function: Retain Particulates	N/A
	Function: Plant Community	0.242
	Function: Wildlife Community	0.247
	Quantitative Score (Average of FCIs x 100)	39.6
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	39.6

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-07		
HUC (12 digit): 08010202102		Lat/Long: 36.361569 °N
Previous Rainfall (7-days) : 0 inches		-88.334422 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 5.2 acres	County: Henry	
Soil Type(s) / Geology : LnC3 - Lexington silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Roadside/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **9**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Roadside channel flowing into culvert and WWC-08

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-07							
3-Latitude/Longitude		36.361569, -88.334422							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		9							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		6 in				-top of bank width		1 ft	
-width at ordinary high water mark		6 in							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Field corn Parthenocissus quinquefolia							
----- (LDB / RDB) -----		RDB: Field corn, Parthenocissus quinquefolia							
-date of PJD request									
5-photo numbers		53 - 54							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Silt							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-08		
HUC (12 digit): 08010202102		Lat/Long: 36.361681 °N
Previous Rainfall (7-days) : 0 inches		-88.334522 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 5.9 acres		County: Henry
Soil Type(s) / Geology : LnC3 - Lexington silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Roadside/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [6](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 6

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel is draining eroded farm field, then running into a riprap section, then to a culvert.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-08							
3-Latitude/Longitude		36.361681, -88.334522							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		6							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		2 ft	
-width at ordinary high water mark		6 in							
-bank height		LDB - 6 in				RDB - 6 in			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Field Corn, Parthenocissus quinquefolia							
----- (LDB / RDB) -----		RDB: Field Corn, Parthenocissus quinquefolia							
-date of PJD request									
5-photo numbers		55 - 56							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Silt, gravel							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05/17/2021
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-09		
HUC (12 digit): 08010202102		Lat/Long: 36.343002 °N
Previous Rainfall (7-days) : 0 inches		-88.329858 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 83 acre	County: Henry	
Soil Type(s) / Geology : LnC3 - Lexington silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Roadside, residential, Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **15.25**

Justification / Notes :

Very downcut downstream (north) of the culvert. Severe drop (~2ft) at downstream side of culvert.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 15.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Very incised downstream of culvert with defined bed and bank. One small pool of water present at time of survey located at the plunge pool downstream of the culvert. Very little sorting or structure present. Downcut through profile.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/17/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-09							
3-Latitude/Longitude		36.361889, -88.333443							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		8.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 feet				-top of bank width		1.5 feet	
-width at ordinary high water mark		1 feet							
-bank height		LDB - 2 feet				RDB - 2 feet			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Kudzu							
----- (LDB / RDB) -----		RDB: Kudzu							
-date of PJD request									
5-photo numbers									
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Very incised downstream (north) of the culvert and small channel has formed at bottom of valley. Severe drop (~2ft) at downstream side of culvert.</p>							
Substrate		Gravel, Sand and silt.							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-10		
HUC (12 digit): 08010202102		Lat/Long: 36.365991 °N
Previous Rainfall (7-days) : 0 inches		-88.333648 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 14.7 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **13.75**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.25)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 13.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Water in pools, no flow.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-10							
3-Latitude/Longitude		36.365991, -88.333648							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		13.75							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		4 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 2.5 ft				RDB - 2.5 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Parthenocissus quinquefolia, Juniperus virginia, Juglans nigra, Prunus serotina							
----- (LDB / RDB) -----		RDB: Parthenocissus quinquefolia, Juniperus virginia, Juglans nigra, Prunus serotina							
-date of PJD request									
5-photo numbers		57 - 58							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sandy clay							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-11		
HUC (12 digit): 08010202102		Lat/Long: 36.365998 °N
Previous Rainfall (7-days) : 0 inches		-88.333705 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.7 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **9.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = **9.5**

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Drains PND-02 into WWC-10

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-11							
3-Latitude/Longitude		36.365998, -88.333705							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		9.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft	
-width at ordinary high water mark		2 ft							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Parthenocissus quinquefolia, Juglans nigra, Fagus grandifolia, Ambrosia trifida							
----- (LDB /RDB) -----		RDB: Parthenocissus quinquefolia, Juglans nigra, Fagus grandifolia, Ambrosia trifida							
-date of PJD request									
5-photo numbers		59 - 60							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sandy clay							

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/2021			
1-Station: from plans		N/A									
2-Map label and name		PND-02									
3-Latitude/Longitude		36.366258 / -88.334134									
4-Feature description:		Pond									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>			
-HD score (if applicable)											
-OHWM indicators		bed & banks <input type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width						-top of bank width					
-width at ordinary high water mark											
-bank height		LDB -				RDB -					
-riffle/pool complex or other specialized habitat present?											
-dominant riparian species:		LDB: Schedonorus arundinaceus									
----- (LDB / RDB) -----		RDB: Schedonorus arundinaceus									
-date of PJD request											
5-photo numbers		61 - 63									
6-HUC -8 Code & Name		06040005				TN Western Valley - Kentucky Lake					
7-Assessed		yes <input type="checkbox"/>		no <input type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes		Approx 0.2 acre. Drains south to WWC.									
Substrate		Silt									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05/17/2021 1255 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-12		
HUC (12 digit): 080102020102		Lat/Long: 36.373541 °N
Previous Rainfall (7-days) : 1 inch		-88.334437 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 7.0 acres	County: Henry	
Soil Type(s) / Geology : SgD3 -Smithdale-Lexington Complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Low density residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	✓	2	3
2. Sinuous channel	0	✓	2	3
3. In-channel structure: riffle-pool sequences	0	✓	2	3
4. Sorting of soil textures or other substrate	0	✓	1	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	✓	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	✓	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	✓	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	✓	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	✓	0
21. Rooted plants in thalweg ¹	3	2	✓	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	✓	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates at head cut
 B&B is interrupted throughout reach
 Feature bifurcated in upper reach and reconnects near culvert under driveway
 Headcuts = 3 / Grade control = 1 - rubbish dumped in channel
 Fibrous rooted present throughout reach
 Rooted plants present throughout reach - Virginia creeper
 Wetland plants scattered throughout lower reach - Impatiens
 Feature loses form in residential lawn below culvert outlet

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-17-2021				
1-Station: from plans	N/A								
2-Map label and name	WWC-12								
3-Latitude/Longitude	36.373577, -88.334452								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	12.25								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input checked="" type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input type="checkbox"/>	leaf litter disturbed or absent <input checked="" type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	12 in		-top of bank width		30 in				
-width at ordinary high water mark	20 in								
-bank height	LDB - 6 in			RDB - 6 in					
-riffle/pool complex or other specialized habitat present?	None								
-dominant riparian species:	LDB: Prunus serotina, Quercus rubra, Acer rubrum								
----- (LDB / RDB) -----	RDB: Carya glabra. Ulmus americana								
-date of PJD request									
5-photo numbers	64 - 66								
6-HUC -8 Code & Name	08010202			North Fork Obion River					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	<p>Feature has bifurcated channel that reconnects at culvert under driveway</p> <p>Woody material and concrete dumped into channel in upper reach</p> <p>Feature loses form in residential lawn below culvert outlet under driveway</p>								
Substrate	Silt								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05/17/2021 1243 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-13		
HUC (12 digit): 080102020102		Lat/Long: 36.373628 °N
Previous Rainfall (7-days) : 1 inch		-88.334375 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 5.0 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Low density residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [7.75](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 7.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

B&B very interrupt throughout reach
No sorting, silt substrate

Headcuts = none. / Grade control = 2 roots

Few debris piles in channel
Fibrous roots present throughout reach
Rooted plants present every 2 to 3 paces

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-17-2021				
1-Station: from plans	N/A								
2-Map label and name	WWC-13								
3-Latitude/Longitude	36.373625, -88.334360								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	7.75								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input checked="" type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input checked="" type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input type="checkbox"/>	leaf litter disturbed or absent <input checked="" type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input checked="" type="checkbox"/>				
-channel bottom width	10 inches		-top of bank width		24 inches				
-width at ordinary high water mark	14 inches								
-bank height	LDB - 8 inches			RDB - 8 inches					
-riffle/pool complex or other specialized habitat present?	None								
-dominant riparian species:	LDB: Ulmus americana, Quercus velutina								
----- (LDB / RDB) -----	RDB: Liquidambar styraciflua, Carya tomentosa								
-date of PJD request									
5-photo numbers	67 - 70								
6-HUC -8 Code & Name	08010202			North Fork Obion River					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	<p>Feature is small WWC that begins at a headcut.</p> <p>Flows into WWC-12.</p>								
Substrate	Silt								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-2021 1415 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-14		
HUC (12 digit): 080102020102		Lat/Long: 36.375126 °N
Previous Rainfall (7-days) : 0 inches		-88.333781 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.1 acres	County: Henry	
Soil Type(s) / Geology : LnC3 - Lexington silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Low density residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [11.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.5)	Absent		Weak		Moderate		Strong
1. Continuous bed and bank	0		1		2		3
2. Sinuous channel	0	✓	1		2		3
3. In-channel structure: riffle-pool sequences	0		1	✓	2		3
4. Sorting of soil textures or other substrate	0	✓	1		2		3
5. Active/relic floodplain	0		0.5		1		1.5
6. Depositional bars or benches	0		1		2		3
7. Braided channel	0		1		2		3
8. Recent alluvial deposits	0		0.5		1		1.5
9. Natural levees	0		1		2		3
10. Headcuts	0		1	✓	2		3
11. Grade controls	0		0.5		1		1.5
12. Natural valley or drainageway	0		0.5		1		1.5
13. At least second order channel on existing USGS or NRCS map	No = 0				Yes = 3		

B. Hydrology (Subtotal = 2.25)	Absent		Weak		Moderate		Strong
14. Subsurface flow/discharge into channel	0		1		2		3
15. Water in channel and >48 hours since sig. rain	0		1		2		3
16. Leaf litter in channel (January – September)	1.5		1		0.5		0
17. Sediment on plants or on debris	0		0.5		1		1.5
18. Organic debris lines or piles (wrack lines)	0		0.5	✓	1		1.5
19. Hydric soils in stream bed or sides of channel	No = 0				Yes = 1.5		

N/A

✓

C. Biology (Subtotal = 2.5)	Absent		Weak		Moderate		Strong
20. Fibrous roots in channel bed ¹	3		2		1	✓	0
21. Rooted plants in thalweg ¹	3		2		1		0
22. Crayfish in stream (exclude in floodplain)	0		1		2		3
23. Bivalves/mussels	0		1		2		3
24. Amphibians	0		0.5		1		1.5
25. Macroinvertebrates (record type & abundance)	0		1		2		3
26. Filamentous algae; periphyton	0		1		2		3
27. Iron oxidizing bacteria/fungus	0		0.5		1		1.5
28. Wetland plants in channel bed ²	0		0.5		1		1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates near highway and then ends in woods as sheet flow
Silt substrate with no gravel

Headcuts = 3 / Grade control = none

Few upland plants in channel - Virginia creeper

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-18-2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-14							
3-Latitude/Longitude		36.375127, -88.333796							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		11.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		12 inches				-top of bank width		18 inches	
-width at ordinary high water mark		14 inches							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Carya glabra, Quercus alba, Prunus serotina, Liquidambar styraciflua							
----- (LDB / RDB) -----		RDB: Carya glabra, Quercus alba, Prunus serotina							
-date of PJD request									
5-photo numbers		71 - 72							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Feature originates at headcut near roadside ditch and ends as sheet-flow in woods							
Substrate		Silt							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-2021 1415 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-15		
HUC (12 digit): 080102020102		Lat/Long: 36.375642 °N
Previous Rainfall (7-days) : 0 inches		-88.333634 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.6 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Low density residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.75](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates at culvert outlet under highway
Silt substrate with no gravel

Headcuts = 4 / Grade control = none

Few upland plants in channel - solidago sp

Few wetland plants in channel- carex sp

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-18-2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-15							
3-Latitude/Longitude		36.375654, -88.333616							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		12.75							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		18 inches				-top of bank width		30 inches	
-width at ordinary high water mark		20 inches							
-bank height		LDB - 2 ft				RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:		LDB: Liriodendron tulipifera, Quercus alba, Liquidambar styraciflua							
----- (LDB / RDB) -----		RDB: Liriodendron tulipifera, Quercus alba, Liquidambar styraciflua, Carpinus caroliniana							
-date of PJD request									
5-photo numbers		73 - 76							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Feature originates at culvert outlet under highway							
Substrate		Silt							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-17-2021 1400 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-16		
HUC (12 digit): 080102020102	Lat/Long: 36.377029 °N	
Previous Rainfall (7-days) : 1 inch	-88.334026 °W	
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 4.4 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Low density residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature begins at grade control of culvert outlet in roadside ditch
 Good B&B along most of reach but does lose form in several locations
 Predominantly run and riffle, no pool habitat
 Headcuts= None / Grade control = 2 culverts and rip rap
 Upland plants present in channel - dead nettle

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-17-2021					
1-Station: from plans	N/A									
2-Map label and name	WWC-16									
3-Latitude/Longitude	36.377312, -88.334038									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	12.25									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	20 inches			-top of bank width			35 inches			
-width at ordinary high water mark	25 inches									
-bank height	LDB - 12 inches				RDB - 12 inches					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Acer rubrum (seedlings), Schedonorus arundinaceus									
----- (LDB / RDB) -----	RDB: Schedonorus arundinaceus, Trifolium repens, Trifolium campestre									
-date of PJD request										
5-photo numbers	77 - 82									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	<p>Feature begins at headcut at culvert outlet</p> <p>Feature transitions into STR-01 down gradient where spring flow emerges at headcut</p>									
Substrate	Silt and gravel									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-18-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-08-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.377928 Long: -88.333751 Datum: NAD83 TN
 Soil Map Unit Name: Ik - Luka loam, 0-2% slopes, occasionally flooded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 08 is a forested wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Site receives flooding from adjacent North Fork Obion River.	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-08-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Salix nigra</u>	<u>30</u>	<input checked="" type="checkbox"/>	OBL	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)														
2. <u>Carya tomentosa</u>	<u>30</u>	<input checked="" type="checkbox"/>	OBL	Total Number of Dominant Species Across All Strata: <u>5</u> (B)														
3. <u>Fraxinus pennsylvanica</u>	<u>10</u>		FACW	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0</u> (A/B)														
4. _____			OBL	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>175</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>15</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>175</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>30</u>	x 1 = <u>30</u>																	
FACW species <u>35</u>	x 2 = <u>70</u>																	
FAC species <u>15</u>	x 3 = <u>75</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>175</u> (B)																	
5. _____			OBL															
6. _____			OBL															
7. _____			OBL															
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>				Prevalence Index = B/A = <u>1.9</u>														
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Acer rubrum</u>	<u>10</u>		FAC															
2. _____			OBL															
3. _____			OBL															
4. _____			OBL															
5. _____			NA															
6. _____			OBL															
7. _____			OBL															
8. _____			OBL															
9. _____			OBL															
<u>10.0</u> = Total Cover 50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Impatiens capensis</u>	<u>25</u>		FACW															
2. _____		<input checked="" type="checkbox"/>	OBL															
3. _____			OBL															
4. _____			OBL															
5. _____			OBL															
6. _____			OBL															
7. _____			NA															
8. _____			OBL															
9. _____			OBL															
10. _____			NA															
11. _____			OBL															
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Smilax rotundifolia</u>	<u>15</u>		FAC															
2. _____			OBL															
3. _____			OBL															
4. _____			OBL															
5. _____			NA															
<u>15.0</u> = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														

SOIL

Sampling Point: WTL-08-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	97	5YR 5/6	3	C	M	SiltyClay	
3-9	10YR 5/2	75	5YR 5/6	25	C	M	SiltyClayLoam	
9-18	10YR 5/2	60	5YR 5/6	40	C	M	Silty ClayLoam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-18-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-08-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 20
 Subregion (LRR or MLRA): LRR P Lat: 36.377896 Long: -88.333823 Datum: NAD83 TN
 Soil Map Unit Name: Ik - Luka loam, 0-2% slopes, occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-08, roadway fill slope.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-08-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Acer negundo</i></u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0</u> (A/B)
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Prevalence Index worksheet: <div style="display: flex; justify-content: space-between;"> <div> Total % Cover of: OBL species <u>0</u> FACW species <u>25</u> FAC species <u>50</u> FACU species <u>8</u> UPL species <u>0</u> Column Totals: <u>83</u> (A) </div> <div> Multiply by: x 1 = <u>0</u> x 2 = <u>50</u> x 3 = <u>150</u> x 4 = <u>32</u> x 5 = <u>0</u> <u>232</u> (B) </div> </div>
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Prevalence Index = B/A = <u>2.8</u>
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u><i>Celtis laevigata</i></u>	<u>25</u>	<input checked="" type="checkbox"/>	FACW	
2. <u><i>Ulmus americana</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
8. _____	_____	_____	NA	
9. _____	_____	_____	NA	
<u>35.0</u> = Total Cover 50% of total cover: <u>17.5</u> 20% of total cover: <u>7.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u><i>Galium aparine</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU	
2. <u><i>Lactuca canadensis</i></u>	<u>3</u>	_____	FACU	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
8. _____	_____	_____	NA	
9. _____	_____	_____	NA	
10. _____	_____	_____	NA	
11. _____	_____	_____	NA	
<u>8.0</u> = Total Cover 50% of total cover: <u>4.0</u> 20% of total cover: <u>1.6</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____	_____	_____	NA	
2. _____	_____	_____	NA	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-08-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 3/3	80					Silt loam	Roadway fill material with gravel
	5YR 3/3	20					Silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel
Depth (inches): 8

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Roadway fill slope - blended fill material with gravel and rock

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL - 08

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)

- ☐ - no fill material or excessive sediment
☐ - no ditches/drainage tiles

-no alteration to overland runoff, groundwater discharge/recharge

2. Hydrology slightly altered (SI = 0.75)

- ☒ - portion of site with minimal fill or sediment
☐ - portion of site with drainage ditches/tiles

-some alteration to overland runoff, groundwater discharge/recharge

3. Hydrology moderately altered (SI = 0.5)

- ☐ - portion of site with moderate fill or sediment
☐ - portion of site with drainage ditches/tiles

- some alteration to overland runoff, groundwater discharge/recharge

4. Hydrology significantly altered (SI = 0.25)

- ☐ - portion of site with significant fill or sediment
☐ - portion of site with drainage ditches/tiles
☐ - significant alteration to overland runoff, groundwater discharge/recharge

5. Hydrology severely altered (SI = 0.1)

- ☐ - entire site impacted by fill or excessive sediment
☐ - entire site with numerous drainage ditches/tiles
☐ - no contributions to or from overland runoff, groundwater discharge/recharge

- no roads or other impediments to surface ground water
- no excavation

- roads or other impediments, water flow slightly altered
- minor portion of site excavated

- roads or other impediments, water flow moderately altered
- moderate portion of site excavated

- roads or other impediments, water flow significantly altered
- significant portion of site excavated

- roads or other impediments, water flow completely blocked
- entire wetland affected

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 75.0

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 20.0

C = Percentage low density residential, construction, or similar 3.0

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar 2.0

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.9152}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

☐ ≥ 15 in. (SI = 1.0) ☒ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)

☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

☒ 5 – 10 (SI = 1.0) ☐ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

NA

NA

**V5: Shrub Cover (SCOV)**

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

**V6: Ground Vegetation Cover (GVC)**

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)
V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input checked="" type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input checked="" type="checkbox"/> Hickory	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar		<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak		Number native shrub spp. _____		
<input type="checkbox"/>		Number native herbaceous spp. _____		

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)
☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0
- ☒ b) if average buffer is 98 ft to 491 ft., multiply by 0.66
- ☐ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33
- ☐ d) if average buffer width is < 33 ft., multiply by 0.1

3. This value is the SI for V9 = 0.495.

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (HYDRO) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.495 (BUFFER)

V2 0.9152 (WSHEDINT) V4 1.0 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-08

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-08 is hydrologically connected to the North Fork Obion River, which is considered an ETW based on presence of state threatened Water Purslane, Halberd-leaf Tearthumb, and firebelly darter.	
Quantitative Rating scores	Function: Hydrologic Regime	0.828
	Function: Biogeochemical Processes	0.881
	Function: Retain Particulates	N/A
	Function: Plant Community	0.793
	Function: Wildlife Community	0.718
	Quantitative Score (Average of FCIs x 100)	80.5
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	TOTAL SCORE

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-17-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-09-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.377668 Long: -88.334295 Datum: NAD83 TN
 Soil Map Unit Name: SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded NWI classification: PSS/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-09 is a scrub shrub/forested wetland on the west side of SR-54. State-listed Halberd-leaf tearthumb (<i>Polygonum arifolium</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-09-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Acer rubrum</i></u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)
2. <u><i>Ulmus rubra</i></u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC	
3. <u><i>Platanus occidentalis</i></u>	<u>10</u>		FACW	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
4. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)
5. _____			NA	
6. _____			NA	
7. _____			NA	
<u>55.0</u> = Total Cover				Prevalence Index worksheet:
50% of total cover: <u>27.5</u> 20% of total cover: <u>11.0</u>				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Total % Cover of: _____ Multiply by: _____
1. <u><i>Ilex verticillata</i></u>	<u>25</u>	<input checked="" type="checkbox"/>	FACW	OBL species <u>5</u> x 1 = <u>5</u>
2. <u><i>Carpinus caroliniana</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC	FACW species <u>90</u> x 2 = <u>180</u>
3. _____			NA	FAC species <u>55</u> x 3 = <u>165</u>
4. _____			NA	FACU species <u>0</u> x 4 = <u>0</u>
5. _____			NA	UPL species <u>0</u> x 5 = <u>0</u>
6. _____			NA	Column Totals: <u>150</u> (A) <u>350</u> (B)
7. _____			NA	Prevalence Index = B/A = <u>2.3</u>
8. _____			NA	
9. _____			NA	Hydrophytic Vegetation Indicators:
50% of total cover: <u>17.5</u> 20% of total cover: <u>7.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
1. <u><i>Impatiens capensis</i></u>	<u>30</u>	<input checked="" type="checkbox"/>	FACW	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
2. <u><i>Onoclea sensibilis</i></u>	<u>15</u>	<input checked="" type="checkbox"/>	FACW	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
3. <u><i>Sambucus nigra</i></u>	<u>10</u>		FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
4. <u><i>Glyceria striata</i></u>	<u>5</u>		OBL	
5. _____			NA	
6. _____			NA	
7. _____			NA	
8. _____			NA	
9. _____			NA	
10. _____			NA	
11. _____			NA	
<u>60.0</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Definitions of Four Vegetation Strata:
1. _____			NA	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
2. _____			NA	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
3. _____			NA	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
4. _____			NA	Woody vine – All woody vines greater than 3.28 ft in height.
5. _____			NA	
<u>0.0</u> = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-09-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-3	10YR 3/2	90	2.5YR 3/6	10	C	M	Sandy clay
3-18	10YR 4/1	80	2.5YR 4/6	20	C	M	Sandy clay

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-17-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-09-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.377656 Long: -88.334225 Datum: NAD83 TN
 Soil Map Unit Name: SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-09.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-09-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u><i>Liriodendron tulipifera</i></u>	40	✓	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)														
2. <u><i>Acer rubrum</i></u>	10	✓	FAC															
3. _____			NA	Total Number of Dominant Species Across All Strata: <u>6</u> (B)														
4. _____			NA															
5. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
6. _____			NA															
7. _____			NA															
<u>50.0</u> = Total Cover 50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>65</u></td> <td>x 4 = <u>260</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>410</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>115</u> (A)	<u>410</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>50</u>	x 3 = <u>150</u>																	
FACU species <u>65</u>	x 4 = <u>260</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>115</u> (A)	<u>410</u> (B)																	
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Prevalence Index = B/A = <u>3.6</u>														
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u><i>Carpinus caroliniana</i></u>	15	✓	FAC															
2. <u><i>Acer rubrum</i></u>	25	✓	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
3. _____			NA															
4. _____			NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.														
5. _____			NA															
6. _____			NA	Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
7. _____			NA															
8. _____			NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
9. _____			NA															
10. _____			NA	Herb Stratum (Plot size: <u>5 ft</u>)														
11. _____			NA															
<u>30.0</u> = Total Cover 50% of total cover: <u>15.0</u> 20% of total cover: <u>6.0</u>				Remarks: (Include photo numbers here or on a separate sheet.)														
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		

SOIL

Sampling Point: WTL-09-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/4	99	5YR 5/8	1	C	M	Silty/Clay	
4-7	10YR 4/4	50	5YR 5/8	50	C	M	Silty/Clay	
7-18	10YR 5/2	80	5YR 5/6	20	C	M	Silty/Clay	Minor component of sand present

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/17/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-09

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

- | | |
|--|--|
| <p>1. Hydrology not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p>-no alteration to overland runoff, groundwater discharge/recharge</p> | <p>- no roads or other impediments to surface ground water</p> <p>- no excavation</p> |
| <p>2. Hydrology slightly altered (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site with minimal fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>-some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow slightly altered</p> <p>- minor portion of site excavated</p> |
| <p>3. Hydrology moderately altered (SI = 0.5)</p> <p><input type="checkbox"/> - portion of site with moderate fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow moderately altered</p> <p>- moderate portion of site excavated</p> |
| <p>4. Hydrology significantly altered (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site with significant fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- significant alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow significantly altered</p> <p>- significant portion of site excavated</p> |
| <p>5. Hydrology severely altered (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - entire site with numerous drainage ditches/tiles</p> <p>- no contributions to or from overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow completely blocked</p> <p>- entire wetland affected</p> |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 40.0
- B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 40.0
- C = Percentage low density residential, construction, or similar 20.0
- D = Percentage high density residential, or similar _____
- E = Percentage urban, commercial, industrial, or similar _____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.8000}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☐ ≥ 15 in. (SI = 1.0) ☒ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☐ 5 – 10 (SI = 1.0) ☒ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

**V5: Shrub Cover (SCOV)**

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

**V6: Ground Vegetation Cover (GVC)**

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input checked="" type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7=

0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0☒ b) if average buffer is 98 ft to 491 ft., multiply by 0.66☐ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33☐ d) if average buffer width is < 33 ft., multiply by 0.1

3. This value is the SI for V9 = 0.33.

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**V1 0.75 (HYDRO) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.33 (BUFFER)V2 0.8 (WSHEDINT) V4 0.75 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	Yes	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-09

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-09 is hydrologically connected to the North Fork Obion River, which is considered an ETW based on presence of state threatened Water Purslane, Halberd-leaf Tearthumb, and firebelly darter.	
Quantitative Rating scores	Function: Hydrologic Regime	0.775
	Function: Biogeochemical Processes	0.823
	Function: Retain Particulates	N/A
	Function: Plant Community	0.719
	Function: Wildlife Community	0.622
	Quantitative Score (Average of FCIs x 100)	73.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	73.5

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05/17/2021 1435 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-06		
HUC (12 digit): 080102020102		Lat/Long: 36.377683 °N
Previous Rainfall (7-days) : 0 inches		-88.334291 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 4.7 acres	County: Henry	
Soil Type(s) / Geology : SgD3, Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **24.25**

Justification / Notes :

Feature drains from WWC-16, which transitions into a stream at a seep/wetland area

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	✓ 1	2	3
3. In-channel structure: riffle-pool sequences	0	✓ 1	2	3
4. Sorting of soil textures or other substrate	0	✓ 1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	✓ 1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	✓ 1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 8.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	✓ 1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 8)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	✓ 1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 24.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature loses B&B downstream
 Low velocity run habitat throughout
 Limited sorting in upper reach
 Headcut = 1 / Grade control = none
 Flow present at headcut and at multiple seep areas near origin of stream
 Few fibrous roots present in upper reach
 Impatiens located throughout lower reach

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05/17/2021					
1-Station: from plans	N/A									
2-Map label and name	STR-06									
3-Latitude/Longitude	36.377688, -88.334291									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	24.25									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input checked="" type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	18 inches			-top of bank width			36 inches			
-width at ordinary high water mark	30 inches									
-bank height	LDB - 8 inches				RDB - 6 inches					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Ilex verticillata, Acer rubrum, Liriodendron tulipifera									
----- (LDB / RDB) -----	RDB: Ilex verticillata, Platanus occidentalis									
-date of PJD request										
5-photo numbers	89 - 90									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Stream begins at WWC- 16 at headcut and spring area and flows into wetland WTL-09.									
Substrate	Silt with some gravel									

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05/17/2021					
1-Station: from plans	N/A									
2-Map label and name	STR-07 (North Fork Obion River)									
3-Latitude/Longitude	36.378047, -88.333594									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	n/a									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input checked="" type="checkbox"/>
-channel bottom width	20 ft			-top of bank width			30 ft			
-width at ordinary high water mark	25 ft									
-bank height	LDB - 6 ft				RDB - 6 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Betula nigra, Acer rubrum, Salix nigra, Liquidambar styraciflua									
----- (LDB / RDB) -----	RDB: Betula nigra, Acer rubrum, Salix nigra, Liquidambar styraciflua									
-date of PJD request										
5-photo numbers	91 - 94									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Swallows and their nests present on SR-54 bridge over river									
Substrate	Sand									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-2021 1208 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-08		
HUC (12 digit): 080102020102		Lat/Long: 36.378331 °N
Previous Rainfall (7-days) : 0 inches		-88.333645 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 21.7 acres	County: Henry	
Soil Type(s) / Geology : Lk, Luka Loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **28.75**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 12)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 7)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 9.75)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 28.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel in wetland area
 Low gradient channel dominated by run habitat
 Substrate dominated by silt with little evidence of sorting
 Depositional benches present occasionally
 No grade control or headcut observed in reach
 Strong flow
 Wetland plants present- lizards tail

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-18-2021					
1-Station: from plans	N/A									
2-Map label and name	STR-08									
3-Latitude/Longitude	36.378332, -88.333659									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	28.75									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input checked="" type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	3 ft			-top of bank width			5 ft			
-width at ordinary high water mark	4 ft									
-bank height	LDB - 20 inches				RDB - 20 inches					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Betula nigra, Platanus occidentalis									
----- (LDB / RDB) -----	RDB: Betula nigra, Platanus occidentalis									
-date of PJD request										
5-photo numbers	95 - 96									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature flows through wetland area and flows into STR-07.									
Substrate	Silt and sand									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-18-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-10-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.379308 Long: -88.333753 Datum: NAD83 TN
 Soil Map Unit Name: LnC3 - Lexington silty clay loam, 5-8% slopes, severely eroded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Portions of wetland are in maintained residential lawn and vegetation is managed. No flags placed in maintained lawn. State-listed Halberd-leaf tearthumb (<i>Polygonum arifolium</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-10-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u><i>Acer rubrum</i></u>	<u>70</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)														
2. <u><i>Liquidambar styraciflua</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>5</u> (B)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>73</u></td> <td>x 2 = <u>146</u></td> </tr> <tr> <td>FAC species <u>103</u></td> <td>x 3 = <u>309</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>181</u> (A)</td> <td><u>460</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>73</u>	x 2 = <u>146</u>	FAC species <u>103</u>	x 3 = <u>309</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>181</u> (A)	<u>460</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>5</u>	x 1 = <u>5</u>																	
FACW species <u>73</u>	x 2 = <u>146</u>																	
FAC species <u>103</u>	x 3 = <u>309</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>181</u> (A)	<u>460</u> (B)																	
<u>6.0</u> = Total Cover 50% of total cover: <u>3.0</u> 20% of total cover: <u>1.2</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index = B/A = <u>2.5</u>														
1. <u><i>Celtis laevigata</i></u>	<u>3</u>	<input checked="" type="checkbox"/>	FACW															
2. <u><i>Ulmus rubra</i></u>	<u>3</u>	<input checked="" type="checkbox"/>	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>6.0</u> = Total Cover 50% of total cover: <u>3.0</u> 20% of total cover: <u>1.2</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u><i>Impatiens capensis</i></u>	<u>70</u>	<input checked="" type="checkbox"/>	FACW															
2. <u><i>Juncus effusus</i></u>	<u>5</u>	_____	OBL	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
3. <u><i>Toxicodendron radicans</i></u>	<u>10</u>	_____	FAC															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>85.0</u> = Total Cover 50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-10-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9	10YR 4/1	85	5YR 4/6	15	C	M	Sandy clay	
9-18	10YR 5/2	60	7.5YR 4/4	40	C	M	Sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-18-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-10-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 10
 Subregion (LRR or MLRA): LRR P Lat: 36.379323 Long: -88.333818 Datum: NAD83 TN
 Soil Map Unit Name: LnC3 - Lexington silty clay loam, 5-8% slopes, severely eroded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Vegetation routinely moved - roadway fill slope and residential lawn	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-10-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>2</u> (B)																
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)																
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>40</u> (A)</td> <td><u>160</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>40</u> (A)	<u>160</u> (B)	Prevalence Index = B/A = <u>4.0</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>40</u> (A)	<u>160</u> (B)																			
Prevalence Index = B/A = <u>4.0</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>																
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA	Remarks: (Include photo numbers here or on a separate sheet.) Vegetation problematic due to mowing.																
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Trifolium repens</u>	<u>30</u>	<input checked="" type="checkbox"/>	FACU																	
2. <u>Plantago lanceolata</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU																	
3. <u>Trifolium campestre</u>	<u>5</u>	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>45.0</u> = Total Cover 50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				

SOIL

Sampling Point: WTL-10-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					Loam	Some gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Roadway fill slope.

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-10

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

- | | |
|--|--|
| <p>1. Hydrology not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p>-no alteration to overland runoff, groundwater discharge/recharge</p> | <p>- no roads or other impediments to surface ground water</p> <p>- no excavation</p> |
| <p>2. Hydrology slightly altered (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site with minimal fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>-some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow slightly altered</p> <p>- minor portion of site excavated</p> |
| <p>3. Hydrology moderately altered (SI = 0.5)</p> <p><input type="checkbox"/> - portion of site with moderate fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow moderately altered</p> <p>- moderate portion of site excavated</p> |
| <p>4. Hydrology significantly altered (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site with significant fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- significant alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow significantly altered</p> <p>- significant portion of site excavated</p> |
| <p>5. Hydrology severely altered (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - entire site with numerous drainage ditches/tiles</p> <p>- no contributions to or from overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow completely blocked</p> <p>- entire wetland affected</p> |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 85.0
- B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar _____
- C = Percentage low density residential, construction, or similar 15.0
- D = Percentage high density residential, or similar _____
- E = Percentage urban, commercial, industrial, or similar _____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.9250}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☐ ≥ 15 in. (SI = 1.0) ☒ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☐ 5 – 10 (SI = 1.0) ☒ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

**V5: Shrub Cover (SCOV)**

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

**V6: Ground Vegetation Cover (GVC)**

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input checked="" type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7=

0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0☒ b) if average buffer is 98 ft to 491 ft., multiply by 0.66☐ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33☐ d) if average buffer width is < 33 ft., multiply by 0.1

3. This value is the SI for V9 = 0.495.

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**V1 0.75 (HYDRO) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.495 (BUFFER)V2 0.925 (WSHEDINT) V4 0.75 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-10

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-10 is hydrologically connected to the North Fork Obion River, which is considered an ETW based on presence of state threatened Water Purslane, Halberd-leaf Tearthumb, and firebelly darter.	
Quantitative Rating scores	Function: Hydrologic Regime	0.833
	Function: Biogeochemical Processes	0.854
	Function: Retain Particulates	N/A
	Function: Plant Community	0.739
	Function: Wildlife Community	0.678
	Quantitative Score (Average of FCIs x 100)	77.6
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	77.6

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/17/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-11-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.378590 Long: -88.334532 Datum: NAD83 TN
 Soil Map Unit Name: Ik - Luka loam, 0-2% slopes, occasionally flooded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 11 is a forested wetland on the west side of SR-54. State-listed Halberd-leaf tearthumb (<i>Polygonum arifolium</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-11-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u><i>Acer rubrum</i></u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)														
2. <u><i>Salix nigra</i></u>	<u>30</u>	<input checked="" type="checkbox"/>	OBL															
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>5</u> (B)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>65</u></td> <td>x 3 = <u>195</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>235</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>65</u>	x 3 = <u>195</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>235</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>30</u>	x 1 = <u>30</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>65</u>	x 3 = <u>195</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100</u> (A)	<u>235</u> (B)																	
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index = B/A = <u>2.4</u>														
1. <u><i>Acer rubrum</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
2. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u><i>Impatiens capensis</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FACW															
2. <u><i>Persicaria perfoliata</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>10.0</u> = Total Cover 50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-11-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 5/2	85	5YR 4/4	15	C	M	Sandy silt clay	
4-18	10YR 6/1	80	5YR 4/4	20	C	M	Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/17/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-11-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Natural levee Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.378544 Long: -88.334545 Datum: NAD83 TN
 Soil Map Unit Name: Ik - Luka loam, 0-2% slopes, occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-11.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-11-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u><i>Acer rubrum</i></u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)														
2. <u><i>Platanus occidentalis</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW															
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>7</u> (B)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71.4</u> (A/B)														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>60.0</u> = Total Cover 50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>120</u> (A)</td> <td><u>350</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>120</u> (A)	<u>350</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>30</u>	x 2 = <u>60</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>20</u>	x 4 = <u>80</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>120</u> (A)	<u>350</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u><i>Betula nigra</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FACW	Prevalence Index = B/A = <u>2.9</u>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>10.0</u> = Total Cover 50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u><i>Microstegium vimineum</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>10.0</u> = Total Cover 50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. <u><i>Smilax rotundifolia</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. <u><i>Rubus sp.</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	NA															
3. <u><i>Lonicera japonica</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>50.0</u> = Total Cover 50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-11-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 5/2	100					Sand	
2-18	10YR 6/4	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)****Indicators for Problematic Hydric Soils³:**

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|---|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT RIVERINE WETLANDS

Date: 05-17-2021

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-11

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: River Connection (RIVCON)

- | | | |
|--|---|--|
| <p>1. Overbank flooding has not been impacted (SI = 1.0)</p> <p><input type="checkbox"/> - no artificial levee(s), spoil piles, roads, or other obstructions</p> <p><input type="checkbox"/> - no channelization; channel is naturally meandering</p> <p><input type="checkbox"/> - no channel downcutting</p> | <p>- no lateral cutting and no bank failure</p> <p>- flood frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>2. Overbank flooding slightly impacted (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - levee(s) etc. present but most overbank flooding occurs</p> <p><input checked="" type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - slight channel downcutting</p> | <p>- slight lateral cutting and bank failure</p> <p>- flooding frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>3. Overbank flooding moderately impacted (SI = 0.5)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - moderate channel downcutting</p> | <p>- moderate lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>4. Overbank flooding significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - significant channel downcutting</p> | <p>- significant lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>5. Overbank flooding severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - levee(s) etc. have eliminated overbank flooding</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - severe channel downcutting</p> | <p>- severe lateral cutting and bank failure</p> <p>- natural flood regime no longer occurs</p> | <p>- local knowledge</p> <p>- gauge data</p> |

V2: Hydroperiod (HYDRO)

- | | |
|---|---|
| <p>1. Hydrologic storage not altered (SI = 1.0)</p> <p><input checked="" type="checkbox"/> - no fill material or excessive sediment</p> <p><input checked="" type="checkbox"/> - no ditches/drainage tiles</p> <p><input type="checkbox"/> - no artificial levees or other structures that cause prolonged ponding</p> | <p>- no land leveling</p> |
| <p>2. Hydrologic storage slightly impacted (SI = 0.75)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - ditches/drainage tiles present over portion of site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>3. Hydrologic storage moderately impacted (SI = 0.50)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - widely spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>4. Hydrologic storage significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - moderately spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>5. Hydrologic storage severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill, excessive sediment, or leveling</p> <p><input type="checkbox"/> - closely spaced ditches/tiles present over entire site</p> <p><input type="checkbox"/> - entire site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of entire site</p> |

N/A

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☐ > 16 in. (SI = 1.0) ☒ 10 – 16 in. (SI = 0.75) ☐ 5 – 9 in. (SI = 0.5) ☐ 3 – 4 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

N/A

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☐ 8 – 16 (SI = 1.0) ☒ 17 – 50 (SI = 0.75) ☐ > 50 (SI = 0.5) ☐ 3 – 7 (SI = 0.5) ☐ 1 – 2 (SI = 0.25)

N/A



N/A



V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum.*

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> American elm	<input type="checkbox"/> River birch	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Overcup oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Boxelder	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> Water hickory	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Deciduous holly	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Pin oak	<input type="checkbox"/> Honey locust	<input checked="" type="checkbox"/> Red maple	<input type="checkbox"/> Sugarberry	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input checked="" type="checkbox"/> Black willow	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/>	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Green ash	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/>	<input type="checkbox"/> Number native shrub spp.		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Number native herbaceous spp.		

2. Using the checked dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7

0.574

*In some Riverine wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases where this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. ☐

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Tract Size (TRACT)

1. Area (acres) of adjacent wetland and upland forest that is contiguous with the WAA. These values are for western Tennessee are negligible unless greater than the value added section limits for the remainder of the state.

☐ > 7,000 (SI = 1.0)

☒ >200 – 1,000 (SI = 0.5)

☐ < 1 (SI = 0.00)

☐ >1,000 – 7,000 (SI = 0.75)

☐ 1 – 200 (SI = 0.25)

☐ In Eastern or Central Tennessee (SI=1.0)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	Yes	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-11

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-11 is hydrologically connected to the North Fork Obion River, which is considered an ETW based on presence of state threatened Water Purslane, Halberd-leaf Tearthumb, and firebelly darter.	
Quantitative Rating scores		0.75
	Function: Hydrologic Regime	
		0.871
	Function: Biogeochemical Processes	
		0.808
	Function: Retain Particulates	
		0.750
	Function: Plant Community	
Quantitative Rating scores		0.687
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	77.3
		0
	Value Added (Significant Size) Total	
Total of Quantitative and Value Added Scores	TOTAL SCORE	77.3

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-2021 0909 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-09		
HUC (12 digit): 080102020102		Lat/Long: 36.381248 °N
Previous Rainfall (7-days) : 0 inches		-88.333353 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 75.1 acres	County: Henry	
Soil Type(s) / Geology : SeE2, Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **30.75**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 15.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	✓ 1	2	3
3. In-channel structure: riffle-pool sequences	0	1	✓ 2	3
4. Sorting of soil textures or other substrate	0	1	✓ 2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	✓ 3
7. Braided channel	0	1	✓ 2	3
8. Recent alluvial deposits	0	0.5	✓ 1	1.5
9. Natural levees	✓ 0	1	2	3
10. Headcuts	✓ 0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	✓ 1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	✓ 2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	✓ 1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	✓ 1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

✓

C. Biology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	✓ 2	1	0
21. Rooted plants in thalweg ¹	✓ 3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	✓ 2	3
23. Bivalves/mussels	✓ 0	1	2	3
24. Amphibians	✓ 0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	✓ 0	1	2	3
26. Filamentous algae; periphyton	0	✓ 1	2	3
27. Iron oxidizing bacteria/fungus	✓ 0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 30.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Predominantly run and pool habitat with occasional riffles
Multiple bars in reach
Headcut = none / Grade control = root

Occasional fibrous roots
Wetland plants present in lower reach elderberry and Carex sp

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-18-2021	
1-Station: from plans		N/A							
2-Map label and name		STR-09							
3-Latitude/Longitude		36.380996, -88.334157							
4-Feature description:									
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>	
-HD score (if applicable)		30.75							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		5 ft				-top of bank width		7 ft	
-width at ordinary high water mark		6 ft							
-bank height		LDB - 8 inches				RDB - 8 inches			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Acer negundo, Quercus rubra, Liquidambar styraciflua							
----- (LDB /RDB) -----		RDB: Acer negundo, Quercus rubra, Liquidambar styraciflua							
-date of PJD request									
5-photo numbers		103 - 106							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Feature originates at culvert outlet under highway and flows into WTL-11.							
Substrate		Sand and silt							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-202 1000 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-17		
HUC (12 digit): 080102020102		Lat/Long: 36.381211 °N
Previous Rainfall (7-days) : 0 inches		-88.334018 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.7 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested and roadway		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [14](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	✓ 1	2	3
4. Sorting of soil textures or other substrate	0	1	✓ 2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	✓ 1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

✓

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature begins at headcut at culvert outlet in roadside ditch
 Dominated by run habitat with few riffles
 No bars or benches
 Headcuts = None / Grade Control = 2 - one small rock formation and one culvert

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-18-2021			
1-Station: from plans		N/A									
2-Map label and name		WWC-17									
3-Latitude/Longitude		36.381291, -88.334033									
4-Feature description:											
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input checked="" type="checkbox"/>			
-HD score (if applicable)		14									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		12 inches				-top of bank width		24 inches			
-width at ordinary high water mark		18 inches									
-bank height		LDB - 24 inches				RDB - 24 inches					
-riffle/pool complex or other specialized habitat present?		None									
-dominant riparian species:		LDB: Pueraria montana, Microstegium vimineum, Lonicera japonica									
----- (LDB /RDB) -----		RDB: Pueraria montana, Microstegium vimineum, Lonicera japonica									
-date of PJD request											
5-photo numbers		107 - 109									
6-HUC -8 Code & Name		08010202				North Fork Obion River					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes		<p>Feature begins at culvert in roadside ditch - no crossing under highway - and flows into STR-09.</p> <p>Large headcut at culvert outlet</p>									
Substrate		Silt with some gravel									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-2021 1032 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-18		
HUC (12 digit): 080102020102	Lat/Long: 36.381312 °N	
Previous Rainfall (7-days) : 0 inches	-88.333653 °W	
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.5 acres	County: Henry	
Soil Type(s) / Geology : SeS2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested and roadway		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [17.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 4.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 17.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Large erosion feature draining roadside and surrounding land
 Abandoned culvert present - appears feature eroded past culvert and created new channel
 Evidence of some sorting but predominantly silt bottom with gravel/sand mix
 Few depositional benches present
 Headcut = 0 / Grade Control = 1 - large pile of riprap
 Few fibrous roots in channel

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-18-2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-18							
3-Latitude/Longitude		36.381309, -88.333667							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		17.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		10 inches				-top of bank width		36 inches	
-width at ordinary high water mark		20 inches							
-bank height		LDB - 12 inches				RDB - 14 inches			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Liriodendron tulipifera, Platanus occidentalis, Ulmus americana							
----- (LDB /RDB) -----		RDB: Liriodendron tulipifera, Platanus occidentalis, Ulmus americana							
-date of PJD request									
5-photo numbers		110 - 112							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Short erosion feature along roadway, feature originates at large headcut armored with riprap. Abandoned pipe nearby - appears feature has cut new channel around pipe</p>							
Substrate		Silt, sand and gravel							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-18-2021 0952 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-19		
HUC (12 digit): 080102020102		Lat/Long: 36.381452 °N
Previous Rainfall (7-days) : 0 inches		-88.334025 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.3 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% eroded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [10](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 10

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Short erosion feature flowing into roadside WWC-17
Headcut = 1 / Grade control = none
Few rooted plants in channel

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-18-2021				
1-Station: from plans	N/A								
2-Map label and name	WWC-19								
3-Latitude/Longitude	36.381459, -88.334031								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	10								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input checked="" type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input type="checkbox"/>	leaf litter disturbed or absent <input checked="" type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	10 inches		-top of bank width		24 inches				
-width at ordinary high water mark	12 inches								
-bank height	LDB - 18 inches			RDB - 20 inches					
-riffle/pool complex or other specialized habitat present?	None								
-dominant riparian species:	LDB: Rubus sp., Microstegium vimineum, Lonicera japonica								
----- (LDB / RDB) -----	RDB: Rubus sp., Microstegium vimineum, Lonicera japonica								
-date of PJD request									
5-photo numbers	113 - 114								
6-HUC -8 Code & Name	08010202			North Fork Obion River					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	Short erosion feature that flows into WWC- 17.								
Substrate	Silt								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-19-2021 0740 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-20		
HUC (12 digit): 080102020102		Lat/Long: 36.383248 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333716 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 3.4 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Industrial and ag		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [9.5](#)

Justification / Notes :

[Roadside ditch receives runoff from highway and adjacent industrial site](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

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C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature flows into culvert under highway
 Moderate B&B
 Predominantly run habitat
 Sorting noted throughout reach
 No bars or benches
 Headcut = 1 small headcut / Grade control = none
 Honeysuckle rooted in channel
 No wetland plants

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-19-2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-20							
3-Latitude/Longitude		36.383243, -88.333723							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		9.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		10 inches				-top of bank width		18 inches	
-width at ordinary high water mark		14 inches							
-bank height		LDB - 10 inches				RDB - 10 inches			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Lonicera japonica, Platanus occidentalis, Acer rubrum							
----- (LDB / RDB) -----		RDB: Lonicera japonica, Sorghum halepense							
-date of PJD request									
5-photo numbers		115- 117							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Short feature that drains roadway and adjacent industrial site, flows into culvert under highway at confluence with WWC-21; no defined channel at culvert outlet, only ponded water; culvert outlet has been buried and has a minimal opening</p>							
Substrate		Silt with some gravel							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-19-2021 0755 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-21		
HUC (12 digit): 080102020102		Lat/Long: 36.383385 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333710 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 10.0 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Industrial and ag		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.5](#)

Justification / Notes :

[Feature begins at headcut on edge of plowed ag field and flows into roadside ditch](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

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C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Strong B&B
Predominantly run habitat
Some sorting but dominated by silt substrate
Headcut = 1 / Grade control = 1 (culvert)
Rooted plants = honeysuckle, Virginia creeper

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021				
1-Station: from plans	N/A								
2-Map label and name	WWC-21								
3-Latitude/Longitude	36.383377, -88.333718								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	12.5								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input checked="" type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input checked="" type="checkbox"/>	leaf litter disturbed or absent <input checked="" type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	12 inches		-top of bank width		36 inches				
-width at ordinary high water mark	24 inches								
-bank height	LDB - 18 inches			RDB - 18 inches					
-riffle/pool complex or other specialized habitat present?	None								
-dominant riparian species:	LDB: Celtis laevigata, Rubus sp.								
----- (LDB /RDB) -----	RDB: Rubus sp., Acer negundo								
-date of PJD request									
5-photo numbers	118 -119								
6-HUC -8 Code & Name	08010202			North Fork Obion River					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	Feature begins at headcut on edge of tilled ag field and flows into roadside ditch and then into culvert under highway with WWC-20. No defined channel at culvert outlet, only ponded water; outlet has been buried and has a minimal opening								
Substrate	Silt with some gravel								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 05-18-2021
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-22		
HUC (12 digit): 080102020102		Lat/Long: 36.386124 °N
Previous Rainfall (7-days) : 0 inches		-88.333619 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 4.8 acres		County: Henry
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Industrial and farm field		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [9.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

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C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates at headcut in roadside ditch, headcut has been armored with riprap
 Minimal sorting
 Headcut = none / Grade control = 1 - riprap
 Fibrous roots throughout reach
 Rooted plants present - Virginia creeper

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-18-2021					
1-Station: from plans	N/A									
2-Map label and name	WWC-22									
3-Latitude/Longitude	36.386085, -88.333633									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	9.5									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	14 inches			-top of bank width			30 inches			
-width at ordinary high water mark	24 inches									
-bank height	LDB - 2 ft				RDB - 3 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Schedonorus arundinaceus, Vitis sp., Solidago sp									
----- (LDB /RDB) -----	RDB: Celtis laevigata, Juglans nigra									
-date of PJD request										
5-photo numbers	120 -123									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature begins at headcut in roadside ditch and loses form down gradient ; headcut has been armored with riprap									
Substrate	Silt									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 05-18-2021
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-23		
HUC (12 digit): 080102020102		Lat/Long: 36.385936 °N
Previous Rainfall (7-days) : 0 inches		-88.333616 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.4 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Hay field		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [11.75](#)

Justification / Notes :

[Feature originates at tile drain outlet - pipe drains detention basin in ag field](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

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C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature is drain for ag detention basin
Headcut = 1 large cut at pipe outlet. / Grade Control = none

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-18-2021					
1-Station: from plans	N/A									
2-Map label and name	WWC-23									
3-Latitude/Longitude	36.385942, -88.333619									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	11.75									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input checked="" type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	20 inches			-top of bank width			30 inches			
-width at ordinary high water mark	24 inches									
-bank height	LDB - 2 ft				RDB - 2 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Liriodendron tulipifera, Quercus velutina									
----- (LDB / RDB) -----	RDB: Juglans nigra, Celtis laevigata									
-date of PJD request										
5-photo numbers	124 - 125									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature originates at outlet of agricultural drain tile that drains detention basin in ag field; feature flows into WWC-22.									
Substrate	Silt									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-18-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-12-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.386842 Long: 88.333497 Datum: NAD83 TN
 Soil Map Unit Name: SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Feature located in roadside ditch.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-12-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>60</u></td> <td>x 1 = <u>60</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>85</u> (A)</td> <td><u>110</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.3</u>	Total % Cover of:	Multiply by:	OBL species <u>60</u>	x 1 = <u>60</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>85</u> (A)	<u>110</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>60</u>	x 1 = <u>60</u>																	
FACW species <u>25</u>	x 2 = <u>50</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>85</u> (A)	<u>110</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
12. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Carex lupulina</u>	<u>30</u>	<input checked="" type="checkbox"/>	OBL															
2. <u>Carex vulpinoidea</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACW															
3. <u>Juncus effusus</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
4. <u>Onoclea sensibilis</u>	<u>10</u>	_____	FACW	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
5. <u>Scirpus atrovirens</u>	<u>5</u>	_____	OBL															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>37.5</u> 20% of total cover: <u>15.0</u>				Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>2.0</u>				Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>2.0</u>				Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>2.0</u>				Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>2.0</u>				Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>2.0</u>				Woody Vine Stratum (Plot size: <u>15 ft</u>)														
1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
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1. <u>Rosa palustris</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														

SOIL

Sampling Point: WTL-12-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/3	100					Silt Sand	
1-3	10YR 3/3	85	5YR 4/6	15	C	M	Sandy clay	
3-18	7.5YR 3/2	75	5YR 4/6	25	C	M	Sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-18-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-12-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 10
 Subregion (LRR or MLRA): LRR P Lat: 36.386818 Long: -88.333466 Datum: NAD83 TN
 Soil Map Unit Name: SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-12, hay field.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) </div> <div style="width: 50%;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </div> </div>	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-12-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>65</u></td> <td>x 4 = <u>260</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>305</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.8</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>80</u> (A)	<u>305</u> (B)	Prevalence Index = B/A = <u>3.8</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>15</u>	x 3 = <u>45</u>																			
FACU species <u>65</u>	x 4 = <u>260</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>80</u> (A)	<u>305</u> (B)																			
Prevalence Index = B/A = <u>3.8</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Trifolium repens</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU																	
2. <u>Schedonorus arundinaceus</u>	<u>15</u>	_____	FAC																	
3. <u>Plantago lanceolata</u>	<u>40</u>	<input checked="" type="checkbox"/>	FACU																	
4. <u>Trifolium campestre</u>	<u>10</u>	_____	NA																	
5. <u>Dactylis glomerata</u>	<u>5</u>	_____	FACU																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>																

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

SOIL

Sampling Point: WTL-12-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/3	100					Loam	
2-10	10YR 4/4	100					Loam	
10-18	10YR 5/3	75	10YR 5/6	25	C	M	Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/18/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-12

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)

☐ - no fill material or excessive sediment
☐ - no ditches/drainage tiles
 -no alteration to overland runoff, groundwater discharge/recharge

- no roads or other impediments to surface ground water
 - no excavation
2. Hydrology slightly altered (SI = 0.75)

☐ - portion of site with minimal fill or sediment
☐ - portion of site with drainage ditches/tiles
 -some alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow slightly altered
 - minor portion of site excavated
3. Hydrology moderately altered (SI = 0.5)

☒ - portion of site with moderate fill or sediment
☐ - portion of site with drainage ditches/tiles
 - some alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow moderately altered
 - moderate portion of site excavated
4. Hydrology significantly altered (SI = 0.25)

☐ - portion of site with significant fill or sediment
☐ - portion of site with drainage ditches/tiles
 - significant alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow significantly altered
 - significant portion of site excavated
5. Hydrology severely altered (SI = 0.1)

☐ - entire site impacted by fill or excessive sediment
☐ - entire site with numerous drainage ditches/tiles
 - no contributions to or from overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow completely blocked
 - entire wetland affected

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 5.0
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 80.0
 C = Percentage low density residential, construction, or similar _____
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar 15.0

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.6515}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

☒ ≥ 15 in. (SI = 1.0) ☐ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

☒ 5 – 10 (SI = 1.0) ☐ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

**V5: Shrub Cover (SCOV)**

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

**V6: Ground Vegetation Cover (GVC)**

1. Average percent cover of ground vegetation per 30-ft. radius plot

☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI = 0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)
☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0
- ☐ b) if average buffer is 98 ft to 491 ft., multiply by 0.66
- ☒ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33
- ☐ d) if average buffer width is < 33 ft., multiply by 0.1

3. This value is the SI for V9 = _____.

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**V1 0.5 (HYDRO) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.165 (BUFFER)V2 0.6515 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-12

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-12 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores		0.571
	Function: Hydrologic Regime	
		0.478
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.318
	Function: Plant Community	
Quantitative Rating scores		0.280
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	41.2
		0
	Value Added (Significant Size) Total	
Total of Quantitative and Value Added Scores	TOTAL SCORE	41.2

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05/19/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-13-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.386892 Long: -88.334300 Datum: NAD83 TN
 Soil Map Unit Name: CVA - Chenneby, Enville, Arkabutla soils, 0-2% slopes, frequently flooded NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 13 is a forested wetland on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-13-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u>Liquidambar styraciflua</u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)																
2. <u>Platanus occidentalis</u>	<u>30</u>	<input checked="" type="checkbox"/>	FACW																	
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>7</u> (B)																
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>85.7</u> (A/B)																
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>33</u></td> <td>x 2 = <u>66</u></td> </tr> <tr> <td>FAC species <u>95</u></td> <td>x 3 = <u>285</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>143</u> (A)</td> <td><u>386</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.7</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>33</u>	x 2 = <u>66</u>	FAC species <u>95</u>	x 3 = <u>285</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>143</u> (A)	<u>386</u> (B)	Prevalence Index = B/A = <u>2.7</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>10</u>	x 1 = <u>10</u>																			
FACW species <u>33</u>	x 2 = <u>66</u>																			
FAC species <u>95</u>	x 3 = <u>285</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>143</u> (A)	<u>386</u> (B)																			
Prevalence Index = B/A = <u>2.7</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. <u>Ulmus americana</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC																	
2. <u>Acer rubrum</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>30.0</u> = Total Cover 50% of total cover: <u>15.0</u> 20% of total cover: <u>6.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Cicuta maculata</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
2. <u>Lepidium virginicum</u>	<u>5</u>	<input checked="" type="checkbox"/>	UPL																	
3. <u>Sisyrinchium angustifolium</u>	<u>3</u>	_____	FACW																	
4. <u>Toxicodendron radicans</u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>23.0</u> = Total Cover 50% of total cover: <u>11.5</u> 20% of total cover: <u>4.6</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTL-13-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/2	95	7.5YR 4/6	5	C	M	Loam	Concentration in pore lining
1-3	10YR 6/3	90	7.5YR 4/6	10	C	M	Sand	
3-10	10YR 4/2	80	5YR 4/6	20	C	M	Sandy clay	
10-18	10YR 5/2	40	5YR 4/6	60	C	M	Sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-13-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 5
 Subregion (LRR or MLRA): LRR P Lat: 36.386857 Long: -88.334255 Datum: NAD83 TN
 Soil Map Unit Name: CVA - Chenneby, Enville, Arkabutla soils, 0-2% slopes, frequently flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-13.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) </div> <div style="width: 50%;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </div> </div>	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-13-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Liquidambar styraciflua</u>	<u>50</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)														
2. <u>Platanus occidentalis</u>	<u>25</u>	<input checked="" type="checkbox"/>	FACW															
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>6</u> (B)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>75.0</u> = Total Cover 50% of total cover: <u>37.5</u> 20% of total cover: <u>15.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>100</u></td> <td>x 3 = <u>300</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>155</u> (A)</td> <td><u>470</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>100</u>	x 3 = <u>300</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>155</u> (A)	<u>470</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>25</u>	x 2 = <u>50</u>																	
FAC species <u>100</u>	x 3 = <u>300</u>																	
FACU species <u>30</u>	x 4 = <u>120</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>155</u> (A)	<u>470</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Ulmus americana</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Prevalence Index = B/A = <u>3.0</u>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
10. _____	_____	_____	NA															
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Parthenocissus quinquefolia</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU															
2. <u>Microstegium vimineum</u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Carex rosea</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>60.0</u> = Total Cover 50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-13-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/3	100					Sandy loam	
5-18	10YR 5/3	70	10YR 5/6	30	C	M	Sandy Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT RIVERINE WETLANDS

Date: 05-19-2021

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-13

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: River Connection (RIVCON)

- | | | |
|--|---|--|
| <p>1. Overbank flooding has not been impacted (SI = 1.0)</p> <p><input type="checkbox"/> - no artificial levee(s), spoil piles, roads, or other obstructions</p> <p><input type="checkbox"/> - no channelization; channel is naturally meandering</p> <p><input type="checkbox"/> - no channel downcutting</p> | <p>- no lateral cutting and no bank failure</p> <p>- flood frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>2. Overbank flooding slightly impacted (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - levee(s) etc. present but most overbank flooding occurs</p> <p><input checked="" type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - slight channel downcutting</p> | <p>- slight lateral cutting and bank failure</p> <p>- flooding frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>3. Overbank flooding moderately impacted (SI = 0.5)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - moderate channel downcutting</p> | <p>- moderate lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>4. Overbank flooding significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - significant channel downcutting</p> | <p>- significant lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>5. Overbank flooding severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - levee(s) etc. have eliminated overbank flooding</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - severe channel downcutting</p> | <p>- severe lateral cutting and bank failure</p> <p>- natural flood regime no longer occurs</p> | <p>- local knowledge</p> <p>- gauge data</p> |

V2: Hydroperiod (HYDRO)

- | | |
|---|---|
| <p>1. Hydrologic storage not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p><input type="checkbox"/> - no artificial levees or other structures that cause prolonged ponding</p> | <p>- no land leveling</p> |
| <p>2. Hydrologic storage slightly impacted (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - ditches/drainage tiles present over portion of site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>3. Hydrologic storage moderately impacted (SI = 0.50)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - widely spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>4. Hydrologic storage significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - moderately spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>5. Hydrologic storage severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill, excessive sediment, or leveling</p> <p><input type="checkbox"/> - closely spaced ditches/tiles present over entire site</p> <p><input type="checkbox"/> - entire site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of entire site</p> |

N/A

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- | | | | |
|--|---|---|--|
| <input type="checkbox"/> > 16 in. (SI = 1.0) | <input checked="" type="checkbox"/> 10 – 16 in. (SI = 0.75) | <input type="checkbox"/> 5 – 9 in. (SI = 0.5) | <input type="checkbox"/> 3 – 4 in. (SI = 0.25) |
|--|---|---|--|
- ☐ < 4 in. or no trees present, go to V5

N/A

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- | | | | | |
|---|--|--|---|--|
| <input checked="" type="checkbox"/> 8 – 16 (SI = 1.0) | <input type="checkbox"/> 17 – 50 (SI = 0.75) | <input type="checkbox"/> > 50 (SI = 0.5) | <input type="checkbox"/> 3 – 7 (SI = 0.5) | <input type="checkbox"/> 1 – 2 (SI = 0.25) |
|---|--|--|---|--|

N/A



N/A



V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)

☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum.*

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> American elm	<input type="checkbox"/> River birch	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Overcup oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Boxelder	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> Water hickory	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Deciduous holly	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Pin oak	<input type="checkbox"/> Honey locust	<input type="checkbox"/> Red maple	<input type="checkbox"/> Sugarberry	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Black willow	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Bald cypress	<input checked="" type="checkbox"/> Sweetgum	<input checked="" type="checkbox"/> Sycamore	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Green ash		<input type="checkbox"/>
<input type="checkbox"/> Swamp white oak		Number native shrub spp. _____		
		Number native herbaceous spp. _____		

2. Using the checked dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7

0.574

* In some Riverine wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases where this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. ☐

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Tract Size (TRACT)

1. Area (acres) of adjacent wetland and upland forest that is contiguous with the WAA. These values are for western Tennessee are negligible unless greater than the value added section limits for the remainder of the state.

☐ > 7,000 (SI = 1.0)

☒ >200 – 1,000 (SI = 0.5)

☐ < 1 (SI = 0.00)

☐ >1,000 – 7,000 (SI = 0.75)

☐ 1 – 200 (SI = 0.25)

☐ In Eastern or Central Tennessee (SI=1.0)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-13

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-13 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores	Function: Hydrologic Regime	0.75
	Function: Biogeochemical Processes	0.839
	Function: Retain Particulates	0.875
	Function: Plant Community	0.766
	Function: Wildlife Community	0.700
	Quantitative Score (Average of FCIs x 100)	78.6
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	78.6

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: <u>Rowe Creek</u>		Date/Time: <u>05-18-2021 1650 hrs</u>
Assessors/Affiliation: <u>MW (#1079-TN11), NV</u>		Project ID : <u>PIN101886.02 (TDOT)</u> <u>172678144</u>
Site Name/Description: <u>Henry Co SR-54 from Smith Rd to Near Howard Rd</u>		
Site Location: <u>STR-10</u>		
HUC (12 digit): <u>080102020102</u>		Lat/Long: <u>36.387034</u> °N
Previous Rainfall (7-days) : <u>0 inches</u>		<u>-88.333341</u> °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : <u>6.1 acres</u>	County: <u>Henry</u>	
Soil Type(s) / Geology : <u>SgD3 - Smithdale-Lexinton compled, 8-12% slopes, severely eroded</u> Source: <u>NRCS</u>		
Surrounding Land Use : <u>Hayfield and forested</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 23.5

Justification / Notes :

Feature originates at culvert outlet

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

✓

C. Biology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 23.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature loses B&B mid- reach and reforms at headcut
 Course material present but little to no sorting
 New alluvium in portions of channel
 Headcut = 1 / Grade control = 1 (culvert)
 Frogs observed in upper reach
 Iron oxidizing bacteria in lower reach

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-18-2021					
1-Station: from plans	N/A									
2-Map label and name	STR-10									
3-Latitude/Longitude	36.387042, -88.333344									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	23.5									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	2 ft			-top of bank width			5 ft			
-width at ordinary high water mark	3 ft									
-bank height	LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Rosa multiflora, Ulmus americana, Nyssa sylvatica									
----- (LDB / RDB) -----	RDB: Rosa multiflora, Acer rubrum, Liriodendron tulipifera									
-date of PJD request										
5-photo numbers	131 - 132									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature originates at culvert outlet under Pete Valentine Rd; feature drains wetland WTL-12 and flows into WTL-14 where it loses form									
Substrate	Sand and gravel									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-14-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.387608 Long: 88.333584 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silt loam, 0-2% slopes. occasionally flooded NWI classification: PSS/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 14 is a scrub shrub/forested wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-14-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>110</u></td> <td>x 2 = <u>220</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>130</u> (A)</td> <td><u>260</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.0</u>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>110</u>	x 2 = <u>220</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>130</u> (A)	<u>260</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>10</u>	x 1 = <u>10</u>																	
FACW species <u>110</u>	x 2 = <u>220</u>																	
FAC species <u>10</u>	x 3 = <u>30</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>130</u> (A)	<u>260</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Alnus serrulata</u>	<u>40</u>	<input checked="" type="checkbox"/>	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
40.0 = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Impatiens capensis</u>	<u>70</u>	<input checked="" type="checkbox"/>	FACW	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
2. <u>Juncus effusus</u>	<u>10</u>	_____	OBL															
3. <u>Microstegium vimineum</u>	<u>10</u>	_____	FAC															
4. <u>Solidago sp.</u>	<u>5</u>	_____	NA															
5. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
95.0 = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-14-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/4	100					Silt loam	
1-8	10YR 5/2	85	2.5YR 3/6	15	C	M	Clay	
8-18	10 YR 5/2	50	2.5YR 3/6	50	C	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-14-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 10
 Subregion (LRR or MLRA): LRR P Lat: 36.387590 Long: -88.333632 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silt loam, 0-2% slopes. occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-14. Roadway fill slope.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-14-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>330</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>330</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>30</u>	x 4 = <u>120</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100</u> (A)	<u>330</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Ulmus rubra</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Acer negundo</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>30.0</u> = Total Cover 50% of total cover: <u>15.0</u> 20% of total cover: <u>6.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Sorghum halepense</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU															
2. <u>Bromus sp.</u>	<u>10</u>	_____	NA															
3. <u>Schedonorus arundinaceus</u>	<u>5</u>	_____	FAC															
4. <u>Trifolium campestre</u>	<u>15</u>	<input checked="" type="checkbox"/>	NA															
5. <u>Plantago lanceolata</u>	<u>10</u>	_____	FACU															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>60.0</u> = Total Cover 50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. <u>Vitis rotundifolia</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Toxicodendron radicans</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>35.0</u> = Total Cover 50% of total cover: <u>17.5</u> 20% of total cover: <u>7.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-14-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5YR 3/6	100					Clay	Gravel and clay fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel
Depth (inches): 2

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Blended gravel and clay fill material for roadway fill.

HGM FUNCTIONAL ASSESSMENT RIVERINE WETLANDS

Date: 05-19-2021

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-14 (Riverine)

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: River Connection (RIVCON)

- | | |
|--|---|
| <p>1. Overbank flooding has not been impacted (SI = 1.0)</p> <p><input checked="" type="checkbox"/> - no artificial levee(s), spoil piles, roads, or other obstructions</p> <p><input checked="" type="checkbox"/> - no channelization; channel is naturally meandering</p> <p><input type="checkbox"/> - no channel downcutting</p> <p>2. Overbank flooding slightly impacted (SI = 0.75)</p> <p><input type="checkbox"/> - levee(s) etc. present but most overbank flooding occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - slight channel downcutting</p> <p>3. Overbank flooding moderately impacted (SI = 0.5)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - moderate channel downcutting</p> <p>4. Overbank flooding significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - significant channel downcutting</p> <p>5. Overbank flooding severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - levee(s) etc. have eliminated overbank flooding</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - severe channel downcutting</p> | <p>- no lateral cutting and no bank failure</p> <p>- flood frequency < 2 years</p> <p>- local knowledge</p> <p>- gauge data</p> <p>- slight lateral cutting and bank failure</p> <p>- flooding frequency < 2 years</p> <p>- local knowledge</p> <p>- gauge data</p> <p>- moderate lateral cutting and bank failure</p> <p>- local knowledge</p> <p>- gauge data</p> <p>- significant lateral cutting and bank failure</p> <p>- local knowledge</p> <p>- gauge data</p> <p>- severe lateral cutting and bank failure</p> <p>- natural flood regime no longer occurs</p> <p>- local knowledge</p> <p>- gauge data</p> |
|--|---|

V2: Hydroperiod (HYDRO)

- | | |
|--|---|
| <p>1. Hydrologic storage not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p><input type="checkbox"/> - no artificial levees or other structures that cause prolonged ponding</p> <p>2. Hydrologic storage slightly impacted (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - ditches/drainage tiles present over portion of site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> <p>3. Hydrologic storage moderately impacted (SI = 0.50)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - widely spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> <p>4. Hydrologic storage significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - moderately spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> <p>5. Hydrologic storage severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill, excessive sediment, or leveling</p> <p><input type="checkbox"/> - closely spaced ditches/tiles present over entire site</p> <p><input type="checkbox"/> - entire site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- no land leveling</p> <p>- land leveling of portion of site</p> <p>- land leveling of portion of site</p> <p>- land leveling of portion of site</p> <p>- land leveling of entire site</p> |
|--|---|

N/A

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☐ > 16 in. (SI = 1.0) ☐ 10 – 16 in. (SI = 0.75) ☒ 5 – 9 in. (SI = 0.5) ☐ 3 – 4 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

N/A

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☐ 8 – 16 (SI = 1.0) ☒ 17 – 50 (SI = 0.75) ☐ > 50 (SI = 0.5) ☐ 3 – 7 (SI = 0.5) ☐ 1 – 2 (SI = 0.25)

N/A



N/A



V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)

☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum.*

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> American elm	<input type="checkbox"/> River birch	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Overcup oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Boxelder	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> Water hickory	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Deciduous holly	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Pin oak	<input type="checkbox"/> Honey locust	<input type="checkbox"/> Red maple	<input type="checkbox"/> Sugarberry	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Black willow	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/>	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Green ash	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/>	1 <input type="checkbox"/> Number native shrub spp.		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Number native herbaceous spp.		

2. Using the checked dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7

0.406

*In some Riverine wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases where this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. ☐

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Tract Size (TRACT)

1. Area (acres) of adjacent wetland and upland forest that is contiguous with the WAA. These values are for western Tennessee are negligible unless greater than the value added section limits for the remainder of the state.

☐ > 7,000 (SI = 1.0)

☐ >200 – 1,000 (SI = 0.5)

☐ < 1 (SI = 0.00)

☐ >1,000 – 7,000 (SI = 0.75)

☒ 1 – 200 (SI = 0.25)

☐ In Eastern or Central Tennessee (SI=1.0)

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-14 (Emergent)

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)

☐ - no fill material or excessive sediment
☐ - no ditches/drainage tiles
 -no alteration to overland runoff, groundwater discharge/recharge

- no roads or other impediments to surface ground water
 - no excavation
2. Hydrology slightly altered (SI = 0.75)

☒ - portion of site with minimal fill or sediment
☐ - portion of site with drainage ditches/tiles
 -some alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow slightly altered
 - minor portion of site excavated
3. Hydrology moderately altered (SI = 0.5)

☐ - portion of site with moderate fill or sediment
☐ - portion of site with drainage ditches/tiles
 - some alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow moderately altered
 - moderate portion of site excavated
4. Hydrology significantly altered (SI = 0.25)

☐ - portion of site with significant fill or sediment
☐ - portion of site with drainage ditches/tiles
 - significant alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow significantly altered
 - significant portion of site excavated
5. Hydrology severely altered (SI = 0.1)

☐ - entire site impacted by fill or excessive sediment
☐ - entire site with numerous drainage ditches/tiles
 - no contributions to or from overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow completely blocked
 - entire wetland affected

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 5.0
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 60.0
 C = Percentage low density residential, construction, or similar 25.0
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar 10.0

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.6260}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

☐ ≥ 15 in. (SI = 1.0) ☐ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

☐ 5 – 10 (SI = 1.0) ☐ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

**V5: Shrub Cover (SCOV)**

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

**V6: Ground Vegetation Cover (GVC)**

1. Average percent cover of ground vegetation per 30-ft. radius plot

☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)
☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0
- ☐ b) if average buffer is 98 ft to 491 ft., multiply by 0.66
- ☒ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33
- ☐ d) if average buffer width is < 33 ft., multiply by 0.1

3. This value is the SI for V9 = 0.248.**VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)****SUBINDEX VALUES:**V1 0.75 (HYDRO) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.248 (BUFFER)V2 0.626 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-14 (Scrub-Shrub)

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

- | | |
|--|--|
| <p>1. Hydrology not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p>-no alteration to overland runoff, groundwater discharge/recharge</p> | <p>- no roads or other impediments to surface ground water</p> <p>- no excavation</p> |
| <p>2. Hydrology slightly altered (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site with minimal fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>-some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow slightly altered</p> <p>- minor portion of site excavated</p> |
| <p>3. Hydrology moderately altered (SI = 0.5)</p> <p><input type="checkbox"/> - portion of site with moderate fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow moderately altered</p> <p>- moderate portion of site excavated</p> |
| <p>4. Hydrology significantly altered (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site with significant fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- significant alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow significantly altered</p> <p>- significant portion of site excavated</p> |
| <p>5. Hydrology severely altered (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - entire site with numerous drainage ditches/tiles</p> <p>- no contributions to or from overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow completely blocked</p> <p>- entire wetland affected</p> |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 5.0
- B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 60.0
- C = Percentage low density residential, construction, or similar 25.0
- D = Percentage high density residential, or similar _____
- E = Percentage urban, commercial, industrial, or similar 10.0

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.6260}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☐ ≥ 15 in. (SI = 1.0) ☐ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☐ 5 – 10 (SI = 1.0) ☐ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☒ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	1 _____ Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	_____ Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= _____

0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0☐ b) if average buffer is 98 ft to 491 ft., multiply by 0.66☒ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33☐ d) if average buffer width is < 33 ft., multiply by 0.13. This value is the SI for V9 = 0.248.**VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)****SUBINDEX VALUES:**V1 0.75 (HYDRO) V3 _____ (TSIZE) V5 1 (SCOV) V7 0.406 (COMP) V9 0.248 (BUFFER)V2 0.626 (WSHEDINT) V4 _____ (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-14 (Riverine)

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-14 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores		0.866
	Function: Hydrologic Regime	
		0.839
	Function: Biogeochemical Processes	
		0.808
	Function: Retain Particulates	
		0.657
	Function: Plant Community	
Quantitative Rating scores		0.555
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	74.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	74.5

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-14 (Emergent)

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-14 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores	Function: Hydrologic Regime	0.685
	Function: Biogeochemical Processes	0.524
	Function: Retain Particulates	N/A
	Function: Plant Community	0.232
	Function: Wildlife Community	0.260
	Quantitative Score (Average of FCIs x 100)	42.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	42.5

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-14 (Scrub-Shrub)

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-14 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores	Function: Hydrologic Regime	0.685
	Function: Biogeochemical Processes	0.676
	Function: Retain Particulates	N/A
	Function: Plant Community	0.349
	Function: Wildlife Community	0.390
	Quantitative Score (Average of FCIs x 100)	52.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	52.5

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: <u>Rowe Creek</u>		Date/Time: <u>05-19-2021</u>
Assessors/Affiliation: <u>MW (#1079-TN11), NV</u>		Project ID : <u>PIN101886.02 (TDOT)</u> <u>172678144</u>
Site Name/Description: <u>Henry Co SR-54 from Smith Rd to Near Howard Rd</u>		
Site Location: <u>STR-11</u>		
HUC (12 digit): <u>080102020102</u>		Lat/Long: <u>36.387670</u> °N
Previous Rainfall (7-days) : <u>0.3</u>		<u>-88.333625</u> °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : <u>16.1 acres</u>	County: <u>Henry</u>	
Soil Type(s) / Geology : <u>Cn-Chenneby silt loam, 0-2% slopes, occasionally flooded</u>		Source: <u>NRCS</u>
Surrounding Land Use : <u>Forested wetland</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 0

Justification / Notes :

Feature drains wetland area dominated by water lotus

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 0)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 0)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021					
1-Station: from plans	N/A									
2-Map label and name	STR-11									
3-Latitude/Longitude	36.387680, -88.333593									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	n/a									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	20 inches			-top of bank width			30 inches			
-width at ordinary high water mark	25 inches									
-bank height	LDB - 16 inches				RDB - 16 inches					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: <i>Alnus serrulata</i> , <i>Impatiens capensis</i>									
----- (LDB / RDB) -----	RDB: <i>Impatiens capensis</i> , <i>Glyceria striata</i>									
-date of PJD request										
5-photo numbers	136 - 141									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Small incised channel draining a ponded area within wetland WTL-14. Feature drains into STR-12 (Rowe Creek)									
Substrate	Silt & Clay									

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-19-2021	
1-Station: from plans		N/A							
2-Map label and name		STR-12 (Rowe Creek)							
3-Latitude/Longitude		36.387699, -88.333855							
4-Feature description:									
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>	
-HD score (if applicable)		n/a							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		20 ft				-top of bank width		30 ft	
-width at ordinary high water mark		25 ft							
-bank height		LDB - 3 ft				RDB - 3 ft			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Betula nigra, Acer negundo, Salix nigra							
----- (LDB / RDB) -----		RDB: Betula nigra, Acer negundo, Salix nigra, Platanus occidentalis							
-date of PJD request									
5-photo numbers		142 - 145							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input checked="" type="checkbox"/>		no <input type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Large perennial channel - no HD required							
Substrate		Sand							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: <u>Rowe Creek</u>		Date/Time: <u>05-19-2021 0930 hrs</u>
Assessors/Affiliation: <u>MW (#1079-TN11), NV</u>		Project ID : <u>PIN101886.02 (TDOT)</u> <u>172678144</u>
Site Name/Description: <u>Henry Co SR-54 from Smith Rd to Near Howard Rd</u>		
Site Location: <u>STR-13</u>		
HUC (12 digit): <u>080102020102</u>		Lat/Long: <u>36.388000</u> °N
Previous Rainfall (7-days) : <u>0.3 inches</u>		<u>-88.333409</u> °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : <u>18.9 acres</u>	County: <u>Henry</u>	
Soil Type(s) / Geology : <u>Cn - Chenneby silt loam, 0-2% slopes, occasionally flooded</u>		Source: <u>NRCS</u>
Surrounding Land Use : <u>Forested wetland</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 0

Justification / Notes :

Feature drains open water area within wetland

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 0)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 0)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021					
1-Station: from plans	N/A									
2-Map label and name	STR-13									
3-Latitude/Longitude	36.388026, -88.333393									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	n/a									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input checked="" type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	20 inches			-top of bank width			3 ft			
-width at ordinary high water mark	25 inches									
-bank height	LDB - 2 ft				RDB - 2 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Betula nigra, Acer negundo, Salix nigra									
----- (LDB / RDB) -----	RDB: Betula nigra, Acer negundo, Salix nigra									
-date of PJD request										
5-photo numbers	146 - 149									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature drains open water area within WTL-14 and flows into STR-12 (Rowe Creek)									
Substrate	Sand and silt									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: <u>Rowe Creek</u>		Date/Time: <u>05-19-2021</u>
Assessors/Affiliation: <u>MW (#1079-TN11), NV</u>		Project ID : <u>PIN101886.02 (TDOT)</u> <u>172678144</u>
Site Name/Description: <u>Henry Co SR-54 from Smith Rd to Near Howard Rd</u>		
Site Location: <u>STR-14</u>		
HUC (12 digit): <u>080102020102</u>		Lat/Long: <u>36.388034</u> °N
Previous Rainfall (7-days) : <u>0.3 inches</u>		<u>-88.333545</u> °W
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : <u>7.7 acres</u>	County: <u>Henry</u>	
Soil Type(s) / Geology : <u>Cn - Chenneby silt loam, 0-2% slopes, occasionally flooded</u>		Source: <u>NRCS</u>
Surrounding Land Use : <u>Wetland and roadway</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 22.5

Justification / Notes :

Feature is located in roadside channel and drains adjacent wetland area

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

☒

C. Biology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 22.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Strong B&B throughout
Predominantly run habitat with few riffles
Little evidence of sorting except in upper reach
Headcut = 2 small ones / Grade control = 1 root
No fibrous roots
Strong iron oxidizing bacteria throughout reach

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021					
1-Station: from plans	N/A									
2-Map label and name	STR-14									
3-Latitude/Longitude	36.388028, -88.333549									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	22.5									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input checked="" type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	16 inches			-top of bank width			4 ft			
-width at ordinary high water mark	24 inches									
-bank height	LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Alnus serrulata, Acer rubrum, Betula nigra									
----- (LDB / RDB) -----	RDB: Acer rubrum, Acer negundo, Ulmus americana									
-date of PJD request										
5-photo numbers	150 - 151									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature located in roadside ditch; drains wetland area and flows into STR-13.									
Substrate	Silt									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-15-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3%
 Subregion (LRR or MLRA): LRR P Lat: 36.388004 Long: -88.333938 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silt loam, 0-2% slopes. occasionally flooded NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 15 is a scrub shrub wetland on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-15-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Salix nigra</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. <u>Acer rubrum</u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>95</u></td> <td>x 1 = <u>95</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>110</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.1</u>	Total % Cover of:	Multiply by:	OBL species <u>95</u>	x 1 = <u>95</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>110</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>95</u>	x 1 = <u>95</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>5</u>	x 3 = <u>15</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100</u> (A)	<u>110</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Rosa palustris</u>	<u>20</u>	<input checked="" type="checkbox"/>	OBL															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Leersia oryzoides</u>	<u>60</u>	<input checked="" type="checkbox"/>	OBL															
2. <u>Sagittaria sp.</u>	<u>10</u>	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-15-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/2	95	7.5YR 3/4	5	C	PL	Sandy loam	
8-18	10YR 5/2	95	7.5YR 3/4	5	C	M	Sandy Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-15-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 20
 Subregion (LRR or MLRA): LRR P Lat: 36.387983 Long: -88.333921 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silt loam, 0-2% slopes. occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-15. Fill slope for field access road.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-15-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>35</u></td> <td>x 3 = <u>105</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>205</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.4</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>35</u>	x 3 = <u>105</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>60</u> (A)	<u>205</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>35</u>	x 3 = <u>105</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>60</u> (A)	<u>205</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. <u>Acer rubrum</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC															
2. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
11. _____	_____	_____	NA															
15.0 = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Securigera varia</u>	<u>15</u>	<input checked="" type="checkbox"/>	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
2. <u>Galium aparine</u>	<u>25</u>	<input checked="" type="checkbox"/>	FACU															
3. <u>Chaerophyllum tainturieri</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
60.0 = Total Cover 50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
5. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-15-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/3	100						Gravel fill material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel fill

Depth (inches): 6

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-15

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

- | | |
|--|--|
| <p>1. Hydrology not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p>-no alteration to overland runoff, groundwater discharge/recharge</p> | <p>- no roads or other impediments to surface ground water</p> <p>- no excavation</p> |
| <p>2. Hydrology slightly altered (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site with minimal fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>-some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow slightly altered</p> <p>- minor portion of site excavated</p> |
| <p>3. Hydrology moderately altered (SI = 0.5)</p> <p><input type="checkbox"/> - portion of site with moderate fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- some alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow moderately altered</p> <p>- moderate portion of site excavated</p> |
| <p>4. Hydrology significantly altered (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site with significant fill or sediment</p> <p><input type="checkbox"/> - portion of site with drainage ditches/tiles</p> <p>- significant alteration to overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow significantly altered</p> <p>- significant portion of site excavated</p> |
| <p>5. Hydrology severely altered (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - entire site with numerous drainage ditches/tiles</p> <p>- no contributions to or from overland runoff, groundwater discharge/recharge</p> | <p>- roads or other impediments, water flow completely blocked</p> <p>- entire wetland affected</p> |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 35.0
- B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 45.0
- C = Percentage low density residential, construction, or similar 15.0
- D = Percentage high density residential, or similar
- E = Percentage urban, commercial, industrial, or similar 5.0

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.7630}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- ☐ ≥ 15 in. (SI = 1.0) ☐ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- ☐ 5 – 10 (SI = 1.0) ☐ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☒ < 20, go to V6

NA

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	1 _____ Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	_____ Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= _____

0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0☐ b) if average buffer is 98 ft to 491 ft., multiply by 0.66☒ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33☐ d) if average buffer width is < 33 ft., multiply by 0.13. This value is the SI for V9 = 0.248.**VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)****SUBINDEX VALUES:**V1 0.75 (HYDRO) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.248 (BUFFER)V2 0.763 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-15

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-15 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores		0.756
	Function: Hydrologic Regime	
		0.55
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.240
	Function: Plant Community	
Quantitative Rating scores		0.268
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	45.4
		0
	Value Added (Significant Size) Total	
Total of Quantitative and Value Added Scores	TOTAL SCORE	45.4

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-16-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 5
 Subregion (LRR or MLRA): LRR P Lat: 36.389384 Long: -88.333791 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silty loam, 0-2% slopes, occasionally flooded NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 16 is an emergent wetland in a cow pasture on the west side of SR-54. It is a hill slope wetland that drains into roadside ditch.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-16-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>8</u></td> <td>x 3 = <u>24</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>28</u> (A)</td> <td><u>44</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.6</u>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>8</u>	x 3 = <u>24</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>28</u> (A)	<u>44</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>20</u>	x 1 = <u>20</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>8</u>	x 3 = <u>24</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>28</u> (A)	<u>44</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Liquidambar styraciflua</u>	<u>3</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Acer rubrum</u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Cephalanthus occidentalis</u>	<u>5</u>	<input checked="" type="checkbox"/>	OBL															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>13.0</u> = Total Cover 50% of total cover: <u>6.5</u> 20% of total cover: <u>2.6</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Carex lurida</u>	<u>10</u>	<input checked="" type="checkbox"/>	OBL															
2. <u>Leersia oryzoides</u>	<u>5</u>	<input checked="" type="checkbox"/>	OBL															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>15.0</u> = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-16-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/3	95	5YR 3/4	5	C	PL	Silty clay	
2-18	10YR 4/1	90	5YR 4/6	10	C	M	Sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-16-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Fill slope Local relief (concave, convex, none): Convex Slope (%): 15
 Subregion (LRR or MLRA): LRR P Lat: 36.389373 Long: -88.333749 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silty loam, 0-2% slopes, occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Remarks: Upland point associated with WTL-16. Roadway fill slope, vegetation recently mowed.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-16-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>45</u></td> <td>(A) <u>160</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.6</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>45</u>	(A) <u>160</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>20</u>	x 3 = <u>60</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>45</u>	(A) <u>160</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Plantago lanceolata</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU															
3. <u>Trifolium campestre</u>	<u>10</u>	_____	NA															
4. <u>Lolium perenne</u>	<u>10</u>	_____	FACU															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>55.0</u> = Total Cover 50% of total cover: <u>27.5</u> 20% of total cover: <u>11.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		
Vegetation problematic due to mowing.																		

SOIL

Sampling Point: WTL-16-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/3	100					Loam	
6-18	10YR 5/4	97	10YR 6/8	3	C	M	Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SLOPE WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-16

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)

☐ - no fill material or excessive sediment
☐ - no ditches/drainage tiles
 -no alteration to overland runoff, groundwater discharge/recharge

- no roads or other impediments to surface ground water
 - no excavation
2. Hydrology slightly altered (SI = 0.75)

☒ - portion of site with minimal fill or sediment
☐ - portion of site with drainage ditches/tiles
 -some alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow slightly altered
 - minor portion of site excavated
3. Hydrology moderately altered (SI = 0.5)

☐ - portion of site with moderate fill or sediment
☐ - portion of site with drainage ditches/tiles
 - some alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow moderately altered
 - moderate portion of site excavated
4. Hydrology significantly altered (SI = 0.25)

☐ - portion of site with significant fill or sediment
☐ - portion of site with drainage ditches/tiles
 - significant alteration to overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow significantly altered
 - significant portion of site excavated
5. Hydrology severely altered (SI = 0.1)

☐ - entire site impacted by fill or excessive sediment
☐ - entire site with numerous drainage ditches/tiles
 - no contributions to or from overland runoff, groundwater discharge/recharge

- roads or other impediments, water flow completely blocked
 - entire wetland affected

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 20.0
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 55.0
 C = Percentage low density residential, construction, or similar 20.0
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar 5.0

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.7130}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

☐ ≥ 15 in. (SI = 1.0) ☐ 10 – 14 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

☐ 5 – 10 (SI = 1.0) ☐ 11 – 15 (SI = 0.75) ☐ > 15 (SI = 0.5) ☐ 1 – 4 (SI = 0.5)

NA

**V5: Shrub Cover (SCOV)**

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ > 20 (SI = 1.0) ☐ < 20, go to V6

NA

**V6: Ground Vegetation Cover (GVC)**

1. Average percent cover of ground vegetation per 30-ft. radius plot

☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI = 0.0)**V7: Vegetation Composition and Diversity (COMP)**

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= _____

0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 0 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. _____

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0☐ b) if average buffer is 98 ft to 491 ft., multiply by 0.66☐ c) if average buffer width is 33 ft to 97 ft., multiply by 0.33☒ d) if average buffer width is < 33 ft., multiply by 0.13. This value is the SI for V9 = 0.05.**VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)****SUBINDEX VALUES:**V1 0.75 (HYDRO) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.05 (BUFFER)V2 0.713 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	Yes	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-16

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: WTL-16 is hydrologically connected to Rowe Creek, which is considered an ETW based on presence of state threatened Halberd-leaf Tearthumb.	
Quantitative Rating scores		0.756
	Function: Hydrologic Regime	
		0.55
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.240
	Function: Plant Community	
Quantitative Rating scores		0.268
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	45.4
		0
	Value Added (Significant Size) Total	
Total of Quantitative and Value Added Scores	TOTAL SCORE	45.4

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-17-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Excavated swale Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.390140 Long: 88.333196 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silt loam, 0-2% slopes. occasionally flooded NWI classification: PEM/PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Feature located in what appears to be an excavated swale.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-17-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>130</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.9</u>	Total % Cover of:	Multiply by:	OBL species <u>40</u>	x 1 = <u>40</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>130</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>40</u>	x 1 = <u>40</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>30</u>	x 3 = <u>90</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>130</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Acer rubrum</u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>30.0</u> = Total Cover 50% of total cover: <u>15.0</u> 20% of total cover: <u>6.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Carex lurida</u>	<u>25</u>	<input checked="" type="checkbox"/>	OBL															
2. <u>Juncus effusus</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-17-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-1	10YR 3/2	95	5YR 3/4	5	C	M	Sandy loam
1-6	10YR 5/2	70	5YR 4/6	30	C	M	Refusal at 6" - gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 6

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-17-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.390107 Long: -88.333209 Datum: NAD83 TN
 Soil Map Unit Name: Cn - Chenneby silt loam, 0-2% slopes. occasionally flooded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-17.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

Sampling Point: WTL-17-UPL

Tree Stratum (Plot size: 30 ft)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Juniperus virginiana</i>	30	✓	FACU
2.				NA
3.				NA
4.				NA
5.				NA
6.				NA
7.				NA
		30.0	= Total Cover	
		50% of total cover: 15.0	20% of total cover: 6.0	
Sapling/Shrub Stratum (Plot size: 15 ft)				
1.				NA
2.				NA
3.				NA
4.				NA
5.				NA
6.				NA
7.				NA
8.				NA
9.				NA
		0.0	= Total Cover	
		50% of total cover: 0.0	20% of total cover: 0.0	
Herb Stratum (Plot size: 5 ft)				
1.	<i>Toxicodendron radicans</i>	15	✓	FAC
2.				NA
3.				NA
4.				NA
5.				NA
6.				NA
7.				NA
8.				NA
9.				NA
10.				NA
11.				NA
		15.0	= Total Cover	
		50% of total cover: 7.5	20% of total cover: 3.0	
Woody Vine Stratum (Plot size: 15 ft)				
1.	<i>Smilax rotundifolia</i>	35	✓	FAC
2.				NA
3.				NA
4.				NA
5.				NA
		35.0	= Total Cover	
		50% of total cover: 17.5	20% of total cover: 7.0	

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 = 0
FACW species 0	x 2 = 0
FAC species 50	x 3 = 150
FACU species 30	x 4 = 120
UPL species 0	x 5 = 0
Column Totals: 80 (A)	270 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

SOIL

Sampling Point: WTL-17-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/2	100					Sandy loam	
2-10	10YR 4/6	100					Sandy loam	Refusal at 10" - tree roots

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)****Indicators for Problematic Hydric Soils³:**

- | | | |
|---|--|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input checked="" type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|--|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: RootsDepth (inches): 10Hydric Soil Present? Yes ☐ No ☒

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 05-20-2021 1035 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-24		
HUC (12 digit): 080102020102		Lat/Long: 36.390788 °N
Previous Rainfall (7-days) : 0.3 inches		-88.334103 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 48.8 acres	County: Henry	
Soil Type(s) / Geology : Cn - Chenneby silt loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Low density residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [17.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	✓	2	3
3. In-channel structure: riffle-pool sequences	0	1	✓	3
4. Sorting of soil textures or other substrate	0	✓	2	3
5. Active/relic floodplain	0	0.5	✓	1.5
6. Depositional bars or benches	0	1	✓	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	✓	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	✓	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	✓	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 3.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	✓	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	✓	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	✓
21. Rooted plants in thalweg ¹	3	✓	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 17.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

No water, No flow
 Good B&B in upper reach but loses form down gradient
 Habitat dominated by run with some riffles
 Feature appears to occasional overbank
 Recent sand deposition throughout
 Headcut = 1 small / Grade control = none
 Sediment present throughout most of reach
 Debris piles present, no wrack lines
 Fibrous roots present throughout reach
 Upland plants present in portions of reach - Viola sp
 Wetland plants present in portions of reach - Persicaria, Carex,

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-20-2021					
1-Station: from plans	N/A									
2-Map label and name	WWC-24									
3-Latitude/Longitude	36.390848, -88.334164									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	17.25									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	4 ft			-top of bank width			7 ft			
-width at ordinary high water mark	5 ft									
-bank height	LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Liquidambar styraciflua, Acer negundo, Platanus occidentalis, Ulmus americana									
----- (LDB / RDB) -----	RDB: Liquidambar styraciflua, Acer negundo, Platanus occidentalis, Ulmus americana									
-date of PJD request										
5-photo numbers	159 - 162									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Well defined channel with strong bed & bank in upper reach, but feature loses form shortly after entering project area, no defined channel at down gradient end of feature									
Substrate	Silt, sand and some gravel									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: <u>Rowe Creek</u>		Date/Time: <u>05/20/2021 1145 hrs</u>
Assessors/Affiliation: <u>MW (#1079-TN11), NV</u>		Project ID : <u>PIN101886.02 (TDOT)</u> <u>172678144</u>
Site Name/Description: <u>Henry Co SR-54 from Smith Rd to Near Howard Rd</u>		
Site Location: <u>STR-15</u>		
HUC (12 digit): <u>080102020102</u>		Lat/Long: <u>36.393915</u> °N
Previous Rainfall (7-days) : <u>0.3 inches</u>		<u>-88.333373</u> °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : <u>63.8 acres</u>	County: <u>Henry</u>	
Soil Type(s) / Geology : <u>lk - Luka Loam, 0-2% slopes, occasionally flooded</u>		Source: <u>NRCS</u>
Surrounding Land Use : <u>Agricultural and forested</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 28.5

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 12.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	✓ 1	2	3
3. In-channel structure: riffle-pool sequences	0	1	✓ 2	3
4. Sorting of soil textures or other substrate	0	1	2	✓ 3
5. Active/relic floodplain	0	✓ 0.5	1	1.5
6. Depositional bars or benches	0	1	2	✓ 3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	✓ 1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	✓ 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 7.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	✓ 2	3
15. Water in channel and >48 hours since sig. rain	0	1	✓ 2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	✓ 1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	✓ 1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	✓ 3	2	1	0
21. Rooted plants in thalweg ¹	✓ 3	2	1	0
22. Crayfish in stream (exclude in floodplain)	✓ 0	1	2	3
23. Bivalves/mussels	✓ 0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	✓ 0	1	2	3
26. Filamentous algae; periphyton	0	1	✓ 2	3
27. Iron oxidizing bacteria/fungus	✓ 0	0.5	1	1.5
28. Wetland plants in channel bed ²	✓ 0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 28.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Flow present
 Strong B&B
 Minimal fresh alluvium deposition on bars and benches, which are present throughout. Some area have silt substrate
 No fibrous roots
 Headcut = none / Grade control = 1 (culvert)
 One frog observed
 Periphyton present throughout

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05/20/2021					
1-Station: from plans	N/A									
2-Map label and name	STR-15									
3-Latitude/Longitude	36.393766, -88.333195									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	28.5									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	3 ft			-top of bank width			6 ft			
-width at ordinary high water mark	4 ft									
-bank height	LDB - 2 ft				RDB - 3 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Liriodendron tulipifera, Quercus alba, Pueraria montana									
----- (LDB /RDB) -----	RDB: Liriodendron tulipifera, Quercus alba, Pueraria montana, Rosa multiflora									
-date of PJD request										
5-photo numbers	163 - 166									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes										
Substrate	Silt and gravel									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 05-20-2021 1200 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-25		
HUC (12 digit): 080102020102		Lat/Long: 36.394444 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333737 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 6.6 acres	County: Henry	
Soil Type(s) / Geology : LeD2 - Lexington silt loam, 8-12% slopes, eroded		Source: NRCS
Surrounding Land Use : Roadway and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [16.75](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 16.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Roadside ditch that conveys flow from adjacent woods and roadway
 Good B&B
 Predominantly run habitat
 Some new alluvium in channel bottom
 Headcut = 1 small. / Grade control = 1 (riprap)
 Few fibrous roots in channel
 Few benches in lower reach

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021					
1-Station: from plans	N/A									
2-Map label and name	WWC-25									
3-Latitude/Longitude	36.394499, -88.333738									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	16.75									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	12 inches			-top of bank width			30 inches			
-width at ordinary high water mark	18 inches									
-bank height	LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Sorghum halepense, Pueraria montana									
----- (LDB / RDB) -----	RDB: Sorghum halepense, Pueraria montana									
-date of PJD request										
5-photo numbers	167 - 168									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Roadway drainage ditch that also receives runoff from forested area; flows into STR-15.									
Substrate	Silt, sand and gravel									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 5/18/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-26		
HUC (12 digit): 08010202102		Lat/Long: 36.399656 °N
Previous Rainfall (7-days) : 0 inches		-88.333232 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 22.4 acres		County: Henry
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Forested/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [10](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 10

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/18/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-26							
3-Latitude/Longitude		36.399656, -88.333232							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		10							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		3 ft				-top of bank width		4 ft	
-width at ordinary high water mark		2 ft							
-bank height		LDB - 3 ft				RDB - 3 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Parthenocissus quinquefolia, T. radicans, Pueraria montana, Platanus occidentalis							
----- (LDB /RDB) -----		RDB: Parthenocissus quinquefolia, T. radicans, Pueraria montana, Platanus occidentalis							
-date of PJD request									
5-photo numbers		169 - 172							
6-HUC -8 Code & Name		08010202				North Obion Fork River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Upstream portion west of the road is significantly smaller than the downstream portion.							
Substrate		Sandy clay/gravel and cobble							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-27		
HUC (12 digit): 08010202102		Lat/Long: 36.400737 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333017 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 7.5 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [9.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 3.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Begins at small headcut with no water. Leaves present in the channel. Water pooled in four small puddles. Sediment bottom with no obvious sorting. Flows into a culvert under the road.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021			
1-Station: from plans		N/A									
2-Map label and name		WWC-27									
3-Latitude/Longitude		36.400737, -88.333017									
4-Feature description:											
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>			
-HD score (if applicable)		11									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		2 ft			
-width at ordinary high water mark		6 in									
-bank height		LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?		No									
-dominant riparian species: ----- (LDB / RDB) -----		LDB: Sambucus nigra, P. quinquefolia, Persicaria virginiana, L. japonica, T. radicans									
		RDB: Sambucus nigra, P. quinquefolia, Persicaria virginiana, L. japonica, T. radicans									
-date of PJD request											
5-photo numbers		173 - 174									
6-HUC -8 Code & Name		08010202				North Fork Obion River					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes											
Substrate											
		Clay									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-28		
HUC (12 digit): 08010202102		Lat/Long: 36.400791 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332970 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.3 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [4.25](#)

Justification / Notes :

[Small channel draining to WWC-27.](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 0.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 4.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Poorly defined bed and bank for part of channel, vegetation in thalweg and leaves.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-28							
3-Latitude/Longitude		36.400791, -88.332970							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		4.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		1.5 ft	
-width at ordinary high water mark		6 in							
-bank height		LDB - 6 in				RDB - 6 in			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: <i>P. quinquefolia</i> , <i>Persicaria virginiana</i> , <i>Lonicera japonica</i> , <i>T. radicans</i> , <i>Cornus</i> sp.							
----- (LDB / RDB) -----		RDB: <i>P. quinquefolia</i> , <i>Persicaria virginiana</i> , <i>Lonicera japonica</i> , <i>T. radicans</i> , <i>Cornus</i> sp.							
-date of PJD request									
5-photo numbers		175 - 176							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Drains to WWC-27							
Substrate		silt							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-18-WET
 Investigator(s): MW, ZB, KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Valley Bottom Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.40292 Long: -88.333708 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-18 is an emergent wetland in a farmed pasture on the west side of SR-54. No flagging due to cattle.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-18-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>65</u></td> <td>x 3 = <u>195</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>75</u> (A)</td> <td><u>220</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.9</u>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>65</u>	x 3 = <u>195</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>75</u> (A)	<u>220</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>5</u>	x 1 = <u>5</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>65</u>	x 3 = <u>195</u>																	
FACU species <u>5</u>	x 4 = <u>20</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>75</u> (A)	<u>220</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Ranunculus bulbosus</u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Carex sp.</u>	<u>10</u>	_____	NA															
3. <u>Veronica peregrina</u>	<u>5</u>	_____	FAC															
4. <u>Poa annua</u>	<u>5</u>	_____	FACU															
5. <u>Persicaria sp.</u>	<u>10</u>	_____	NA															
6. <u>Packera glabella</u>	<u>5</u>	_____	OBL															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-18-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 5/1	95	5YR 5/8	5	C	PL/M	Silty clay loam	
12-16	10YR 4/1	95	5YR 5/8	5	C	M	Clay loam	
16-18	10YR 6/1	95	7.5YR 5/8	5	C	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-18-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.40281 Long: -88.333657 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-18.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-18-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>210</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.2</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>65</u> (A)	<u>210</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>50</u>	x 3 = <u>150</u>																	
FACU species <u>15</u>	x 4 = <u>60</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>65</u> (A)	<u>210</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Ranunculus bulbosus</u>	<u>10</u>	_____	FAC															
2. <u>Schedonorus arundinaceus</u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Trifolium repens</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
<u>65.0</u> = Total Cover 50% of total cover: <u>32.5</u> 20% of total cover: <u>13.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-18-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/3	100					Loam	
6-18	10YR 4/2	50					Sandy loam	
	5 YR 4/6	50					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-18

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces ⁵ _____
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar ⁹⁵ _____
 C = Percentage low density residential, construction, or similar _____
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar _____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.7625}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☒ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☒ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☒ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.01 (BUFFER)

V2 0.7625 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-18

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.873
	Function: Hydrologic Regime	
		0.591
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.253
	Function: Plant Community	
	0.254	
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	49.3
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	49.3

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-29		
HUC (12 digit): 08010202102		Lat/Long: 36.403250 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333074 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 19.3 acres	County: Henry	
Soil Type(s) / Geology : SgD3 - Smithdale-Lexington complex, 8-12% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [16.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.25)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 16.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Majority of channel inaccessible due to livestock. Assessed from the fence line.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-29							
3-Latitude/Longitude		36.403250, -88.333074							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		16.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		3 ft				-top of bank width		6 ft	
-width at ordinary high water mark		2 ft							
-bank height		LDB - 3 ft				RDB - 3 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Quercus falcata, Ranunculus sp.							
----- (LDB / RDB) -----		RDB: Quercus falcata, Ranunculus sp.							
-date of PJD request									
5-photo numbers		179 - 180							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Majority of channel inaccessible due to livestock. Assessed from the fence line.							
Substrate		Clay							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-30		
HUC (12 digit): 08010202102		Lat/Long: 36.405360 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333463 °W
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 11.9 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [13.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 13.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel begins as riprap lined channel on the roadside then has a silt/sediment substrate after a headcut. Turns and runs along fence line of cow pasture. One pool with no flow. Some sorting throughout

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-30							
3-Latitude/Longitude		36.405360, -88.333463							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		4.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1.5 ft				-top of bank width		2.5 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 2 ft				RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Acer rubrum, Gleditsia triacanthos							
----- (LDB /RDB) -----		RDB: Trifolium campestre, Schedonorus arundinaceus							
-date of PJD request									
5-photo numbers		181 - 184							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Channel begins as a riprap lined channel on the roadside then has a silt/sediment substrate after a headcut. It then turns and runs along a fence line of a cow pasture.							
Substrate		Riprap/silt							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: _____
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-19-WET
 Investigator(s): MW, ZB, KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Valley Bottom Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.405038 Long: -88.333681 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-19 is an emergent wetland in a farmed pasture on the west side of SR-54. No flagging due to cattle.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-19-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>85</u> (A)</td> <td><u>250</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.9</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>85</u> (A)	<u>250</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>5</u>	x 2 = <u>10</u>																	
FAC species <u>80</u>	x 3 = <u>240</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>85</u> (A)	<u>250</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Ranunculus bulbosus</u>	<u>70</u>	<u>✓</u>	FAC															
2. <u>Carex sp.</u>	<u>5</u>	_____	NA															
3. <u>Carex vulpinoidea</u>	<u>5</u>	_____	FACW	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
4. <u>Alopecurus pratensis</u>	<u>10</u>	_____	FAC															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-19-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-5	10YR 5/1	95	5YR 5/8	5	C	PL/M	Silty clay loam	
5-18	7.5YR 4/6	100					Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-19-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.404964 Long: -88.333556 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-19.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-19-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>55</u></td> <td>x 3 = <u>165</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>265</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>55</u>	x 3 = <u>165</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>80</u> (A)	<u>265</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>55</u>	x 3 = <u>165</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>80</u> (A)	<u>265</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Ranunculus bulbosus</u>	<u>5</u>	_____	FAC															
2. <u>Schedonorus arundinaceus</u>	<u>40</u>	<u>✓</u>	FAC															
3. <u>Trifolium repens</u>	<u>20</u>	<u>✓</u>	FACU	Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
4. <u>Poa annua</u>	<u>5</u>	_____	FACU															
5. <u>Juncus tenuis</u>	<u>10</u>	_____	FAC															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
<u>80.0</u> = Total Cover 50% of total cover: <u>40.0</u> 20% of total cover: <u>16.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-19-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	7.5YR 4/4	100					Sandy loam	
4-18	5YR 4/6	100					Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-19

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces _____
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar ⁹⁰_____
 C = Percentage low density residential, construction, or similar _____
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar ¹⁰_____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.676}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1) _____
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☒ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.01 (BUFFER)

V2 0.676 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-19

Exceptional Status Wetlands	Check if applicable	
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.822
	Function: Biogeochemical Processes	0.573
	Function: Retain Particulates	N/A
	Function: Plant Community	0.248
	Function: Wildlife Community	0.249
	Quantitative Score (Average of FCIs x 100)	47.3
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	TOTAL SCORE

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Rowe Creek		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-31		
HUC (12 digit): 08010202102		Lat/Long: 36.407853 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332887 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 9.7 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **14.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Poorly defined for downstream portion, defined upstream. One small puddle, grade control: 4 small woody, 1 headcut.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	ZB, KD		Affiliation:	Stantec		Date:	5/19/2021		
1-Station: from plans	N/A								
2-Map label and name	WWC-31								
3-Latitude/Longitude	36.407853 / -88.332887								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	14.5								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	2 ft				-top of bank width		3 ft		
-width at ordinary high water mark	1.5 ft								
-bank height	LDB - 1.5 ft				RDB - 1.5 ft				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species:	LDB: Microstegium vimineum, Liquidambar styraciflua, P. quinquefolia, Celtis occidentalis								
----- (LDB / RDB) -----	RDB: Microstegium vimineum, Liquidambar styraciflua, P. quinquefolia, Celtis occidentalis								
-date of PJD request									
5-photo numbers	186 - 190								
6-HUC -8 Code & Name	08010202				North Fork Obion River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		<input type="checkbox"/>
	no <input type="checkbox"/>								
10-Notes									
Substrate	sand/silt								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-32		
HUC (12 digit): 08010202102		Lat/Long: 36.409760 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333636 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 3.2 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [6.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 6.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Poorly defined for upstream portion, defined downstream. One root grade control, two headcuts. Upstream portion full of grass and upland veg.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-32							
3-Latitude/Longitude		36.409760, -88.333636							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		6.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1.5 ft				-top of bank width		2 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Prunus serotina, Schedonorus arundinaceus							
----- (LDB / RDB) -----		RDB: Prunus serotina, Schedonorus arundinaceus							
-date of PJD request									
5-photo numbers		191 - 194							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sandy clay							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-20-WET
 Investigator(s): MW, ZB, KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Valley Bottom Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.410715 Long: -88.332809 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-20 is an isolated forested wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Isolated	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-20-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____			NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
2. <i>Celtis laevigata</i>	<u>30</u>	✓	FACW	
3. <i>Acer rubrum</i>	<u>60</u>	✓	FAC	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
4. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0</u> (A/B)
5. _____			NA	
6. _____			NA	Prevalence Index worksheet:
7. _____			NA	
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>				Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>45</u> x 2 = <u>90</u> FAC species <u>80</u> x 3 = <u>240</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>125</u> (A) <u>330</u> (B)
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index = B/A = <u>2.6</u>
1. <i>Celtis laevigata</i>	<u>15</u>	✓	FACW	Hydrophytic Vegetation Indicators:
2. _____			NA	
3. _____			NA	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
4. _____			NA	
5. _____			NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____			NA	
7. _____			NA	Definitions of Four Vegetation Strata:
8. _____			NA	
9. _____			NA	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
10. _____			NA	
11. _____			NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____
<u>15.0</u> = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Smilax rotundifolia</i>	<u>20</u>	✓	FAC	
2. <i>Aster sp.</i>	<u>5</u>	✓	NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
6. _____			NA	
7. _____			NA	
8. _____			NA	
9. _____			NA	
10. _____			NA	
11. _____			NA	
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____			NA	
2. _____			NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-20-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/2	95	5YR 5/6	5	C	M	Clay loam	
4-18	10YR 6/1	90	5YR 5/8	10	C	M	Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-20-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.41066 Long: -88.332913 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-20.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-20-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Quercus falcata</u>	<u>50</u>	<input checked="" type="checkbox"/>	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>Sassafras albidum</u>	<u>15</u>		FACU	
3. <u>Acer rubrum</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Total Number of Dominant Species Across All Strata: <u>7</u> (B)
4. _____	_____		NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>28.6</u> (A/B)
5. _____	_____		NA	
6. _____	_____		NA	
7. _____	_____		NA	
<u>85.0</u> = Total Cover 50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>95</u> x 4 = <u>380</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>125</u> (A) <u>470</u> (B) Prevalence Index = B/A = <u>3.8</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u>Celtis occidentalis</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Prunus serotina</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU	
3. _____	_____		NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
4. _____	_____		NA	
5. _____	_____		NA	
6. _____	_____		NA	
7. _____	_____		NA	
8. _____	_____		NA	
9. _____	_____		NA	
10. _____	_____		NA	
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Persicaria virginiana</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. <u>Parthenocissus quinquefolia</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU	
3. <u>Ligustrum sinense</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU	
4. _____	_____		NA	
5. _____	_____		NA	
6. _____	_____		NA	
7. _____	_____		NA	
8. _____	_____		NA	
9. _____	_____		NA	
10. _____	_____		NA	
11. _____	_____		NA	
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____	_____		NA	
2. _____	_____		NA	
3. _____	_____		NA	
4. _____	_____		NA	
5. _____	_____		NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-20-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/3	100					Sandy loam	
4-18	10YR 5/6	100					Sandy	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-20

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 60

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 20

C = Percentage low density residential, construction, or similar 20

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.85}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☒ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☒ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input checked="" type="checkbox"/> Sugar Berry	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar		<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak		Number native shrub spp. _____		
<input type="checkbox"/>		Number native herbaceous spp. _____		

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☒ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.75

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 1 (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.75 (BUFFER)

V2 0.85 (WSHEDINT) V4 1 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-20

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
COMMENTS/NOTES:		
Quantitative Rating scores	Function: Hydrologic Regime	0.652
	Function: Biogeochemical Processes	0.807
	Function: Retain Particulates	N/A
	Function: Plant Community	0.789
	Function: Wildlife Community	0.779
	Quantitative Score (Average of FCIs x 100)	75.7
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	TOTAL SCORE

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-21-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.410924 Long: -88.333699 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-21 is an emergent wetland in a farmed pasture on the west side of SR-54. No flagging due to COWS.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-21-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species <u>35</u></td> <td>x 3 = <u>105</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>85</u> (A)</td> <td><u>205</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.4</u>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species <u>35</u>	x 3 = <u>105</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>85</u> (A)	<u>205</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>20</u>	x 1 = <u>20</u>																	
FACW species <u>20</u>	x 2 = <u>40</u>																	
FAC species <u>35</u>	x 3 = <u>105</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>85</u> (A)	<u>205</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Carex vulpinoidea</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Juncus effusus</u>	<u>20</u>	<input checked="" type="checkbox"/>	OBL															
3. <u>Juncus tenuis</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
4. <u>Poa annua</u>	<u>10</u>	_____	FACU															
5. <u>Schedonorus arundinaceus</u>	<u>15</u>	_____	FAC															
6. <u>Carex sp.</u>	<u>2</u>	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
87.0 = Total Cover 50% of total cover: <u>43.5</u> 20% of total cover: <u>17.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
0.0 = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-21-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/1	98	5YR 4/6	2	C	M	Clay loam	
3-15	10YR 6/2	85	7.5YR 5/8	15	C	M	Clay	
15-18	10YR 5/8	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-21-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.410931 Long: -88.333597 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-21.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-21-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>7</u></td> <td>x 4 = <u>28</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>57</u> (A)</td> <td><u>178</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.1</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>7</u>	x 4 = <u>28</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>57</u> (A)	<u>178</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>50</u>	x 3 = <u>150</u>																	
FACU species <u>7</u>	x 4 = <u>28</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>57</u> (A)	<u>178</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Trifolium campestre</u>	<u>5</u>	_____	NA															
2. <u>Schedonorus arundinaceus</u>	<u>50</u>	<u>✓</u>	FAC															
3. <u>Geranium maculatum</u>	<u>5</u>	_____	FACU	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
4. <u>Rubus sp.</u>	<u>10</u>	_____	NA															
5. <u>Allium canadense</u>	<u>2</u>	_____	FACU															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
<u>72.0</u> = Total Cover 50% of total cover: <u>36.0</u> 20% of total cover: <u>14.4</u>				1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA	1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-21-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Sandy loam	
4-18	10YR 5/6	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-21

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|-----------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |

2. Wetland depth slightly impacted (SI = 0.75)

- | | | |
|--|--------------------------|--------------------|
| <input checked="" type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |

3. Wetland depth moderately impacted (SI = 0.5)

- | | | |
|--|-------------------------|-----------------------|
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

4. Wetland depth significantly impacted (SI = 0.25)

- | | | |
|---|-------------------------|--------------------------|
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

5. Wetland depth severely impacted (SI = 0.1)

- | | | |
|--|--------------------------|---------------------------|
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces _____

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar ⁹⁵_____

C = Percentage low density residential, construction, or similar _____

D = Percentage high density residential, or similar _____

E = Percentage urban, commercial, industrial, or similar ⁵_____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.713}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1) _____
- ☐ < 20 (SI=0.0)
- ☐

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3 Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.704

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☒ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.704 (COMP) V9 0.01 (BUFFER)

V2 0.713 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-21

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.731
	Function: Biogeochemical Processes	0.541
	Function: Retain Particulates	N/A
	Function: Plant Community	0.271
	Function: Wildlife Community	0.272
	Quantitative Score (Average of FCIs x 100)	45.4
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	45.4

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-33		
HUC (12 digit): 08010202102		Lat/Long: 36.410939 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332645 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.3 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [16.5](#)

Justification / Notes :

[Small channel draining to isolated wetland within a confined valley formed by possibly historically man-made berms.](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 6)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 16.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Bed and bank defined in upper and loses form as the small valley widens. Small amount of flow in upper portion at time of survey. No obvious groundwater connection found. Minor sorting present. All riffle.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-33							
3-Latitude/Longitude		36.410939, -88.332645							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		16.5							
-OHWM indicators		bed & banks <input type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2.5 ft				-top of bank width		3 ft	
-width at ordinary high water mark		1.5 ft							
-bank height		LDB - 3 in				RDB - 3 in			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Smilax rotundifolia, Celtis occidentalis, Parthenocissus quinquefolia							
----- (LDB / RDB) -----		RDB: Smilax rotundifolia, Celtis occidentalis, Parthenocissus quinquefolia							
-date of PJD request									
5-photo numbers		199 - 200							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Small channel draining to isolated wetland within a confined valley formed by possibly historically man-made berms. Small channel draining to isolated wetland within a confined valley formed by possibly historically man-made berms.</p>							
Substrate		Sandy clay and gravel							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-22-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.411871 Long: -88.333065 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-22 is an emergent wetland on the roadside on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Isolated, wetland drains to WWC that drains to PND-03, which is isolated by manmade berm.	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-22-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>65</u></td> <td>x 3 = <u>195</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>195</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>65</u>	x 3 = <u>195</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>65</u> (A)	<u>195</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>65</u>	x 3 = <u>195</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>65</u> (A)	<u>195</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Juncus tenuis</u>	<u>50</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Schedonorus arundinaceus</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Carex sp.</u>	<u>10</u>	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>75.0</u> = Total Cover 50% of total cover: <u>37.5</u> 20% of total cover: <u>15.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.) 																		

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:
Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

 Yes ☒ No ☐

SOIL

Sampling Point: WTL-22-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	95	5YR 4/6	5	C	M/PL	Sandy loam	
8-18	10YR 6/4	98	5YR 5/8	15	C	M	Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-22-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.411813 Long: -88.3331 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-22.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) </div> <div style="width: 50%;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </div> </div>	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-22-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>210</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.5</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>60</u> (A)	<u>210</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>30</u>	x 3 = <u>90</u>																	
FACU species <u>30</u>	x 4 = <u>120</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>60</u> (A)	<u>210</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Trifolium campestre</u>	<u>30</u>	<input checked="" type="checkbox"/>	NA															
2. <u>Schedonorus arundinaceus</u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Plantago lanceolata</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
4. <u>Trifolium repens</u>	<u>10</u>	_____	FACU															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				1. _____ 2. _____ 3. _____ 4. _____ 5. _____														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-22-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/2	100					Sandy loam	
2-4	7.5YR 5/6	100					Sandy	Roadfill

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Roadfill

Depth (inches): 4

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-22

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|--|---|--|
| <input type="checkbox"/> - no fill material or sediment
<input type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered | - no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased | - minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input checked="" type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod | - entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 85
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 15
 C = Percentage low density residential, construction, or similar _____
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar _____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.9625}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input checked="" type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.287

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☒ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.5

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.5 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.287 (COMP) V9 0.5 (BUFFER)

V2 0.9625 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-22

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.694
	Function: Biogeochemical Processes	0.527
	Function: Retain Particulates	N/A
	Function: Plant Community	0.220
	Function: Wildlife Community	0.276
	Quantitative Score (Average of FCIs x 100)	42.9
	Value Added (Significant Size) Total	0
	TOTAL SCORE	42.9
Total of Quantitative and Value Added Scores		

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-34		
HUC (12 digit): 08010202102		Lat/Long: 36.412078 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333003 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.7 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **4.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 4.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Drains WTL-22 to culvert. Poor bed and bank. Small root grade control.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-34							
3-Latitude/Longitude		36.412078, -88.333003							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		4.5							
-OHWM indicators		bed & banks <input type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		2 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 3 in				RDB - 3 in			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: <i>P. quinquefolia</i> , <i>Celtis occidentalis</i> , <i>Lonicera japonica</i> , <i>Toxicodendron radicans</i>							
----- (LDB / RDB) -----		RDB: <i>P. quinquefolia</i> , <i>Celtis occidentalis</i> , <i>Lonicera japonica</i> , <i>Toxicodendron radicans</i>							
-date of PJD request									
5-photo numbers		203 - 204							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Drains WTL22 to culvert which flows west under SR-54.							
Substrate		silt							

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd
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Biologist:	ZB, KD	Affiliation:	Stantec	Date:	5/19/2021
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1-Station: from plans	N/A
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2-Map label and name	PND-03
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3-Latitude/Longitude	36.412171 / -88.333227
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4-Feature description:	Pond
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-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input type="checkbox"/>	wwc <input type="checkbox"/>
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-HD score (if applicable)	
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-OHWM indicators	bed & banks		deposition		presence of litter / debris		scour		veg absent, bent, matted	
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	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
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	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
--	--------------------------	-------------------------------------	---------------------------------	--------------------------	--------------------------------	--------------------------	----------	--------------------------	----------	--------------------------

-channel bottom width		-top of bank width	
-----------------------	--	--------------------	--

-width at ordinary high water mark	
------------------------------------	--

-bank height	LDB -	RDB -
--------------	-------	-------

-riffle/pool complex or other specialized habitat present?	
--	--

-dominant riparian species:	LDB: <i>Schedonorus arundinaceus</i>
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----- (LDB / RDB) -----	RDB: <i>Schedonorus arundinaceus</i>
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-date of PJD request	
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5-photo numbers	205 - 206
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6-HUC -8 Code & Name	08010202	North Fork Obion River
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7-Assessed	yes	<input type="checkbox"/>	no	<input type="checkbox"/>
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8-ETW	yes	<input type="checkbox"/>	no	<input type="checkbox"/>	
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9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>
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	no	<input type="checkbox"/>	
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10-Notes	Approx 0.02 acre.
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10-Notes	Approx 0.02 acre.
Substrate	Silt

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-35		
HUC (12 digit): 08010202102		Lat/Long: 36.412209 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332765 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.7 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **4.25**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.25)	Absent		Weak		Moderate		Strong	
1. Continuous bed and bank	0	✓	1		2		3	
2. Sinuous channel	✓		1		2		3	
3. In-channel structure: riffle-pool sequences	✓		1		2		3	
4. Sorting of soil textures or other substrate	✓		1		2		3	
5. Active/relic floodplain	✓		0.5		1		1.5	
6. Depositional bars or benches	✓		1		2		3	
7. Braided channel	✓		1		2		3	
8. Recent alluvial deposits	✓		0.5		1		1.5	
9. Natural levees	✓		1		2		3	
10. Headcuts	✓		1		2		3	
11. Grade controls	0	✓	0.5		1		1.5	
12. Natural valley or drainageway	0		0.5		1		1.5	✓
13. At least second order channel on existing USGS or NRCS map	No✓ = 0				Yes = 3			

B. Hydrology (Subtotal = 2)	Absent		Weak		Moderate		Strong	
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/>			1		2		3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/>			1		2		3
16. Leaf litter in channel (January – September)	1.5		<input checked="" type="checkbox"/>			0.5		0
17. Sediment on plants or on debris	0		0.5		<input checked="" type="checkbox"/>			1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/>		0.5		1			1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0					Yes = 1.5		

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/>
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/>
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 4.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Sheet flow area draining to culvert, no bed and bank, small root grade control

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-35							
3-Latitude/Longitude		36.412209, -88.332765							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		4.25							
-OHWM indicators		bed & banks <input type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		3 ft				-top of bank width		3 ft	
-width at ordinary high water mark		3 ft							
-bank height		LDB - n/a				RDB - n/a			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Smilax rotundifolia, P.quinquefolia, Microstegium vimineum, Celtis occidentalis							
----- (LDB /RDB) -----		RDB: Smilax rotundifolia, P.quinquefolia, Microstegium vimineum, Celtis occidentalis							
-date of PJD request									
5-photo numbers		207 - 208							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Mostly sheet flow area with some channel forming, no bed and bank. Drains west to culvert running beneath SR-54.</p>							
Substrate		Silt							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-23-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.412549 Long: -88.333061 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-23 is an isolated wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-23-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>15</u></td> <td>x 1 = <u>15</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>45</u> (A)</td> <td><u>105</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.3</u>	Total % Cover of:	Multiply by:	OBL species <u>15</u>	x 1 = <u>15</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>45</u> (A)	<u>105</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>15</u>	x 1 = <u>15</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>30</u>	x 3 = <u>90</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>45</u> (A)	<u>105</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Juncus tenuis</u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Eleocharis palustris</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
3. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
<u>45.0</u> = Total Cover 50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-23-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/1	98	5YR 4/4	2	C	M	Sandy loam	
4-8	10YR 6/1	98	5YR 5/8	2	C	M	Sandy clay loam	
8-13	White Page N/8/	80					Clay loam	
	10YR 7/6	20					Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input checked="" type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Dense clay
Depth (inches): 13

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-23-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Roadside Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.412564 Long: -88.33302 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-23.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-23-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>240</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.4</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>240</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>40</u>	x 3 = <u>120</u>																	
FACU species <u>30</u>	x 4 = <u>120</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>240</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Plantago lanceolata</u>	<u>30</u>	<input checked="" type="checkbox"/>	FACU															
3. <u>Trifolium campestre</u>	<u>5</u>	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>75.0</u> = Total Cover 50% of total cover: <u>37.5</u> 20% of total cover: <u>15.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-23-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/3	100					Loam	
3-8	White Page N/8/	80					Clay	
	10YR 7/6	20					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Dense Clay

Depth (inches): 8

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-23

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|--|---|--|
| <input type="checkbox"/> - no fill material or sediment
<input type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered | - no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased | - minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input checked="" type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod | - entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 95
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar _____
 C = Percentage low density residential, construction, or similar _____
 D = Percentage high density residential, or similar _____
 E = Percentage urban, commercial, industrial, or similar 5

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.9505}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☒ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☒ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.25

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.5 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.25 (BUFFER)

V2 0.9505 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-23

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.689
	Function: Biogeochemical Processes	0.525
	Function: Retain Particulates	N/A
	Function: Plant Community	0.251
	Function: Wildlife Community	0.279
	Quantitative Score (Average of FCIs x 100)	43.6
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	43.6

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-36		
HUC (12 digit): 08010202102		Lat/Long: 36.413012 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333001 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.6 acres	County: Henry	
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [6.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 6.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Bed and bank present through the majority of the channel. Some deposits behind obstructions.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd
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Biologist:	ZB, KD	Affiliation:	Stantec	Date:	5/19/2021
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1-Station: from plans	N/A										
2-Map label and name	WWC-36										
3-Latitude/Longitude	36.413012, -88.333001										
4-Feature description:											
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		www <input checked="" type="checkbox"/>				
-HD score (if applicable)	6.25										
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>		
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>		
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>		
-channel bottom width	1.5 ft				-top of bank width			2 ft			
-width at ordinary high water mark	1 ft										
-bank height	LDB - 6 in					RDB - 6 in					
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: -----(LDB /RDB)-----	LDB: Prunus serotina, Celtis occidentalis, P. quinquefolia, Toxicodendron radicans										
	RDB: Prunus serotina, Celtis occidentalis, P. quinquefolia, Toxicodendron radicans										
-date of PJD request											
5-photo numbers	211 - 212										
6-HUC -8 Code & Name	08010202					North Fork Obion River					
7-Assessed	yes <input type="checkbox"/>		<input type="checkbox"/>	no <input type="checkbox"/>		<input checked="" type="checkbox"/>					
8-ETW	yes <input type="checkbox"/>		<input type="checkbox"/>	no <input type="checkbox"/>		<input checked="" type="checkbox"/>					
9-303 (d) List	yes <input type="checkbox"/>		<input type="checkbox"/>	siltation <input type="checkbox"/>		<input type="checkbox"/>	habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		<input type="checkbox"/>
	no <input type="checkbox"/>		<input type="checkbox"/>								
10-Notes	<p>Originates from a culvert from under the highway.</p>										
Substrate	silt/sediment										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-37		
HUC (12 digit): 08010202102		Lat/Long: 36.414550 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333381 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 26.4 acres		County: Henry
Soil Type(s) / Geology : SgE3 - Smithdale-Lexington complex, 12-25% slopes		Source: NRCS
Surrounding Land Use : Forested/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.5](#)

Justification / Notes :

[Flows west from culvert.](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Bed and bank loses form for a portion of the channel. Sorting present throughout. Recent alluvial within sorted areas. 1 moderate headcut. Small grade control.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-37							
3-Latitude/Longitude		36.414550, -88.333381							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		12.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		4 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 6 in				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Platanus occidentalis, Parthenocissus quinquefolia, Ranunculus sp., Stellaria media							
----- (LDB /RDB) -----		RDB: Platanus occidentalis, P. quinquefolia, Ranunculus sp., Stellaria media, Juglans nigra							
-date of PJD request									
5-photo numbers		213 - 214							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Small channel flows west from culvert							
Substrate		Sandy clay/gravel							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-24-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1%
 Subregion (LRR or MLRA): LRR P Lat: 36.414679 Long: -88.332759 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex (SgE3, SgD3) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-24 is a forested wetland on the east side of SR-54. There has been active logging within and upstream of wetland and has impacted the area and increased sedimentation. Vegetation problematic	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-24-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Quercus palustris</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>44.4</u> (A/B)														
2. <u>Juglans nigra</u>	<u>15</u>	<input checked="" type="checkbox"/>	UPL															
3. <u>Acer rubrum</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>24</u></td> <td>x 3 = <u>72</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>15</u></td> <td>x 5 = <u>75</u></td> </tr> <tr> <td>Column Totals: <u>79</u> (A)</td> <td><u>257</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>24</u>	x 3 = <u>72</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>15</u>	x 5 = <u>75</u>	Column Totals: <u>79</u> (A)	<u>257</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>25</u>	x 2 = <u>50</u>																	
FAC species <u>24</u>	x 3 = <u>72</u>																	
FACU species <u>15</u>	x 4 = <u>60</u>																	
UPL species <u>15</u>	x 5 = <u>75</u>																	
Column Totals: <u>79</u> (A)	<u>257</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>45.0</u> = Total Cover 50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Morus rubra</u>	<u>10</u>	<input checked="" type="checkbox"/>	NA															
2. <u>Acer negundo</u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Celtis laevigata</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACW															
4. <u>Ligustrum sinense</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Ambrosia trifida</u>	<u>2</u>	_____	FAC															
2. <u>Ligustrum sinense</u>	<u>5</u>	_____	FAC															
3. <u>Viola sp.</u>	<u>2</u>	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
4. <u>Aster sp.</u>	<u>15</u>	<input checked="" type="checkbox"/>	NA															
5. <u>Smilax rotundifolia</u>	<u>2</u>	_____	FAC															
6. <u>Lonicera japonica</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
<u>36.0</u> = Total Cover 50% of total cover: <u>18.0</u> 20% of total cover: <u>7.2</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation problematic due to recent logging

SOIL

Sampling Point: WTL-24-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 5/2	93	10YR 2/1	2	D	M	Silty clay loam	
			10YR 5/8	5	C	M	Silty clay loam	
2-8	10YR 5/1	93	10YR 2/1	2	D	M	Clay loam	
			5YR 5/8	5	C	M	Clay loam	
8-18	7.5YR 5/6	100					Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-24-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.414511 Long: -88.332869 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale-Lexington complex, 12 to 25 percent slopes, severely eroded (SgE3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-24	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-24-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Carya tomentosa</i></u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u><i>Northern red oak</i></u>	<u>15</u>		<u>FACU</u>	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3. <u><i>Platanus occidentalis</i></u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)
4. _____	_____		<u>NA</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>32</u> x 2 = <u>64</u> FAC species <u>32</u> x 3 = <u>96</u> FACU species <u>27</u> x 4 = <u>108</u> UPL species <u>65</u> x 5 = <u>325</u> Column Totals: <u>156</u> (A) <u>593</u> (B) Prevalence Index = B/A = <u>3.8</u>
5. _____	_____		<u>NA</u>	
6. _____	_____		<u>NA</u>	
7. _____	_____		<u>NA</u>	
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u><i>Carya tomentosa</i></u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u><i>Rosa multiflora</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. <u><i>Ligustrum sinense</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
4. _____	_____		<u>NA</u>	
5. _____	_____		<u>NA</u>	
6. _____	_____		<u>NA</u>	
7. _____	_____		<u>NA</u>	
8. _____	_____		<u>NA</u>	
9. _____	_____		<u>NA</u>	
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u><i>Rosa multiflora</i></u>	<u>5</u>		<u>FACU</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
2. <u><i>Celtis laevigata</i></u>	<u>2</u>		<u>FACW</u>	
3. <u><i>Smilax rotundifolia</i></u>	<u>5</u>		<u>FAC</u>	
4. <u><i>Microstegium vimineum</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
5. <u><i>Maianthemum racemosum</i></u>	<u>2</u>		<u>FACU</u>	
6. <u><i>Acer rubrum</i></u>	<u>2</u>		<u>FAC</u>	
7. _____	_____		<u>NA</u>	
8. _____	_____		<u>NA</u>	
9. _____	_____		<u>NA</u>	
10. _____	_____		<u>NA</u>	
11. _____	_____		<u>NA</u>	
<u>36.0</u> = Total Cover 50% of total cover: <u>18.0</u> 20% of total cover: <u>7.2</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____	_____		<u>NA</u>	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____		<u>NA</u>	
3. _____	_____		<u>NA</u>	
4. _____	_____		<u>NA</u>	
5. _____	_____		<u>NA</u>	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-24-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/3	100					Sandy loam	
4-18	10YR 4/4	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/20/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-24

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|-----------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |

2. Wetland depth slightly impacted (SI = 0.75)

- | | | |
|---|--------------------------|--------------------|
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |

3. Wetland depth moderately impacted (SI = 0.5)

- | | | |
|---|-------------------------|-----------------------|
| <input checked="" type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

4. Wetland depth significantly impacted (SI = 0.25)

- | | | |
|---|-------------------------|--------------------------|
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

5. Wetland depth severely impacted (SI = 0.1)

- | | | |
|--|--------------------------|---------------------------|
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 55

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 30

C = Percentage low density residential, construction, or similar 15

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.85}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☒ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)
- ☒

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input checked="" type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input checked="" type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input checked="" type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input checked="" type="checkbox"/> Black Walnut	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar		<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak		Number native shrub spp. _____		
<input type="checkbox"/>		Number native herbaceous spp. _____		

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.590

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**

☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**

☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**

☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.495

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.5 (WETDEPTH) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.590 (COMP) V9 0.495 (BUFFER)

V2 0.85 (WSHEDINT) V4 1 (TDEN) V6 0 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-24

Exceptional Status Wetlands	Check if applicable	
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.652
	Function: Hydrologic Regime	
		0.782
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.737
	Function: Plant Community	
	0.677	
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	71.2
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	71.2

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-25-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.415108 Long: -88.33337 Datum: NAD83 TN
 Soil Map Unit Name: Ochlockonee fine sandy loam (Ok), Smithdale loam (SeE2) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-25 is an emergent wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-25-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>280</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.9</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>280</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>10</u>	x 2 = <u>20</u>																	
FAC species <u>80</u>	x 3 = <u>240</u>																	
FACU species <u>5</u>	x 4 = <u>20</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>280</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Ranunculus bulbosus</u>	<u>70</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Rumex crispus</u>	<u>10</u>	_____	FAC															
3. <u>Carex vulpinoidea</u>	<u>10</u>	_____	FACW															
4. <u>Hordeum pusillum</u>	<u>5</u>	_____	FACU															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-25-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 5/2	96	7.5YR 4/4	2	C	PL	Clay loam	
			7.5YR 2.5/1	2	D	M	Clay loam	
10-18	10YR 4/2	60					Sandy clay loam	
	10YR 4/4	40					Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-25-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.415046 Long: -88.333418 Datum: NAD83 TN
 Soil Map Unit Name: Ochlockonee fine sandy loam, 0 to 3 percent slopes, rarely flooded (Ok) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-25.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-25-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Quercus falcata</u>	<u>50</u>	<input checked="" type="checkbox"/>	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Sassafras albidum</u>	<u>15</u>		FACU	
3. <u>Acer rubrum</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Total Number of Dominant Species Across All Strata: <u>7</u> (B)
4. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>42.9</u> (A/B)
5. _____			NA	
6. _____			NA	
7. _____			NA	
<u>85.0</u> = Total Cover				Prevalence Index worksheet:
50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Total % Cover of: _____ Multiply by: _____
1. <u>Celtis occidentalis</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU	OBL species <u>0</u> x 1 = <u>0</u>
2. <u>Prunus serotina</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACU	FACW species <u>0</u> x 2 = <u>0</u>
3. _____			NA	FAC species <u>65</u> x 3 = <u>195</u>
4. _____			NA	FACU species <u>97</u> x 4 = <u>388</u>
5. _____			NA	UPL species <u>0</u> x 5 = <u>0</u>
6. _____			NA	Column Totals: <u>162</u> (A) <u>583</u> (B)
7. _____			NA	Prevalence Index = B/A = <u>3.6</u>
8. _____			NA	
9. _____			NA	
<u>20.0</u> = Total Cover				Hydrophytic Vegetation Indicators:
50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: <u>5 ft</u>)				<input type="checkbox"/> 2 - Dominance Test is >50%
1. <u>Achillea millefolium</u>	<u>2</u>		FACU	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
2. <u>Smilax glauca</u>	<u>10</u>		FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
3. <u>Ranunculus bulbosus</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC	
4. <u>Galium porrigens</u>	<u>20</u>	<input checked="" type="checkbox"/>	NA	
5. <u>Trifolium campestre</u>	<u>10</u>		NA	
6. <u>Schedonorus arundinaceus</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	
7. <u>Trifolium repens</u>	<u>10</u>		FACU	
8. _____			NA	
9. _____			NA	
10. _____			NA	
11. _____			NA	
<u>87.0</u> = Total Cover				
50% of total cover: <u>43.5</u> 20% of total cover: <u>17.4</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				
1. _____			NA	
2. _____			NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
<u>0.0</u> = Total Cover				
50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>

SOIL

Sampling Point: WTL-25-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 7/1	100					Sand	
8-18	10YR 7/1	75	7.5YR 5/8	5	C	M	Sand	
	10YR 6/6	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/19/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-25

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | |
|--|---|
| <input checked="" type="checkbox"/> - no fill material or sediment
<input checked="" type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered
- no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased
- minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod
- moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod
- significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod
- entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 30
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 60
 C = Percentage low density residential, construction, or similar
 D = Percentage high density residential, or similar
 E = Percentage urban, commercial, industrial, or similar 10

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.751}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**

☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**

☒ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**

☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.165

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.165 (BUFFER)

V2 0.751 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-25

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.867
	Function: Hydrologic Regime	
		0.589
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.253
	Function: Plant Community	
	0.271	
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	49.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	49.5

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-38		
HUC (12 digit): 08010202102		Lat/Long: 36.415236 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333284 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.9 acres		County: Henry
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [4.25](#)

Justification / Notes :

[Culvert on west side of highway silted in with large pool and sand deposit berm. This channel receives flow from back watering in the pool when it fills.](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 4.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Poorly defined bed and bank. Sediment on plants in most of the channel.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-38							
3-Latitude/Longitude		36.415236, -88.333284							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		4.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input checked="" type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1.5 ft				-top of bank width		2 ft	
-width at ordinary high water mark		1.5 ft							
-bank height		LDB - 3 in				RDB - 3 in			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Ranunculus sp., Schedonorus arundinaceus, Geranium maculatum, Festuca sp.							
----- (LDB / RDB) -----		RDB: Ranunculus sp., Schedonorus arundinaceus, Geranium maculatum, Festuca sp.							
-date of PJD request									
5-photo numbers		219 - 220							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Culvert on west side of highway silted in with large pool and sand deposit berm. This channel receives flow from back watering in the pool when it fills.							
Substrate		Sandy clay, vegetation							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-26-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.41541 Long: -88.332752 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale loam, 12 to 25 percent slopes, eroded (SeE2) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-26 is a forested wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-26-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u><i>Ulmus americana</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3</u> (A/B)														
2. <u><i>Liquidambar styraciflua</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
3. <u><i>Quercus velutina</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	NA															
4. <u><i>Diospyros virginiana</i></u>	<u>5</u>		FAC															
5. _____			NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>2</u></td> <td>x 1 = <u>2</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>60</u></td> <td>x 3 = <u>180</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>62</u> (A)</td> <td><u>182</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.9</u>	Total % Cover of:	Multiply by:	OBL species <u>2</u>	x 1 = <u>2</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>62</u> (A)	<u>182</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>2</u>	x 1 = <u>2</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>60</u>	x 3 = <u>180</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>62</u> (A)	<u>182</u> (B)																	
6. _____			NA															
7. _____			NA															
<u>65.0</u> = Total Cover 50% of total cover: <u>32.5</u> 20% of total cover: <u>13.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____			NA															
2. _____			NA															
3. _____			NA															
4. _____			NA															
5. _____			NA															
6. _____			NA															
7. _____			NA															
8. _____			NA															
9. _____			NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u><i>Ranunculus bulbosus</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
2. <u><i>Packera glabella</i></u>	<u>2</u>		OBL															
3. <u><i>Persicaria virginiana</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
4. <u><i>Ligustrum sinense</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC															
5. _____			NA															
6. _____			NA															
7. _____			NA															
8. _____			NA															
9. _____			NA															
<u>17.0</u> = Total Cover 50% of total cover: <u>8.5</u> 20% of total cover: <u>3.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
1. _____			NA															
2. _____			NA															
3. _____			NA															
4. _____			NA															
5. _____			NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-26-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-15	10YR 5/1	98	5YR 4/6	2	C	PL	Clay loam	
15-18	10YR 4/1	98	7.5YR 4/6	2	C	M	Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/19/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-26-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.415251 Long: -88.332731 Datum: NAD83 TN
 Soil Map Unit Name: Smithdale loam, 12 to 25 percent slopes, eroded (SeE2) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-26.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-26-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Quercus velutina</u>	<u>50</u>	<input checked="" type="checkbox"/>	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)														
2. <u>Carya tomentosa</u>	<u>10</u>		NA	Total Number of Dominant Species Across All Strata: <u>2</u> (B)														
3. <u>Quercus falcata</u>	<u>10</u>		FACU	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
4. _____	_____		NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>42</u></td> <td>x 3 = <u>126</u></td> </tr> <tr> <td>FACU species <u>27</u></td> <td>x 4 = <u>108</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>69</u> (A)</td> <td><u>234</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>42</u>	x 3 = <u>126</u>	FACU species <u>27</u>	x 4 = <u>108</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>69</u> (A)	<u>234</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>42</u>	x 3 = <u>126</u>																	
FACU species <u>27</u>	x 4 = <u>108</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>69</u> (A)	<u>234</u> (B)																	
5. _____	_____		NA															
6. _____	_____		NA															
7. _____	_____		NA															
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index = B/A = <u>3.4</u>														
1. _____	_____		NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____		NA															
3. _____	_____		NA															
4. _____	_____		NA															
5. _____	_____		NA															
6. _____	_____		NA															
7. _____	_____		NA															
8. _____	_____		NA															
9. _____	_____		NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Microstegium vimineum</u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Allium canadense</u>	<u>2</u>		FACU															
3. <u>Persicaria virginiana</u>	<u>5</u>		FAC															
4. <u>Toxicodendron radicans</u>	<u>2</u>		FAC															
5. <u>Parthenocissus quinquefolia</u>	<u>5</u>		FACU															
6. <u>Ulmus americana</u>	<u>5</u>		FAC															
7. <u>Stellaria media</u>	<u>10</u>		FACU															
8. _____	_____		NA															
9. _____	_____		NA															
10. _____	_____		NA															
11. _____	_____		NA															
<u>59.0</u> = Total Cover 50% of total cover: <u>29.5</u> 20% of total cover: <u>11.8</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
1. _____	_____		NA															
2. _____	_____		NA															
3. _____	_____		NA															
4. _____	_____		NA															
5. _____	_____		NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-26-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/3	100					Sandy loam	
3-18	7.5YR 4/6	100					Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT RIVERINE WETLANDS

Date: 05-19-2021

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-26

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: River Connection (RIVCON)

- | | | |
|--|---|--|
| <p>1. Overbank flooding has not been impacted (SI = 1.0)</p> <p><input type="checkbox"/> - no artificial levee(s), spoil piles, roads, or other obstructions</p> <p><input type="checkbox"/> - no channelization; channel is naturally meandering</p> <p><input type="checkbox"/> - no channel downcutting</p> | <p>- no lateral cutting and no bank failure</p> <p>- flood frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>2. Overbank flooding slightly impacted (SI = 0.75)</p> <p><input type="checkbox"/> - levee(s) etc. present but most overbank flooding occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - slight channel downcutting</p> | <p>- slight lateral cutting and bank failure</p> <p>- flooding frequency < 2 years</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>3. Overbank flooding moderately impacted (SI = 0.5)</p> <p><input checked="" type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - moderate channel downcutting</p> | <p>- moderate lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>4. Overbank flooding significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - levee (s) etc. present but some overbank flow occurs</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - significant channel downcutting</p> | <p>- significant lateral cutting and bank failure</p> | <p>- local knowledge</p> <p>- gauge data</p> |
| <p>5. Overbank flooding severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - levee(s) etc. have eliminated overbank flooding</p> <p><input type="checkbox"/> - channelization</p> <p><input type="checkbox"/> - severe channel downcutting</p> | <p>- severe lateral cutting and bank failure</p> <p>- natural flood regime no longer occurs</p> | <p>- local knowledge</p> <p>- gauge data</p> |

V2: Hydroperiod (HYDRO)

- | | |
|---|---|
| <p>1. Hydrologic storage not altered (SI = 1.0)</p> <p><input type="checkbox"/> - no fill material or excessive sediment</p> <p><input type="checkbox"/> - no ditches/drainage tiles</p> <p><input type="checkbox"/> - no artificial levees or other structures that cause prolonged ponding</p> | <p>- no land leveling</p> |
| <p>2. Hydrologic storage slightly impacted (SI = 0.75)</p> <p><input checked="" type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - ditches/drainage tiles present over portion of site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>3. Hydrologic storage moderately impacted (SI = 0.50)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - widely spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>4. Hydrologic storage significantly impacted (SI = 0.25)</p> <p><input type="checkbox"/> - portion of site impacted by fill or excessive sediment</p> <p><input type="checkbox"/> - moderately spaced ditches/drainage tiles present over entire site</p> <p><input type="checkbox"/> - portion of the site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of portion of site</p> |
| <p>5. Hydrologic storage severely impacted (SI = 0.1)</p> <p><input type="checkbox"/> - entire site impacted by fill, excessive sediment, or leveling</p> <p><input type="checkbox"/> - closely spaced ditches/tiles present over entire site</p> <p><input type="checkbox"/> - entire site impacted by dikes or other structures that cause prolonged ponding</p> | <p>- land leveling of entire site</p> |

N/A

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
- | | | | |
|--|--|--|--|
| <input type="checkbox"/> > 16 in. (SI = 1.0) | <input type="checkbox"/> 10 – 16 in. (SI = 0.75) | <input checked="" type="checkbox"/> 5 – 9 in. (SI = 0.5) | <input type="checkbox"/> 3 – 4 in. (SI = 0.25) |
| <input type="checkbox"/> < 4 in. or no trees present, go to V5 | | | |

N/A

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
- | | | | | |
|--|---|--|---|--|
| <input type="checkbox"/> 8 – 16 (SI = 1.0) | <input checked="" type="checkbox"/> 17 – 50 (SI = 0.75) | <input type="checkbox"/> > 50 (SI = 0.5) | <input type="checkbox"/> 3 – 7 (SI = 0.5) | <input type="checkbox"/> 1 – 2 (SI = 0.25) |
|--|---|--|---|--|

N/A



N/A



V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)

☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum.*

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Shumard oak	<input checked="" type="checkbox"/> American elm	<input type="checkbox"/> River birch	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Overcup oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Boxelder	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> Water hickory	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Deciduous holly	<input type="checkbox"/> Japanese stiltgrass
<input type="checkbox"/> Pin oak	<input type="checkbox"/> Honey locust	<input type="checkbox"/> Red maple	<input type="checkbox"/> Sugarberry	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Black willow	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Bald cypress	<input checked="" type="checkbox"/> Sweetgum	<input type="checkbox"/>	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Green ash	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Swamp white oak	<input checked="" type="checkbox"/> Black Oak			
<input type="checkbox"/>	<input type="checkbox"/>	Number native shrub spp. _____		
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		

2. Using the checked dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____

b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____

c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____

d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____

e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7 _____

0.762

*In some Riverine wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases where this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present. ☐

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Tract Size (TRACT)

1. Area (acres) of adjacent wetland and upland forest that is contiguous with the WAA. These values are for western Tennessee are negligible unless greater than the value added section limits for the remainder of the state.

☐ > 7,000 (SI = 1.0)

☐ >200 – 1,000 (SI = 0.5)

☐ < 1 (SI = 0.00)

☐ >1,000 – 7,000 (SI = 0.75)

☒ 1 – 200 (SI = 0.25)

☐ In Eastern or Central Tennessee (SI=1.0)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-26

Exceptional Status Wetlands	Check if applicable	
1. ONRW	<input type="checkbox"/>	
2. ETW	<input type="checkbox"/>	
3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>	
COMMENTS/NOTES:		
Quantitative Rating scores	Function: Hydrologic Regime	.612
	Function: Biogeochemical Processes	0.705
	Function: Retain Particulates	0.681
	Function: Plant Community	0.651
	Function: Wildlife Community	0.551
	Quantitative Score (Average of FCIs x 100)	64.0
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	TOTAL SCORE

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-39 (West of SR-54)		
HUC (12 digit): 08010202102		Lat/Long: 36.415342 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332913 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 56.2 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **10.25**

Justification / Notes :

Culvert on west side of highway silted in with large pool (~6ft deep and 20ft long). The pool has a berm on the downstream side formed by a sand deposit. Downstream of pool, channel is less defined within the study area and headcuts outside of study area before draining to a farm pond. Appears to have abandoned a more defined channel that is located to the southwest outside of the study area.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 10.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

B&B poor outside of large pool at silted in culvert. Water in bottom of pool.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/19/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-39 (East of SR-54)		
HUC (12 digit): 08010201102		Lat/Long: 36.415342 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332913 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 56.3 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **18.25**

Justification / Notes :

This feature has defined bed and bank outside of the study area to the east. Near the culvert a fence has created a blockage and deposited material has filled in behind the blockage to the top of the fence (~3ft above the original channel bed). This has cause the flows to be diverted and braided within the area west of the fence (blockage).

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 12.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 18.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Bed and Bank is defined and riffle pool sequence is improved to east outside of the influence of the fence blockage. Sorting is present throughout. Bars and benches have formed within the channel to the east of the influence of the fence as well as within the braided area that is formed by the impacted channel bed. Large alluvial deposits are located upstream of the blockage.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/19/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-39							
3-Latitude/Longitude		36.415342, -88.332913							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		10.25 west (downstream) of SR-54 / 18.25 east (upstream) of SR-54							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		6 ft				-top of bank width		8 ft	
-width at ordinary high water mark		6 ft							
-bank height		LDB - 3 ft				RDB - 3 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: DS - Ranunculus sp., Schedonorus arundinaceus, Rumex crispus, Festuca sp.							
----- (LDB / RDB) -----		RDB: DS - Ranunculus sp., Schedonorus arundinaceus, Rumex crispus, Festuca sp.							
-date of PJD request									
5-photo numbers		223 - 231							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Culvert on west side of highway silted in with large pool (~6ft deep and 20ft long). The pool has a berm on the downstream side formed by a sand deposit. Downstream of pool, channel is less defined within the study area and headcuts outside of study area before draining to a farm pond. Appears to have abandoned a more defined channel that is located to the southwest outside of the study area.</p> <p>East of highway impacted by active logging. Heavy sand/ gravel bed load may be influenced by logging activities. This feature has defined bed and bank outside of the study area to the east. Near the culvert a fence has created a blockage and is acting as a grade control. Deposited material has filled in behind the blockage to the top of the fence (~3ft above the original channel bed). This has cause the flows to be diverted and braided within the area west of the fence (blockage).</p> <p>US Dominant Riparian Species LDB: Liquidambar styraciflua, Ulmus americana, Ranunculus bulbosus, Persicaria virginiana RDB: Liquidambar styraciflua, Ulmus americana, Ranunculus bulbosus, Persicaria virginiana Substrate Sand/gravel</p>							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-40		
HUC (12 digit): 08010202102		Lat/Long: 36.415964 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332851 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.9 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **13**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 13

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Multiple small woody stems and one large tree root as grade controls, frequent debris piles, occasional leaves in channel,

Cherry, oak sp. greenbrier, sweet gum, maple

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-40							
3-Latitude/Longitude		36.415964, -88.332851							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		13							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1.5 ft				-top of bank width		3.5 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 1ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Prunus serotina, Quercus sp., Smilax rotundifolia, Liquidambar styraciflua, Acer sp.							
----- (LDB /RDB) -----		RDB: Prunus serotina, Quercus sp., Smilax rotundifolia, Liquidambar styraciflua, Acer sp.							
-date of PJD request									
5-photo numbers		232 - 234							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sand							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-41		
HUC (12 digit): 08010202102		Lat/Long: 36.418152 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333336 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 3.4 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [14.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Small drainage channel with sparse upland plants. All riffle and sorting or scour in downstream portion. Ends at a confluence with WWC-42.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-41							
3-Latitude/Longitude		36.418152, -88.333336							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		14.25							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1.5 ft				-top of bank width		3 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 2.5 ft				RDB - 2.5 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Ailanthus altissima, Quercus sp., Microstegium vimineum, P. quinquefolia							
----- (LDB / RDB) -----		RDB: Ailanthus altissima, Quercus sp., Microstegium vimineum, P. quinquefolia							
-date of PJD request									
5-photo numbers		235 - 237							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Flows to WWC-42.							
Substrate		Sand							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-42		
HUC (12 digit): 08010202102		Lat/Long: 36.418651 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333284 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 16.9 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **14**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 10.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Small drainage channel with leaves throughout and upland plants. All riffle and no observed sorting or scour in main channel. Ends with a large headcut into a deeply scoured pool that flows about 10ft into a confluence with WWC-43 and WWC-45. It crosses under the road in a culvert then confluences with both WWC-44 and WWC-41.

3ft TOB, microstegium, walnut, white oak, mayapple, jumpseed, sycamore

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	ZB, KD		Affiliation:	Stantec		Date:	5/20/21		
1-Station: from plans	N/A								
2-Map label and name	WWC-42								
3-Latitude/Longitude	36.418651, 88.333284								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	14								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	1.5 ft				-top of bank width		3 ft		
-width at ordinary high water mark	1.5 ft								
-bank height	LDB - 2 ft				RDB - 2 ft				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species:	LDB: Microstegium vimineum, Juglans nigra, Platanus occidentalis, Ligustrum sinsense								
----- (LDB / RDB) -----	RDB: Microstegium vimineum, Juglans nigra, Platanus occidentalis, Ligustrum sinsense								
-date of PJD request									
5-photo numbers	238 - 244								
6-HUC -8 Code & Name	08010202				North Fork Obion River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		
	no <input type="checkbox"/>								
10-Notes	<p>Small drainage channel with leaves throughout and upland plants. All riffle and no observed sorting or scour in main channel. Ends with a large headcut into a deeply scoured pool that flows about 10ft into a confluence with WWC-43 and WWC-45. It crosses under the road in a culvert then confluent with both WWC-44 and WWC-41.</p>								
Substrate	Sandy clay								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-43		
HUC (12 digit): 08010202102		Lat/Long: 36.418580 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332871 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.8 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **6.25**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 6.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Small drainage channel with leaves throughout and upland plants. All riffle and no observed sorting or scour.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	ZB, KD		Affiliation:	Stantec		Date:	5/20/21		
1-Station: from plans	N/A								
2-Map label and name	WWC-43								
3-Latitude/Longitude	36.418580, -88.332871								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	6.25								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	1 ft				-top of bank width		1.5 ft		
-width at ordinary high water mark	0.5 ft								
-bank height	LDB - 1ft				RDB - 1 ft				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species:	LDB: Microstegium vimineum, Juglans nigra, Ligustrum sinense								
----- (LDB /RDB) -----	RDB: Microstegium vimineum, Juglans nigra, Ligustrum sinense								
-date of PJD request									
5-photo numbers	245 - 246								
6-HUC -8 Code & Name	08010202				North Fork Obion River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		
	no <input type="checkbox"/>								
10-Notes									
Substrate	Sandy clay								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-44		
HUC (12 digit): 08010202102		Lat/Long: 36.418708 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333231 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.4 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [9.75](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Small drainage channel with sparse upland plants. All riffle and sorting or scour in downstream portion. Ends at a confluence with WWC-42.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-44							
3-Latitude/Longitude		36.418708, -88.333231							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		9.75							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		3 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: M. vimineum, J. nigra, Quercus alba, Podophyllum peltatum, Persicaria virginiana							
----- (LDB / RDB) -----		RDB: M. vimineum, J. nigra, Quercus alba, Podophyllum peltatum, Persicaria virginiana							
-date of PJD request									
5-photo numbers		247 - 248							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sandy clay							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-45		
HUC (12 digit): 08010202102		Lat/Long: 36.418819 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332863 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 3.3 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **11**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Small drainage channel begins at a headcut with leaves throughout and sparse upland plants. All riffle and no observed sorting or scour in main channel. Ends with a large headcut into a deeply scoured pool that flows about 10ft into a confluence with WWC-43 and WWC-42. Upstream portion lacks bed and bank.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-45							
3-Latitude/Longitude		36.418819, -88.332863							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		11							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1.5 ft				-top of bank width		3 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 6 in				RDB - 6 in			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Microstegium vimineum, Juglans nigra, Ligustrum sinense							
----- (LDB /RDB) -----		RDB: Microstegium vimineum, Juglans nigra, Ligustrum sinense							
-date of PJD request									
5-photo numbers		249 - 250							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sand							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-46		
HUC (12 digit): 08010202102		Lat/Long: 36.422702 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333050 °W
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.8 acres	County: Henry	
Soil Type(s) / Geology : Eb - Enville-Bibb complex, 0-2% slopes, frequently flooded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **11.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Upstream portion of channel has riprap from road slope

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-46							
3-Latitude/Longitude		36.422702, -88.333050							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		11.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		4 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 3 ft				RDB - 3 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: <i>P. quinquefolia</i> , <i>Microstegium vimineum</i> , <i>Juglans nigra</i> , <i>Liriodendron tulipifera</i>							
----- (LDB / RDB) -----		RDB: <i>Parthenocissus quinquefolia</i> , <i>Juglans nigra</i>							
-date of PJD request									
5-photo numbers		253 - 256							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Partially riprap lined							
Substrate		Sandy clay/riprap							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-27-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.423045 Long: -88.332521 Datum: NAD83 TN
 Soil Map Unit Name: Ochlockonee fine sandy loam (Ok), Smithdale loam (SeE2) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Emergent seep wetland located east of SR-54. State-listed water purslane (<i>Didiplis diandra</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-27-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>55</u></td> <td>x 1 = <u>55</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>130</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.6</u>	Total % Cover of:	Multiply by:	OBL species <u>55</u>	x 1 = <u>55</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>80</u> (A)	<u>130</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>55</u>	x 1 = <u>55</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>25</u>	x 3 = <u>75</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>80</u> (A)	<u>130</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Carex lupulina</u>	<u>5</u>	_____	OBL															
2. <u>Juncus tenuis</u>	<u>15</u>	_____	FAC															
3. <u>Juncus effusus</u>	<u>10</u>	_____	OBL	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
4. <u>Andropogon virginicus</u>	<u>10</u>	_____	FAC															
5. <u>Didiplis diandra</u>	<u>40</u>	<u>✓</u>	OBL															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
<u>80.0</u> = Total Cover 50% of total cover: <u>40.0</u> 20% of total cover: <u>16.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-27-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/1	95	5YR 5/8	5	C	M	Clay Loam	
3-18	10YR 6/1	90	5YR 5/8	10	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-27-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.423394 Long: -88.332529 Datum: NAD83 TN
 Soil Map Unit Name: Ochlockonee fine sandy loam, 0 to 3 percent slopes, rarely flooded (Ok) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-27.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-27-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>60</u></td> <td>x 3 = <u>180</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>260</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.3</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>80</u> (A)	<u>260</u> (B)	Prevalence Index = B/A = <u>3.3</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>60</u>	x 3 = <u>180</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>80</u> (A)	<u>260</u> (B)																			
Prevalence Index = B/A = <u>3.3</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Schedonorus arundinaceus</u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
2. <u>Trifolium repens</u>	<u>10</u>	_____	FACU																	
3. <u>Sherardia arvensis</u>	<u>10</u>	_____	NA																	
4. <u>Viola sp.</u>	<u>10</u>	_____	NA																	
5. <u>Stellaria media</u>	<u>10</u>	_____	FACU																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>100.0</u> = Total Cover 50% of total cover: <u>50.0</u> 20% of total cover: <u>20.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WTL-27-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/3	100					Sandy loam	
3-18	10YR 4/4	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/20/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-27

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 35

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 60

C = Percentage low density residential, construction, or similar 5

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.825}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☒ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☒ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☒ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.2475

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.2475 (BUFFER)

V2 0.825 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	Yes	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	Yes	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-27

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES: headwater seep wetland	
Quantitative Rating scores	Function: Hydrologic Regime	0.908
	Function: Biogeochemical Processes	0.603
	Function: Retain Particulates	N/A
	Function: Plant Community	0.276
	Function: Wildlife Community	0.303
	Quantitative Score (Average of FCIs x 100)	52.3
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	52.3
	TOTAL SCORE	52.3

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-16		
HUC (12 digit): 080102020102		Lat/Long: 36.422509 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332682 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 182.6 acres	County: Henry	
Soil Type(s) / Geology : Ok - Ochlockonee fine sandy loam, 0-3% slopes, rarely flooded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **31.5**

Justification / Notes :

Multiple seeps observed

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 12)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	✓ 1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	✓ 3
4. Sorting of soil textures or other substrate	0	✓ 1	2	3
5. Active/relic floodplain	✓ 0	0.5	1	1.5
6. Depositional bars or benches	0	1	✓ 2	3
7. Braided channel	✓ 0	1	2	3
8. Recent alluvial deposits	0	✓ 0.5	1	1.5
9. Natural levees	✓ 0	1	2	3
10. Headcuts	0	✓ 1	2	3
11. Grade controls	✓ 0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	✓ 2	1.5
13. At least second order channel on existing USGS or NRCS map	No ✓ = 0		Yes = 3	

B. Hydrology (Subtotal = 9)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	✓ 3
15. Water in channel and >48 hours since sig. rain	0	1	2	✓ 3
16. Leaf litter in channel (January – September)	✓ 1.5	1	0.5	0
17. Sediment on plants or on debris	✓ 0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	✓ 0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes ✓ = 1.5	

N/A

C. Biology (Subtotal = 10.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	✓ 3	2	1	0
21. Rooted plants in thalweg ¹	✓ 3	2	1	0
22. Crayfish in stream (exclude in floodplain)	✓ 0	1	2	3
23. Bivalves/mussels	✓ 0	1	2	3
24. Amphibians	0	✓ 0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	✓ 0	1	2	3
26. Filamentous algae; periphyton	0	1	2	✓ 3
27. Iron oxidizing bacteria/fungus	0	0.5	✓ 1	1.5
28. Wetland plants in channel bed ²	✓ 0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 31.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Seeps present at multiple places. Headcut at the beginning of the channel. Adult frogs observed in one location.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21			
1-Station: from plans		N/A									
2-Map label and name		STR-16									
3-Latitude/Longitude		36.422722, -88.332713									
4-Feature description:											
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>			
-HD score (if applicable)		31.5									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		4 ft				-top of bank width		6 ft			
-width at ordinary high water mark		3 ft									
-bank height		LDB - 3 ft				RDB - 2 ft					
-riffle/pool complex or other specialized habitat present?		No									
-dominant riparian species:		LDB: Schedonorous arundinaceus, Liquiambar styraciflua, Taraxacum officinale									
----- (LDB / RDB) -----		RDB: Schedonorous arundinaceus, Acer rubrum, Taraxacum officinale, Platanus occidentalis									
-date of PJD request											
5-photo numbers		251 - 252									
6-HUC -8 Code & Name		08010202				North Fork Obion River					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes		Feature originates at headcut in roadside channel									
Substrate		Sandy clay									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-17		
HUC (12 digit): 080102020102		Lat/Long: 36.422690 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332664 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.4 acres	County: Henry	
Soil Type(s) / Geology : Ok - Ochlockonee fine sandy loam, 0-3% slopes, rarely flooded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **25.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 9)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

C. Biology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 25.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channels formed at headcut and flows to the main channel. Visible groundwater flow at time of survey.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21			
1-Station: from plans		N/A									
2-Map label and name		STR-17									
3-Latitude/Longitude		36.422692, -88.332663									
4-Feature description:											
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>			
-HD score (if applicable)		25.5									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft			
-width at ordinary high water mark		1 ft									
-bank height		LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?		No									
-dominant riparian species:		LDB: Schedonorus arundinaceus, Taraxacum officinale, Juglans nigra									
----- (LDB /RDB) -----		RDB: S. arundinaceus, Platanus occidentalis, T. officinale, Erigeron sp, Acer saccharinum									
-date of PJD request											
5-photo numbers		259 - 262									
6-HUC -8 Code & Name		08010202				North Fork Obion River					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes											
Substrate											
		Sandy clay									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-18		
HUC (12 digit): 080102020102		Lat/Long: 36.422858 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332596 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.5 acres	County: Henry	
Soil Type(s) / Geology : Ok - Ochlockonee fine sandy loam, 0-3% slopes, rarely flooded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **20**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = <u>7</u>)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = <u>8.5</u>)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> 1.5	

N/A

C. Biology (Subtotal = <u>4.5</u>)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 20

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channels formed at headcut where wetland drains to the main channel. Visible groundwater flow at time of survey.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21			
1-Station: from plans		N/A									
2-Map label and name		STR-18									
3-Latitude/Longitude		36.422866, -88.332649									
4-Feature description:											
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>			
-HD score (if applicable)		20									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft			
-width at ordinary high water mark		1 ft									
-bank height		LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?		No									
-dominant riparian species:		LDB: Schedonorus arundinaceus, Taraxacum officinale, Juglans nigra									
----- (LDB /RDB) -----		RDB: Schedonorus arundinaceus, Acer rubrum, Taraxacum officinale, Platanus occidentalis									
-date of PJD request											
5-photo numbers		263 - 265									
6-HUC -8 Code & Name		08010202				North fork Obion River					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes											
Substrate											
		Sandy clay. cobble									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-28-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1%
 Subregion (LRR or MLRA): LRR P Lat: 36.423297 Long: -88.33331 Datum: NAD83 TN
 Soil Map Unit Name: Enville-Bibb complex (Eb), Smithdale loam (SeE2) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-28 is an emergent wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-28-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>45</u></td> <td>x 1 = <u>45</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>75</u> (A)</td> <td><u>110</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.5</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>45</u>	x 1 = <u>45</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>75</u> (A)	<u>110</u> (B)	Prevalence Index = B/A = <u>1.5</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>45</u>	x 1 = <u>45</u>																			
FACW species <u>25</u>	x 2 = <u>50</u>																			
FAC species <u>5</u>	x 3 = <u>15</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>75</u> (A)	<u>110</u> (B)																			
Prevalence Index = B/A = <u>1.5</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Carex lupulina</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL																	
2. <u>Juncus tenuis</u>	<u>5</u>	_____	FAC																	
3. <u>Carex scoparia</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW																	
4. <u>Juncus effusus</u>	<u>20</u>	<input checked="" type="checkbox"/>	OBL																	
5. <u>Leersia oryzoides</u>	<u>10</u>	_____	OBL																	
6. <u>Impatiens capensis</u>	<u>5</u>	_____	FACW																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>75.0</u> = Total Cover 50% of total cover: <u>37.5</u> 20% of total cover: <u>15.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:
Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

SOIL

Sampling Point: WTL-28-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/1	100					Clay loam	
3-18	10YR 6/1	40	5YR 4/4	15	C	M	Sandy clay loam	
	10YR 4/1	40	10YR 2/1	5	D	M	Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-28-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.423071 Long: -88.333108 Datum: NAD83 TN
 Soil Map Unit Name: Enville-Bibb complex, 0 to 2 percent slopes, frequently flooded (Eb) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-28	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-28-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Juglans nigra</u>	40	✓	UPL	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____			NA	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____			NA	
4. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0</u> (A/B)
5. _____			NA	
6. _____			NA	
7. _____			NA	
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>35</u> x 2 = <u>70</u> FAC species <u>82</u> x 3 = <u>246</u> FACU species <u>7</u> x 4 = <u>28</u> UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>164</u> (A) <u>544</u> (B) Prevalence Index = B/A = <u>3.3</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Sambucus nigra</u>	30	✓	FACW	
2. _____			NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
6. _____			NA	
7. _____			NA	
8. _____			NA	
9. _____			NA	
<u>30.0</u> = Total Cover 50% of total cover: <u>15.0</u> 20% of total cover: <u>6.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
1. <u>Microstegium vimineum</u>	60	✓	FAC	
2. <u>Parthenocissus quinquefolia</u>	2		FACU	
3. <u>Sambucus nigra</u>	5		FACW	
4. <u>Persicaria virginiana</u>	10		FAC	
5. <u>Chaerophyllum tainturieri</u>	2		FAC	
6. <u>Galium aparine</u>	5		FACU	
7. <u>Stellaria pubera</u>	5		NA	
8. _____			NA	
9. _____			NA	
<u>89.0</u> = Total Cover 50% of total cover: <u>44.5</u> 20% of total cover: <u>17.8</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____
1. <u>Campsis radicans</u>	10	✓	FAC	
2. _____			NA	
3. _____			NA	
4. _____			NA	
5. _____			NA	
<u>10.0</u> = Total Cover 50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-28-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/3	100					Sandy loam	
3-18	10YR 4/4	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/20/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-28

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | |
|--|---|
| <input checked="" type="checkbox"/> - no fill material or sediment
<input checked="" type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered
- no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased
- minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod
- moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod
- significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod
- entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

- A = Percentage forested with no impervious surfaces 30
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 65
 C = Percentage low density residential, construction, or similar
 D = Percentage high density residential, or similar
 E = Percentage urban, commercial, industrial, or similar 5

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.788}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3 Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.704

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**

☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**

☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**

☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.495

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.704 (COMP) V9 0.495 (BUFFER)

V2 0.788 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-28

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.893
	Function: Biogeochemical Processes	0.598
	Function: Retain Particulates	N/A
	Function: Plant Community	0.289
	Function: Wildlife Community	0.344
	Quantitative Score (Average of FCIs x 100)	53.1
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	53.1

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-19		
HUC (12 digit): 080102020102		Lat/Long: 36.423237 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332730 °W
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 61.2 acres	County: Henry	
Soil Type(s) / Geology : Ok - Ochlockonee fine sandy loam, 0-3% slopes, rarely flooded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **30.5**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	✓ 1	2	3
3. In-channel structure: riffle-pool sequences	0	1	✓ 2	3
4. Sorting of soil textures or other substrate	0	✓ 1	2	3
5. Active/relic floodplain	✓ 0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	✓ 3
7. Braided channel	✓ 0	1	2	3
8. Recent alluvial deposits	0	✓ 0.5	1	1.5
9. Natural levees	✓ 0	1	2	3
10. Headcuts	0	✓ 1	2	3
11. Grade controls	✓ 0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	✓ 2	1.5
13. At least second order channel on existing USGS or NRCS map	No ✓ = 0		Yes = 3	

B. Hydrology (Subtotal = 9)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	✓ 3
15. Water in channel and >48 hours since sig. rain	0	1	2	✓ 3
16. Leaf litter in channel (January – September)	✓ 1.5	1	0.5	0
17. Sediment on plants or on debris	✓ 0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	✓ 0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes ✓ = 1.5	

N/A

C. Biology (Subtotal = 10)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	✓ 3	2	1	0
21. Rooted plants in thalweg ¹	✓ 3	2	1	0
22. Crayfish in stream (exclude in floodplain)	✓ 0	1	2	3
23. Bivalves/mussels	✓ 0	1	2	3
24. Amphibians	✓ 0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	✓ 0	1	2	3
26. Filamentous algae; periphyton	0	1	2	✓ 3
27. Iron oxidizing bacteria/fungus	0	0.5	✓ 1	1.5
28. Wetland plants in channel bed ²	✓ 0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 30.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Seeps present at multiple places. Headcut at the beginning of the channel.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		STR-19							
3-Latitude/Longitude		36.423238, -88.332727							
4-Feature description:									
-channel identification		perennial stream <input checked="" type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>	
-HD score (if applicable)		30.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		3 ft				-top of bank width		4 ft	
-width at ordinary high water mark		2 ft							
-bank height		LDB - 2 ft				RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?		No							
-dominant riparian species:		LDB: Schedonorus arundinaceus, Taraxacum officinale, Liquidambar styraciflua							
----- (LDB /RDB) -----		RDB: Schedonorus arundinaceus, Acer rubrum, Taraxacum officinale, Platanus occidentalis							
-date of PJD request									
5-photo numbers		269 - 272							
6-HUC -8 Code & Name		08010202				North Fork Obion River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes									
Substrate									
		Sandy clay							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-47		
HUC (12 digit): 08010202102		Lat/Long: 36.423740 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332716 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 48.1 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Forested/Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [11.75](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Small drainage channel starting at a headcut, no water in channel at time of survey . some upland plants. All riffle with some sorting. Loses form on downstream portion.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB, KD	Affiliation:	Stantec	Date:	5/20/21					
1-Station: from plans	N/A									
2-Map label and name	WWC-47									
3-Latitude/Longitude	36.423740, -88.332716									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	11.75									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	2 ft			-top of bank width			3 ft			
-width at ordinary high water mark	1 ft									
-bank height	LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: P. quinquefolia, T. radicans, Acer negundo, Erigeron sp., Schedonorus arundinaceus									
----- (LDB /RDB) -----	RDB: P. quinquefolia, T. radicans, Celtis occidentalis, Erigeron sp., S. arundinaceus									
-date of PJD request										
5-photo numbers	273 - 276									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes										
Substrate	Sand/Riprap									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-29-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Old pond Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.427696 Long: -88.333078 Datum: NAD83 TN
 Soil Map Unit Name: SeE2 - Smithdale loam, 12-25% slopes, eroded NWI classification: PUB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<table style="width: 100%;"> <tr> <td style="width: 30%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%;">Yes <input checked="" type="checkbox"/></td> <td style="width: 10%;">No <input type="checkbox"/></td> </tr> <tr> <td>Hydric Soil Present?</td> <td>Yes <input checked="" type="checkbox"/></td> <td>No <input type="checkbox"/></td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td>Yes <input checked="" type="checkbox"/></td> <td>No <input type="checkbox"/></td> </tr> </table>	Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<p>Is the Sampled Area within a Wetland?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>								
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>								
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>								
Remarks: Closed depression that appears to be an old pond.										

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Marl Deposits (B15) (LRR U)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-Stained Leaves (B9)		<p>Secondary Indicators (minimum of two required)</p> <table style="width: 100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input checked="" type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</td></tr> <tr><td><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)																															
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<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
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<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)																															
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<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)																																
<p>Field Observations:</p> <table style="width: 100%;"> <tr> <td style="width: 30%;">Surface Water Present?</td> <td style="width: 10%;">Yes <input checked="" type="checkbox"/></td> <td style="width: 10%;">No <input type="checkbox"/></td> <td style="width: 50%;">Depth (inches): <u>1</u></td> </tr> <tr> <td>Water Table Present?</td> <td>Yes <input checked="" type="checkbox"/></td> <td>No <input type="checkbox"/></td> <td>Depth (inches): <u>0</u></td> </tr> <tr> <td>Saturation Present? (includes capillary fringe)</td> <td>Yes <input checked="" type="checkbox"/></td> <td>No <input type="checkbox"/></td> <td>Depth (inches): <u>0</u></td> </tr> </table>	Surface Water Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>1</u>	Water Table Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>0</u>	Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>0</u>	<p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>																			
Surface Water Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches): <u>1</u>																													
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks:																																

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-29-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Salix nigra</u>	40	✓	OBL	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)														
2. <u>Acer rubrum</u>	30	✓	FAC	Total Number of Dominant Species Across All Strata: <u>2</u> (B)														
3. _____			OBL	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
4. _____			OBL															
5. _____			OBL															
6. _____			OBL															
7. _____			OBL															
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>95</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.9</u>	Total % Cover of:	Multiply by:	OBL species <u>40</u>	x 1 = <u>40</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>95</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>40</u>	x 1 = <u>40</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
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FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>95</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____			OBL															
2. _____			OBL															
3. _____			OBL															
4. _____			OBL															
5. _____			NA															
6. _____			OBL															
7. _____			OBL															
8. _____			OBL															
9. _____			OBL															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. _____			OBL															
2. _____			OBL															
3. _____			OBL															
4. _____			OBL															
5. _____			OBL															
6. _____			NA															
7. _____			OBL															
8. _____			OBL															
9. _____			OBL															
10. _____			NA															
11. _____			OBL															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
1. _____			OBL															
2. _____			OBL															
3. _____			OBL															
4. _____			OBL															
5. _____			NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-29-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	70	7.5YR 4/6	30	C	M	Silty clay	
3-18	10YR 5/2	40	7.5YR 4/6	60	C	M	Sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-29-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 10
 Subregion (LRR or MLRA): LRR P Lat: 36.427756 Long: -88.333126 Datum: NAD83 TN
 Soil Map Unit Name: SeE2 - Smithdale loam, 12-25% slopes, eroded NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-29.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-29-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Pinus taeda</i></u>	60	✓	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u><i>Ulmus americana</i></u>	10		FAC	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)
4. _____			NA	
5. _____			NA	
6. _____			NA	
7. _____			NA	
<u>70.0</u> = Total Cover 50% of total cover: <u>35.0</u> 20% of total cover: <u>14.0</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>95</u> x 3 = <u>285</u> FACU species <u>30</u> x 4 = <u>120</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>125</u> (A) <u>405</u> (B) Prevalence Index = B/A = <u>3.2</u>
<u>15.0</u> = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3.0</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
<u>15.0</u> = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3.0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-29-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 5/4	100					Loam	
5-18	10YR 5/4	40	7.5YR 5/8	60	C	M	Loamy Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-19-2021 1335 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-48		
HUC (12 digit): 080102020102		Lat/Long: 36.427871 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332929 °W
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.6 acres	County: Henry	
Soil Type(s) / Geology : Cn - Chenneby silt loam, 0-2% slopes, occasionally flooded		Source: NRCS
Surrounding Land Use : Residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [14.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates at headcut near culvert outlet
 Good B&B along most of reach but loses form downstream
 Predominantly run habitat
 Sand and gravel substrate with some silt
 Headcut = 1 / Grade control = none
 Fibrous roots throughout most of reach
 No rooted plants
 No wetland plants

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021					
1-Station: from plans	N/A									
2-Map label and name	WWC-48									
3-Latitude/Longitude	36.390841, -88.334157									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	14.25									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	20 inches			-top of bank width			36 inches			
-width at ordinary high water mark	24 inches									
-bank height	LDB - 10 inches				RDB - 10 inches					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Ligustrum sinense, Salix nigra, Morus rubra									
----- (LDB / RDB) -----	RDB: Pinus taeda, Prunus serotina									
-date of PJD request										
5-photo numbers	279 - 280									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature originates at headcut near culvert outlet and flows into WTL- 29.									
Substrate	Sand, silt and gravel									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-19-2021 1425 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-49		
HUC (12 digit): 080102020102		Lat/Long: 36.429424 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333091 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.9 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [14.5](#)

Justification / Notes :

[Feature appears to flow through old detention basin and has cut a channel through the berm of the basin](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9.25)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 14.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates at culvert outlet
 Defined B&B throughout
 Multiple pools with few riffles
 Headcut = 2 large cuts / Grade control = 1 (culvert)
 Fibrous roots present every 2 - 3 paces
 Rooted plants present- cinquefoil

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021				
1-Station: from plans	N/A								
2-Map label and name	WWC-49								
3-Latitude/Longitude	36.429410, -88.333083								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	14.5								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input checked="" type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input checked="" type="checkbox"/>	leaf litter disturbed or absent <input checked="" type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	2 ft		-top of bank width		30 inches				
-width at ordinary high water mark	2 ft								
-bank height	LDB - 20 inches				RDB - 20 inches				
-riffle/pool complex or other specialized habitat present?	None								
-dominant riparian species:	LDB: Celtis laevigata, Prunus serotina, Carya sp.								
----- (LDB / RDB) -----	RDB: Juglans nigra, Celtis laevigata								
-date of PJD request									
5-photo numbers	281 - 282								
6-HUC -8 Code & Name	08010202				North Fork Obion River				
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	Feature originates at culvert outlet, flows through an old detention basin and has cut a channel through the berm of the basin								
Substrate	Silt and gravel								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-19-2021 1440 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-50		
HUC (12 digit): 080102020102		Lat/Long: 36.429485 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333047 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.6 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smithdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Residential and forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [10.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 10.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates in old detention basin and flows into WWC-49
 B&B loses form in lower reach
 Channel clogged with leaves and leaf litter present in portions of channel
 Silt bottom channel with no new alluvium
 Headcut = 1 small one at confluence with WWC-48
 Grade control = none
 Rooted plants in channel - few fleabane

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021				
1-Station: from plans	N/A								
2-Map label and name	WWC-50								
3-Latitude/Longitude	36.429485, -88.333306								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	10.25								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input type="checkbox"/>	leaf litter disturbed or absent <input checked="" type="checkbox"/>	natural line impressed on bank <input type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	13 inches		-top of bank width		18 inches				
-width at ordinary high water mark	14 inches								
-bank height	LDB - 6 inches			RDB - 6 inches					
-riffle/pool complex or other specialized habitat present?	None								
-dominant riparian species:	LDB: Juglans nigra, Platanus occidentalis, Acer rubrum								
----- (LDB / RDB) -----	RDB: Juglans nigra, Platanus occidentalis, Acer rubrum								
-date of PJD request									
5-photo numbers	283 - 284								
6-HUC -8 Code & Name	08010202			North Fork Obion River					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	Feature originates in old detention basin and flows around berm of basin and into WWC-49.								
Substrate	Silt								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: North Fork Obion River		Date/Time: 05-19-2021 1500 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-51		
HUC (12 digit): 060400060101		Lat/Long: 36.430057 °N
Previous Rainfall (7-days) : 0.3 inches		-88.333155 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.4 acres	County: Henry	
Soil Type(s) / Geology : SeE2 - Smitdale loam, 12-25% slopes, eroded		Source: NRCS
Surrounding Land Use : Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature originates at culvert outlet in residential lawn
 Loses B&B down gradient
 No pools, all riffle and run habitat
 Headcut = none / Grade control = 1 (culvert)
 Fibrous roots present throughout most of reach
 Rooted plants present in channel- Microstegium and Virginia creeper

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		MW, NV		Affiliation:		Stantec		Date: 05-19-2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-51							
3-Latitude/Longitude		36.430059, -88.333174							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		12.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input checked="" type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft	
-width at ordinary high water mark		30 inches							
-bank height		LDB - 18 inches				RDB - 24 inches			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Microstegium vimineum, Parthenocissus quinquefolia, Schedonorus arundinaceus							
----- (LDB / RDB) -----		RDB: Microstegium vimineum, Parthenocissus quinquefolia, Schedonorus arundinaceus							
-date of PJD request									
5-photo numbers		285 - 286							
6-HUC -8 Code & Name		06040006				East Fork Clarks River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		Feature originates at culvert outlet in residential lawn							
Substrate		Sand and gravel with some silt							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-30-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Drainage ditch Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.435127 Long: -88.332949 Datum: NAD83 TN
 Soil Map Unit Name: CkA - Calloway-Kurk complex, 0-2% slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland area in roadside ditch and low areas in adjacent field	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-30-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>25</u> (A)</td> <td><u>75</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>25</u> (A)	<u>75</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>25</u>	x 3 = <u>75</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>25</u> (A)	<u>75</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Rumex crispus</u>	<u>25</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-30-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 4/2	95	5YR 4/6	5	C	M	Clay	
1-8	10YR 4/2	75	5YR 4/6	25	C	M	Clay	
8-18	10YR 5/2	60	5YR 4/6	40	C	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-30-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.434999 Long: -88.332734 Datum: NAD83 TN
 Soil Map Unit Name: CkA - Calloway-Kurk complex, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-30. Vegetation problematic due to mowing.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-30-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA	Total Number of Dominant Species Across All Strata: <u>3</u> (B)																
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> (A/B)																
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x 4 = <u>240</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>240</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>60</u>	x 4 = <u>240</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>60</u> (A)	<u>240</u> (B)	Prevalence Index = B/A = <u>4.0</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>60</u>	x 4 = <u>240</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>60</u> (A)	<u>240</u> (B)																			
Prevalence Index = B/A = <u>4.0</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>																
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA	100.0 = Total Cover 50% of total cover: <u>50.0</u> 20% of total cover: <u>20.0</u>																
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA	Herb Stratum (Plot size: <u>5 ft</u>)																
11. _____	_____	_____	NA																	
1. <u>Trifolium repens</u>	<u>25</u>	<u>✓</u>	FACU	Remarks: (Include photo numbers here or on a separate sheet.) Vegetation problematic due to mowing.																
2. <u>Erigeron annuus</u>	<u>10</u>		FACU																	
3. <u>Plantago lanceolata</u>	<u>25</u>	<u>✓</u>	FACU																	
4. <u>Sherardia arvensis</u>	<u>40</u>	<u>✓</u>	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
_____	_____	_____	NA																	

SOIL

Sampling Point: WTL-30-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/3	100					Silty clay	
5-18	10YR 4/3	90	7.5YR 4/6	10	C	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-31-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1%
 Subregion (LRR or MLRA): LRR P Lat: 36.435127 Long: -88.332949 Datum: NAD83 TN
 Soil Map Unit Name: CkA - Calloway-Kurk complex, 0-2% slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Feature is located in field adjacent to residential area - pockets of hydrophytic vegetation are present in the field. Vegetation problematic due to mowing.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-31-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>15</u></td> <td>x 1 = <u>15</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>55</u> (A)</td> <td><u>145</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.6</u>	Total % Cover of:	Multiply by:	OBL species <u>15</u>	x 1 = <u>15</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>55</u> (A)	<u>145</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>15</u>	x 1 = <u>15</u>																	
FACW species <u>15</u>	x 2 = <u>30</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>55</u> (A)	<u>145</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Carex vulpinoidea</u>	<u>10</u>	_____	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Juncus effusus</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
3. <u>Hordeum pusillum</u>	<u>10</u>	_____	FACU															
4. <u>Unknown grass</u>	<u>20</u>	<input checked="" type="checkbox"/>	NA															
5. <u>Hypericum sp.</u>	<u>10</u>	_____	NA															
6. <u>Sisyrinchium angustifolium</u>	<u>5</u>	_____	FACW															
7. <u>Schizachyrium scoparium</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>85.0</u> = Total Cover 50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.) Vegetation problematic due to mowing.																		

SOIL

Sampling Point: WTL-31-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-4	10YR 5/2	75	7.5YR 5/8	25	C	PL	Silty Clay loam	
4-7	10YR 5/2	60	7.5YR 5/8	40	C	PL	Silty Clay loam	
4-18	10YR 5/2	85	7.5YR 5/8	15	C	M	Silty Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-31-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.435162 Long: -88.332910 Datum: NAD83 TN
 Soil Map Unit Name: CkA - Calloway-Kurk complex, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Maintained field adjacent to residential area. Field routinely mowed - veg problematic	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-31-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>280</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.1</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>280</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>80</u>	x 3 = <u>240</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>90</u> (A)	<u>280</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>80</u>	<input checked="" type="checkbox"/>	FAC	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. <u>Trifolium repens</u>	<u>10</u>	_____	FACU															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	_____ = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-31-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/3	100					Loam	
3-18	10YR 5/3	85	7.5YR 5/8	15	C	M	Silty Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT FLAT WETLANDS

Date: 5/20/21

Project Name TDOT Henry Co. SR-54

Field Personnel MW, NV

Wetland Name/Location WTL-31

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)

- ☐ -no fill material or excessive sediment -no excavation
☐ -no ditches/drainage tiles

2. Hydrology slightly altered (SI = 0.75)

- ☐ -portion of site with minimal fill or sediment - minimal portion of site excavated
☐ -portion of site with drainage ditches/tiles

3. Hydrology moderately altered (SI = 0.5)

- ☐ - portion of site with moderate fill or sediment - moderate portion of site excavated
☐ - portion of site with drainage ditches/tiles

4. Hydrology significantly altered (SI = 0.25)

- ☒ - portion of site with significant fill or excessive sediment - significant portion of site excavated
☐ - portion of site with drainage ditches/tiles

5. Hydrology severely altered (SI = 0.1)

- ☐ - entire site impacted by fill or excessive sediment - entire wetland affected
☐ - entire site with numerous drainages/tiles

V2: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V4

V3: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V5: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V6: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum.*

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)	
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shellbark hickory	<input type="checkbox"/> American elm	<input type="checkbox"/> Sugarberry	<input type="checkbox"/> European/Chinese privet	
<input type="checkbox"/> White oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Boxelder	<input type="checkbox"/> Japanese honeysuckle	
<input type="checkbox"/> Pin oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Green ash	<input type="checkbox"/> Black willow	<input type="checkbox"/> Japanese stiltgrass	
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Red maple	<input type="checkbox"/> American elm	<input type="checkbox"/> Tall fescue	
<input type="checkbox"/> Water oak	<input type="checkbox"/>	<input type="checkbox"/> Silver maple	<input type="checkbox"/>	<input type="checkbox"/> Purple loosestrife	
<input type="checkbox"/> Willow oak	<input type="checkbox"/>	<input type="checkbox"/> Sweetgum	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Shumard oak	<input type="checkbox"/>	<input type="checkbox"/> Number native shrub spp.		<input type="checkbox"/>	
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/>	4 <input type="checkbox"/> Number native herbaceous spp.		<input type="checkbox"/>	

2. Using the checked dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V6 0.812

*In some Flat wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V7: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present.

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V7 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)
☐ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☒ b) if average buffer is 98 ft to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

3. This value is the SI for V8 = 0.33

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.25 (HYDRO) V3 _____ (TDEN) V5 1 (GVC) V7 1 (ORGANIC)
V2 _____ (TSIZE) V4 _____ (SCOV) V6 0.812 (COMP) V8 0.33 (BUFFER)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-31

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.500
	Function: Biogeochemical Processes	0.316
	Function: Retain Particulates	N/A
	Function: Plant Community	0.229
	Function: Wildlife Community	0.266
	Quantitative Score (Average of FCIs x 100)	32.8
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	32.8

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 05-20-2021 1710 hrs
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-20		
HUC (12 digit): 060400060101		Lat/Long: 36.437105 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332666 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 27.5 acres	County: Henry	
Soil Type(s) / Geology : Ua - Udorthents, loamy		Source: NRCS
Surrounding Land Use : Industrial and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Stream](#)

Secondary Indicator Score (if applicable) = [25.75](#)

Justification / Notes :

[Determination problematic due to possible water or sewer line break - water bubbling up from roadside and scent of sewer present; hydrology source may not be natural](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 9.25)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

C. Biology (Subtotal = 8)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 25.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature flowing in roadside ditch
 Strong flow
 Predominantly run habitat
 Few small benches present in reach
 Headcut = none / Grade control = 1 culvert

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	MW, NV	Affiliation:	Stantec	Date:	05-19-2021					
1-Station: from plans	N/A									
2-Map label and name	STR-20									
3-Latitude/Longitude	36.436544, -88.332390									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	25.75									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	18 inches			-top of bank width			36 inches			
-width at ordinary high water mark	24 inches									
-bank height	LDB - 18 inches				RDB - 18 inches					
-riffle/pool complex or other specialized habitat present?	None									
-dominant riparian species:	LDB: Schedonorus arundinaceus, Acer rubrum									
----- (LDB / RDB) -----	RDB: Schedonorus arundinaceus, Acer rubrum, Acer saccharinum									
-date of PJD request										
5-photo numbers	293 - 298									
6-HUC -8 Code & Name	06040006				East Fork Clarks River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	<p>ATTENTION: Source of hydrology is in question for this feature as it appears the source of hydrology is either a water line or sewer line break. At the upper most reach of the feature water was observed bubbling out of the ground at the edge of pavement and there was a faint scent of sewage.</p> <p>Need to investigate source of hydrology and possible leak</p> <p>Feature is located in the roadside ditch- strong flow present day of survey</p>									
Substrate	Silt, sand and gravel									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-32-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Roadside swale Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.437688 Long: -88.332453 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 32 is an emergent wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>Surface</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-32-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>35</u></td> <td>x 1 = <u>35</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>50</u> (A)</td> <td><u>80</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.6</u>	Total % Cover of:	Multiply by:	OBL species <u>35</u>	x 1 = <u>35</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>50</u> (A)	<u>80</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>35</u>	x 1 = <u>35</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>15</u>	x 3 = <u>45</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>50</u> (A)	<u>80</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Eleocharis obtusa</u>	<u>25</u>	<u>✓</u>	OBL	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
2. <u>Ranunculus sardous</u>	<u>15</u>	<u>✓</u>	FAC															
3. <u>Scirpus atrovirens</u>	<u>10</u>	<u>✓</u>	OBL															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. <u>None</u>	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-32-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/2	95	7.5YR 4/6	5	C	PL	Silt	
5-18	10YR 5/2	80	7.5YR 4/6	20	C	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 05-19-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-32-UPL
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Fill slope Local relief (concave, convex, none): Convex Slope (%): 20
 Subregion (LRR or MLRA): LRR P Lat: 36.437690 Long: -88.332479 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-32. Roadway fill slope.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) </div> <div style="width: 50%;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </div> </div>	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-32-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>240</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.4</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>240</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>40</u>	x 3 = <u>120</u>																	
FACU species <u>30</u>	x 4 = <u>120</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>70</u> (A)	<u>240</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Trifolium repens</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU															
3. <u>Sherardia arvensis</u>	<u>10</u>	_____	NA															
4. <u>Plantago lanceolata</u>	<u>10</u>	_____	FACU															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>80.0</u> = Total Cover 50% of total cover: <u>40.0</u> 20% of total cover: <u>16.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-32-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					Silt loam	
6-10	5YR 4/6	100					Clay	Gravel mixed in - Refusal at 10"

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 10

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Roadway fill slope.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-33-WET
 Investigator(s): MW, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 3%
 Subregion (LRR or MLRA): LRR P Lat: 36.440577 Long: -88.332571 Datum: NAD83 TN
 Soil Map Unit Name: Ud - Udorthents-Urban land complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-33 is an emergent wetland ditch on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-33-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>2</u></td> <td>x 1 = <u>2</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>2</u></td> <td>x 3 = <u>6</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>4</u> (A)</td> <td><u>8</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.0</u>	Total % Cover of:	Multiply by:	OBL species <u>2</u>	x 1 = <u>2</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>2</u>	x 3 = <u>6</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>4</u> (A)	<u>8</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>2</u>	x 1 = <u>2</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>2</u>	x 3 = <u>6</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>4</u> (A)	<u>8</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Packera glabella</u>	<u>2</u>	<input checked="" type="checkbox"/>	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Rumex crispus</u>	<u>2</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Persecaria sp.</u>	<u>2</u>	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>6.0</u> = Total Cover 50% of total cover: <u>3.0</u> 20% of total cover: <u>1.2</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		

Remarks: (Include photo numbers here or on a separate sheet.)

Problematic vegetation. Vegetation frequently disturbed by mowing.

SOIL

Sampling Point: WTL-33-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					Silty clay loam	
6-10	10YR 4/2	55	10YR 5/6	45	C	M	Silty clay	
10-18	10YR 6/2	85	10YR 5/8	15	C	M	Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-33-UPL
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%
 Subregion (LRR or MLRA): LRR P Lat: 36.440556 Long: -88.332559 Datum: NAD83 TN
 Soil Map Unit Name: Ud - Udorthents-Urban land complex NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Upland point associated with WTL-33.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) </div> <div style="width: 50%;"> <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </div> </div>	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-33-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>42</u></td> <td>x 3 = <u>126</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>42</u></td> <td>(A) <u>126</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>42</u>	x 3 = <u>126</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>42</u>	(A) <u>126</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>42</u>	x 3 = <u>126</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>42</u>	(A) <u>126</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Acer rubrum</u>	<u>2</u>	_____	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Schedonorus arundinaceus</u>	<u>40</u>	<input checked="" type="checkbox"/>	FAC															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>42.0</u> = Total Cover 50% of total cover: <u>21.0</u> 20% of total cover: <u>8.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		

Remarks: (Include photo numbers here or on a separate sheet.)

Problematic vegetation. Vegetation frequently disturbed by mowing.

SOIL

Sampling Point: WTL-33-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/2	100					Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Roadfill

Depth (inches): 5

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-52		
HUC (12 digit): 060400060101		Lat/Long: 36.441736 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332679 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 92.1 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Residential/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [18.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 18.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Culvert under SR-54, upstream portion flows east under the highway. Bed and bank strong, leaves occasionally in channel. Large debris piles present, no vegetation. Sediment deposits in leaves on the bank and on sediment. Few small bars observed. Some concrete in the channel. Fibrous roots sparse. Tadpoles found in one puddle. Downstream portion is fed by three culverts, one from the main channel under the road and two others from different drainage areas. Downstream was rerouted and channel now ends on the east of the highway with a pool and small area of riprap.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	KD, NV		Affiliation:	Stantec		Date:	5/21/2021		
1-Station: from plans	N/A								
2-Map label and name	WWC-52								
3-Latitude/Longitude	36.441666, -88.332790								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	18								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	2.5 ft				-top of bank width		4 ft		
-width at ordinary high water mark	1 ft								
-bank height	LDB - 2 ft					RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:	LDB: Schedonorus arundinaceus, Hedera helix								
----- (LDB /RDB) -----	RDB: Schedonorus arundinaceus, Hedera helix								
-date of PJD request									
5-photo numbers	305 -310								
6-HUC -8 Code & Name	06040006				East Fork Clarks River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		
	no <input type="checkbox"/>								
10-Notes									
Substrate									
	Sandy clay with gravel								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-53		
HUC (12 digit): 060400060101		Lat/Long: 36.442855 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332827 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 32.3 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Residential/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [15.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 15.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Culvert under SR-54, downstream portion has a large pool below culvert outlet with no flow. Bed and bank mostly defined, scour is present with some sorting. Vegetation is present sporadically. A few small debris piles, no wrack lines. Hydric soils present throughout. Roots present throughout. Woody roots present as grade control.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	KD, NV		Affiliation:	Stantec		Date:	5/21/2021		
1-Station: from plans	N/A								
2-Map label and name	WWC-53								
3-Latitude/Longitude	36.442842, -88.332691								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	15.5								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	1.5 ft				-top of bank width		3 ft		
-width at ordinary high water mark	1 ft								
-bank height	LDB - 2 ft					RDB - 2.5 ft			
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:	LDB: Acer saccharinum, Schedonorus arundinaceus, Cirsium sp.								
----- (LDB / RDB) -----	RDB: Acer saccharinum, Schedonorus arundinaceus, Cirsium sp.								
-date of PJD request									
5-photo numbers	311 -312								
6-HUC -8 Code & Name	06040006				East Fork Clarks River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		
	no <input type="checkbox"/>								
10-Notes									
Substrate	Sandy clay with gravel								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-54		
HUC (12 digit): 060400060101		Lat/Long: 36.448283 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332394 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 26.5 acres	County: Henry	
Soil Type(s) / Geology : Ud - Udorthents-Urban land complex		Source: NRCS
Surrounding Land Use : Residential/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [8.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = <u>4.5</u>)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = <u>2.5</u>)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

C. Biology (Subtotal = <u>1.5</u>)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 8.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Roadside channel with minimal sorting and all riffle. Vegetation sporadic in the middle and heavier in the up and downstream ends.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd
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Biologist:	KD, NV	Affiliation:	Stantec	Date:	5/21/2021
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1-Station: from plans	N/A
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2-Map label and name	WWC-54
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3-Latitude/Longitude	36.448258, -88.332400
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4-Feature description:	
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-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>
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-HD score (if applicable)	8.5
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-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>
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	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
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	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
--	--------------------------	-------------------------------------	---------------------------------	--------------------------	--------------------------------	--------------------------	----------	--------------------------	----------	--------------------------

-channel bottom width	2 ft	-top of bank width	2.5 ft
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-width at ordinary high water mark	1 ft
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-bank height	LDB - 1.5 ft	RDB - 1.5 ft
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-riffle/pool complex or other specialized habitat present?	
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-dominant riparian species:	LDB: <i>Schedonorus arundinaceus</i>
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------(LDB /RDB)-----	RDB:Schedonorus arundinaceus
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-date of PJD request	
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5-photo numbers	313 -314
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6-HUC -8 Code & Name	06040006	East Fork Clarks River
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7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>
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8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>	
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9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>
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	no	<input type="checkbox"/>	
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10-Notes	Roadside ditch
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[illegible]

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-34-WET
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR P Lat: 36.449000 Long: -88.332216 Datum: NAD83 TN
 Soil Map Unit Name: Ud - Udorthents-Urban land complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: WTL-34 is an emergent wetland ditch on the west side of SR-54. Vegetation problematic			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-34-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>35</u> (A)</td> <td><u>120</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.4</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>35</u> (A)	<u>120</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>20</u>	x 3 = <u>60</u>																	
FACU species <u>15</u>	x 4 = <u>60</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>35</u> (A)	<u>120</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Ranunculus sardous</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Rumex crispus</u>	<u>5</u>		FAC															
3. <u>Carex sp.</u>	<u>25</u>	<input checked="" type="checkbox"/>	NA															
4. <u>Galium sp.</u>	<u>2</u>		NA															
5. <u>Ambrosia artemisiifolia</u>	<u>5</u>		FACU															
6. <u>Glechoma hederacea</u>	<u>10</u>		FACU															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>31.0</u> 20% of total cover: <u>12.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.) Problematic vegetation due to roadside location.																		

SOIL

Sampling Point: WTL-34-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 3/1	100					Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-34-UPL
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3%
 Subregion (LRR or MLRA): LRR P Lat: 36.449007 Long: -88.332251 Datum: NAD83 TN
 Soil Map Unit Name: Ud - Udorthents-Urban land complex NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-34.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-34-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>60</u></td> <td>x 3 = <u>180</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>200</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.1</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>65</u> (A)	<u>200</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>60</u>	x 3 = <u>180</u>																	
FACU species <u>5</u>	x 4 = <u>20</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>65</u> (A)	<u>200</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>50</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Taraxacum officinale</u>	<u>5</u>	_____	FACU															
3. <u>Ranunculus sardous</u>	<u>10</u>	_____	FAC															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>65.0</u> = Total Cover 50% of total cover: <u>32.5</u> 20% of total cover: <u>13.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-34-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
								Road fill

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Road fill

Depth (inches): 0

Hydric Soil Present? Yes ☐ No ☒

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-55		
HUC (12 digit): 060400060101		Lat/Long: 36.449620 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332189 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 5.3 acres		County: Henry
Soil Type(s) / Geology : Ud - Udorthents-Urban land complex		Source: NRCS
Surrounding Land Use : Residential/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [11.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 4)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Begins at the end of WTL-34 and has some sorting and definition until the culvert where the channel transitions to riprap and drains into WWC-56, minimal sorting and all riffle. Vegetation sporadic. Hydric soils.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		KD, NV		Affiliation:		Stantec		Date: 5/21/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-55							
3-Latitude/Longitude		36.449661, -88.332193							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		11.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		3 ft				-top of bank width		4 ft	
-width at ordinary high water mark		2.5 ft							
-bank height		LDB - 1 ft				RDB - 2 ft			
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:		LDB: Schedonorus arundinaceus							
----- (LDB /RDB) -----		RDB: Schedonorus arundinaceus, Fraxinus pennsylvanica							
-date of PJD request									
5-photo numbers		318 -319							
6-HUC -8 Code & Name		06040006				East Fork Clarks River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Begins at the end of WTL-34 and has some sorting and definition until the culvert where the channel transitions to rip rap lined channel and drains into WWC-56.</p>							
Substrate		Sandy clay with gravel							

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-56		
HUC (12 digit): 060400060101		Lat/Long: 36.449883 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332029 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 46.1 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Residential/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 4)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Begins at riprap at culvert inlet on the west side of the road. Flows east to more riprap and a pooled area. Riprap ends and becomes a channel with minimal sorting and all riffle. Vegetation sporadic.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		KD, NV		Affiliation:		Stantec		Date: 5/21/2021	
1-Station: from plans		N/A							
2-Map label and name		WWC-56							
3-Latitude/Longitude		36.449903, -88.331956							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		12.5							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		1 ft				-top of bank width		2.5 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 6 in				RDB - 6 in			
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:		LDB: Schedonorus arundinaceus							
----- (LDB / RDB) -----		RDB: Schedonorus arundinaceus							
-date of PJD request									
5-photo numbers		320 -321							
6-HUC -8 Code & Name		06040006				East Fork Clarks River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Begins at riprap at culvert inlet on the west side of the road. Flows east to more riprap and a pooled area.</p>							
Substrate		Sandy clay with gravel							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-35-WET
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.450996 Long: -88.332082 Datum: NAD83 TN
 Soil Map Unit Name: PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-35 is an emergent wetland ditch on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-35-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>10</u></td> <td>x 1 = <u>10</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>7</u></td> <td>x 4 = <u>28</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>27</u> (A)</td> <td><u>58</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.1</u>	Total % Cover of:	Multiply by:	OBL species <u>10</u>	x 1 = <u>10</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>7</u>	x 4 = <u>28</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>27</u> (A)	<u>58</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>10</u>	x 1 = <u>10</u>																	
FACW species <u>10</u>	x 2 = <u>20</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>7</u>	x 4 = <u>28</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>27</u> (A)	<u>58</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Packera glabella</u>	<u>10</u>	<u>✓</u>	OBL															
2. <u>Carex vulpinoidea</u>	<u>10</u>	<u>✓</u>	FACW															
3. <u>Taraxacum officinale</u>	<u>5</u>	_____	FACU	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
4. <u>Erigeron annuus</u>	<u>2</u>	_____	FACU															
5. <u>Viola sp.</u>	<u>5</u>	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
<u>32.0</u> = Total Cover 50% of total cover: <u>16.0</u> 20% of total cover: <u>6.4</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-35-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	98	10YR 5/6	2			Sandy clay loam	
6-15	10YR 4/2	96	7.5YR 5/8	4			Sandy clay loam	
15-18	10YR 4/2	40	7.5YR 4/6	60			Sandy clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-35-UPL
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.450989 Long: -88.332076 Datum: NAD83 TN
 Soil Map Unit Name: Providence silty clay loam, 5 to 8 percent slopes, severely eroded (PrC3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-35.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-35-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>85</u> (A)</td> <td><u>270</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.2</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>85</u> (A)	<u>270</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>15</u>	x 4 = <u>60</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>85</u> (A)	<u>270</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceous</u>	<u>70</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Taraxacum officinale</u>	<u>5</u>	_____	FACU															
3. <u>Erigeron annuus</u>	<u>10</u>	_____	FACU															
4. <u>Viola sp.</u>	<u>20</u>	_____	NA															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>105.0</u> = Total Cover 50% of total cover: <u>52.5</u> 20% of total cover: <u>21.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-35-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					Loam	
6-18	10YR 4/3	70	7.5YR 5/6	30			Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/2021

Project Name TDOT Henry Co. SR-54

Field Personnel KD, NV

Wetland Name/Location WTL-35

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- ☐ - no fill material or sediment
☐ - no ditches/drainage tiles

- outlet unaltered
- runoff/input unaltered

- no excavation

2. Wetland depth slightly impacted (SI = 0.75)

- ☒ - portion of site with minimal fill material or sediment
☐ - portion of site with ditches/drainage tiles

- outlet lowered/raised
- runoff/input increased

- minor excavation

3. Wetland depth moderately impacted (SI = 0.5)

- ☐ - portion of site with moderate fill material or sediment
☐ - portion of site with ditches/drainage tiles

- outlet lowered/raised
- increased hydroperiod

- moderate excavation

4. Wetland depth significantly impacted (SI = 0.25)

- ☐ - portion of site with significant fill material or sediment
☐ - portion of site with ditches/drainage tiles

- outlet lowered/raised
- increased hydroperiod

- significant excavation

5. Wetland depth severely impacted (SI = 0.1)

- ☐ - excessive fill material or sediment
☐ - numerous ditches/drainage tiles

- outlet removed/blocked
- increased hydroperiod

- entire wetland affected
- recovery potential lost

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 25

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar

C = Percentage low density residential, construction, or similar 76

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.625}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☒ 20 – 29 (SI = 0.1)
 < 20 (SI=0.0)
☐

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☒ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.248

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.248 (BUFFER)

V2 0.625 (WSHEDINT) V4 _____ (TDEN) V6 0.1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-35

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.685
	Function: Biogeochemical Processes	0.388
	Function: Retain Particulates	N/A
	Function: Plant Community	0.151
	Function: Wildlife Community	0.179
	Quantitative Score (Average of FCIs x 100)	35.1
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	35.1

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/2021
Assessors/Affiliation: MW (#1079-TN11), NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-21		
HUC (12 digit): 060400060101		Lat/Long: 36.452030 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332084 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 64.3 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Residential/commercial		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **25**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = <u>14.5</u>)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = <u>6</u>)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

C. Biology (Subtotal = <u>4.5</u>)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Stream begins at a headcut at the end of WWC-56. There is water at the base of the headcut but no flow at time of survey. Multiple small and one large grade control. Sorting throughout, better at upstream portion. Adult frogs observed at one location. Fibrous roots found in two spots. No vegetation in channel. Downstream flows into a culvert under SR-54.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	KD, NV		Affiliation:	Stantec		Date:	5/21/2021		
1-Station: from plans	N/A								
2-Map label and name	STR-21								
3-Latitude/Longitude	36.452058, -88.332103								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input checked="" type="checkbox"/>		ephemeral stream <input type="checkbox"/>		wwc <input type="checkbox"/>		
-HD score (if applicable)	25								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input checked="" type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	3 ft				-top of bank width		5 ft		
-width at ordinary high water mark	2 ft								
-bank height	LDB - 4 ft				RDB - 4 ft				
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:	LDB: P. quinquefolia, T. radicans, Sassafras albidum, Ulmus americana, L. styraciflua								
----- (LDB / RDB) -----	RDB: P. quinquefolia, T. radicans, Sassafras albidum, Ulmus americana, L. styraciflua								
-date of PJD request									
5-photo numbers	325 - 326								
6-HUC -8 Code & Name	06040006				East Fork Clarks River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		<input type="checkbox"/>
	no <input type="checkbox"/>								
10-Notes	Stream begins at a headcut at the end of WWC-56.								
Substrate	Sandy clay with gravel								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/21
Assessors/Affiliation: ZB (#1186-TN19)		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-57		
HUC (12 digit): 06040060101		Lat/Long: 36.452614 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332340 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.6 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Residential forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [16](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> 1.5	

N/A

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 16

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel flowing at time of survey but may be a result of a leaking pipe. Chlorine smell. Water flowing from road embankment adjacent to a box which may be associated with a water line.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB	Affiliation:	Stantec	Date:	5/21/21					
1-Station: from plans	N/A									
2-Map label and name	WWC-57									
3-Latitude/Longitude	36.452614, -88.332340									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	16									
-OHWM indicators	bed & banks	<input type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	1 ft			-top of bank width			2 ft			
-width at ordinary high water mark	1 ft									
-bank height	LDB - 6 inches				RDB - 6 inches					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: Schedonorus arundinaceus, Valerianella radiata, Smilax rotundifolia, Festuca sp.									
----- (LDB / RDB) -----	RDB: Schedonorus arundinaceus, Valerianella radiata, Smilax rotundifolia, Festuca sp.									
-date of PJD request										
5-photo numbers	327 - 328									
6-HUC -8 Code & Name	08010202				North Fork Obion River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	<p>Channel flowing at time of survey but may be a result of a leaking pipe. Chlorine smell. Water flowing from road embankment adjacent to a box which may be associated with a water line.</p>									
Substrate	Gravel, silt, clay									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: STR-22		
HUC (12 digit): 060400060101		Lat/Long: 36.452660 °N
Previous Rainfall (7-days) : 0.3 inches		-88.331875 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 255.6 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Stream**

Secondary Indicator Score (if applicable) = **0**

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 0)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 0)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	3	2	1	0
21. Rooted plants in thalweg ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ²	0	0.5	1	1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB, KD	Affiliation:	Stantec	Date:	5/20/21					
1-Station: from plans	N/A									
2-Map label and name	STR-22									
3-Latitude/Longitude	36.452649, -88.332024									
4-Feature description:										
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>		
-HD score (if applicable)	n/a									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>
	change in plant community	<input checked="" type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	8 ft			-top of bank width			10 ft			
-width at ordinary high water mark	8 ft									
-bank height	LDB - 2.5 ft				RDB - 3.5 ft					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: Carya glabra, Fraxinus pennsylvanica, Rosa multiflora									
----- (LDB / RDB) -----	RDB: Rosa multiflora, Platanus occidentalis, Carya glabra									
-date of PJD request										
5-photo numbers	329 - 330									
6-HUC -8 Code & Name	06040006				East Fork Clarks River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes										
Substrate	Sandy clay									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/21
Assessors/Affiliation: ZB (#1186-TN19)		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-58		
HUC (12 digit): 06040060101		Lat/Long: 36.453127 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332293 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 19.6 acres		County: Henry
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded Source: NRCS		
Surrounding Land Use : Residential, forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [11.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> 1.5	

N/A

C. Biology (Subtotal = 4)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 11.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Roadside ditch. Small amount of sorting and recent alluvial.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:		ZB		Affiliation:		Stantec		Date: 5/21/21			
1-Station: from plans		N/A									
2-Map label and name		WWC-58									
3-Latitude/Longitude		36.453127, -88.332293									
4-Feature description:											
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>			
-HD score (if applicable)		11.25									
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input checked="" type="checkbox"/>	
		change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input checked="" type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft			
-width at ordinary high water mark		1 ft									
-bank height		LDB - 6 inches				RDB - 6 inches					
-riffle/pool complex or other specialized habitat present?		No									
-dominant riparian species:		LDB: A. rubrum, S. arundinaceus, Valerianella radiata, Prunus serotina, Trifolium campestre									
----- (LDB /RDB) -----		RDB: Acer rubrum, Schedonorus arundinaceus, Valerianella radiata, Prunus serotina									
-date of PJD request											
5-photo numbers		331 - 333									
6-HUC -8 Code & Name		06040006				East Fork Clarks River					
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>							
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>			
		no <input type="checkbox"/>									
10-Notes		Roadside ditch drains roadside ditch wetland									
Substrate		Silt									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/20/21
Assessors/Affiliation: ZB (#1186-TN19), KD		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-59		
HUC (12 digit): 06040060101		Lat/Long: 36.453664 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332109 °W
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 14.2 acres	County: Henry	
Soil Type(s) / Geology : PrC3 - Providence silty clay loam, 5-8% slopes, severely eroded		Source: NRCS
Surrounding Land Use : Residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; align-items: center;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [12](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 3)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 1)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 12

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Roadside ditch. begins where wetland veg dissipates in ditch. Once in cleared mowed/maintained yard a large headcut has formed and then the channel flows into culvert with riprap for ~20 ft before flowing into a forested area.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:		ZB, KD		Affiliation:		Stantec		Date: 5/20/21	
1-Station: from plans		N/A							
2-Map label and name		WWC-59							
3-Latitude/Longitude		36.453664 / -88.332109							
4-Feature description:									
-channel identification		perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>	
-HD score (if applicable)		12							
-OHWM indicators		bed & banks <input checked="" type="checkbox"/>		deposition <input type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input checked="" type="checkbox"/>	
		change in plant community <input checked="" type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>	
		change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>	
-channel bottom width		2 ft				-top of bank width		3 ft	
-width at ordinary high water mark		1 ft							
-bank height		LDB - 1 ft				RDB - 1 ft			
-riffle/pool complex or other specialized habitat present?		None							
-dominant riparian species:		LDB: Parthenocissus quinquefolia, Microstegium vimineum, Liquidambar styraciflua							
----- (LDB / RDB) -----		RDB: Parthenocissus quinquefolia, Plantago lanceolata							
-date of PJD request									
5-photo numbers		334 - 337							
6-HUC -8 Code & Name		06040060				East Fork Clarks River			
7-Assessed		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
8-ETW		yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>					
9-303 (d) List		yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>	
		no <input type="checkbox"/>							
10-Notes		<p>Roadside ditch. begins where wetland veg dissipates in ditch. Once in cleared mowed/maintained yard a large headcut has formed and then the channel flows into culvert with riprap for ~20 ft before flowing into a forested area.</p>							
Substrate		silt, gravel							

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-36-WET
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): roadside ditch Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.454302 Long: -88.332252 Datum: NAD83 TN
 Soil Map Unit Name: CaB2 - Calloway Silt Loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Emergent roadside ditch wetland. State-listed water purslane (<i>Didiplis diandra</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-36-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>45</u></td> <td>x 3 = <u>135</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>170</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.6</u>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>45</u>	x 3 = <u>135</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>65</u> (A)	<u>170</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>5</u>	x 1 = <u>5</u>																	
FACW species <u>15</u>	x 2 = <u>30</u>																	
FAC species <u>45</u>	x 3 = <u>135</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>65</u> (A)	<u>170</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Juncus effusus</u>	<u>5</u>	_____	OBL															
2. <u>Juncus tenuis</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
3. <u>Andropogon virginicus</u>	<u>10</u>	_____	FAC															
4. <u>Carex scoparia</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACW															
5. <u>Festuca perennis</u>	<u>10</u>	_____	NA															
6. <u>Carex sp.</u>	<u>2</u>	_____	NA															
7. <u>Acer rubrum</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>77.0</u> = Total Cover 50% of total cover: <u>38.5</u> 20% of total cover: <u>15.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-36-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 5/2	98	5YR 5/8	2	C	M	Silty clay loam	
3-18	10YR 6/1	90	5YR 5/6	5	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-36-UPL
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Roadside slope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.454302 Long: -88.332252 Datum: NAD83 TN
 Soil Map Unit Name: CaB2 - Calloway Silt Loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-36	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-36-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>235</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.6</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>65</u> (A)	<u>235</u> (B)	Prevalence Index = B/A = <u>3.6</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>25</u>	x 3 = <u>75</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>65</u> (A)	<u>235</u> (B)																			
Prevalence Index = B/A = <u>3.6</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Trifolium campestre</u>	<u>15</u>	_____	NA																	
2. <u>Schedonorus arundinaceus</u>	<u>25</u>	<input checked="" type="checkbox"/>	FAC																	
3. <u>Trifolium repens</u>	<u>10</u>	_____	FACU																	
4. <u>Plantago lanceolata</u>	<u>25</u>	<input checked="" type="checkbox"/>	FACU																	
5. <u>Taraxacum officinale</u>	<u>5</u>	_____	FACU																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>80.0</u> = Total Cover 50% of total cover: <u>40.0</u> 20% of total cover: <u>16.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ☒

SOIL

Sampling Point: WTL-36-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Loam	
4-18	7.5YR 4/6	100					Clay Loam	Roadfill

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|---|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-36

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|---|--|
| <input type="checkbox"/> - no fill material or sediment
<input type="checkbox"/> - no ditches/drainage tiles | - outlet unaltered
- runoff/input unaltered | - no excavation |
| <p>2. Wetland depth slightly impacted (SI = 0.75)</p> <input type="checkbox"/> - portion of site with minimal fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- runoff/input increased | - minor excavation |
| <p>3. Wetland depth moderately impacted (SI = 0.5)</p> <input type="checkbox"/> - portion of site with moderate fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - moderate excavation |
| <p>4. Wetland depth significantly impacted (SI = 0.25)</p> <input checked="" type="checkbox"/> - portion of site with significant fill material or sediment
<input type="checkbox"/> - portion of site with ditches/drainage tiles | - outlet lowered/raised
- increased hydroperiod | - significant excavation |
| <p>5. Wetland depth severely impacted (SI = 0.1)</p> <input type="checkbox"/> - excessive fill material or sediment
<input type="checkbox"/> - numerous ditches/drainage tiles | - outlet removed/blocked
- increased hydroperiod | - entire wetland affected
- recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 40
 B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 20
 C = Percentage low density residential, construction, or similar 10
 D = Percentage high density residential, or similar
 E = Percentage urban, commercial, industrial, or similar 30

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.603}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot
☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot
☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3 Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total} \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.704

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by 1.0

☒ b) if average buffer is 98 ft. to 491 ft., multiply by 0.66

☐ c) if average buffer width is 33 ft. to 97 ft., multiply by 0.33

☐ d) if average buffer width is < 33 ft., multiply by 0.1

2. This value is the SI for V9= 0.33

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.25 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.704 (COMP) V9 0.33 (BUFFER)

V2 0.603 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	Yes	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-36

Exceptional Status Wetlands	Check if applicable	
1. ONRW	<input type="checkbox"/>	
2. ETW	<input type="checkbox"/>	
3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>	
COMMENTS/NOTES:		
Quantitative Rating scores	Function: Hydrologic Regime	0.388
	Function: Biogeochemical Processes	0.394
	Function: Retain Particulates	N/A
	Function: Plant Community	0.232
	Function: Wildlife Community	0.269
	Quantitative Score (Average of FCIs x 100)	32.1
	Value Added (Significant Size) Total	0
	Total of Quantitative and Value Added Scores	TOTAL SCORE

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-37-WET
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1%
 Subregion (LRR or MLRA): LRR P Lat: 36.454473 Long: -88.331964 Datum: NAD83 TN
 Soil Map Unit Name: CaB2, CkA, PrC3, Ur, Ua NWI classification: PEM/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-37 is an emergent/forested wetland on the east side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-37-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u><i>Celtis laevigata</i></u>	40	✓	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)														
2. _____			NA	Total Number of Dominant Species Across All Strata: <u>5</u> (B)														
3. _____			NA															
4. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0</u> (A/B)														
5. _____			NA															
6. _____			NA															
7. _____			NA															
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>50</u></td> <td>x 2 = <u>100</u></td> </tr> <tr> <td>FAC species <u>35</u></td> <td>x 3 = <u>105</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>245</u> (B)</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>50</u>	x 2 = <u>100</u>	FAC species <u>35</u>	x 3 = <u>105</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>245</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>50</u>	x 2 = <u>100</u>																	
FAC species <u>35</u>	x 3 = <u>105</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>245</u> (B)																	
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index = B/A = <u>2.6</u>														
1. <u><i>Acer rubrum</i></u>	15	✓	FAC															
2. <u><i>Ulmus alata</i></u>	10	✓	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
3. _____			NA															
4. _____			NA															
5. _____			NA															
6. _____			NA															
7. _____			NA															
8. _____			NA															
9. _____			NA															
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u><i>Carex squarrosa</i></u>	10	✓	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u><i>Toxicodendron radicans</i></u>	15	✓	FAC															
3. <u><i>Aster sp.</i></u>	5		NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
4. <u><i>Smilax rotundifolia</i></u>	5		FAC															
5. _____			NA															
6. _____			NA															
7. _____			NA															
8. _____			NA															
9. _____			NA															
10. _____			NA															
11. _____			NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
<u>35.0</u> = Total Cover 50% of total cover: <u>17.5</u> 20% of total cover: <u>7.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____			NA															
2. _____			NA															
3. _____			NA															
4. _____			NA															
5. _____			NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-37-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 5/1	100					Clay loam	
2-18	10YR 6/1	90	7.5YR 5/8	10	C	M	Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/20/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-37-UPL
 Investigator(s): ZB, KD Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR or MLRA): LRR P Lat: 36.454132 Long: -88.331837 Datum: NAD83 TN
 Soil Map Unit Name: Providence silty clay loam, 5 to 8 percent slopes, severely eroded (PrC3) NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-37.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-37-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u>Carya glabra</u>	<u>30</u>	<input checked="" type="checkbox"/>	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)																
2. <u>Quercus alba</u>	<u>30</u>	<input checked="" type="checkbox"/>	FACU	Total Number of Dominant Species Across All Strata: <u>5</u> (B)																
3. <u>Diospyros virginiana</u>	<u>30</u>	<input checked="" type="checkbox"/>	FAC	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>20.0</u> (A/B)																
4. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>30</u></td> <td>x 3 = <u>90</u></td> </tr> <tr> <td>FACU species <u>135</u></td> <td>x 4 = <u>540</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>165</u> (A)</td> <td><u>630</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.8</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>30</u>	x 3 = <u>90</u>	FACU species <u>135</u>	x 4 = <u>540</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>165</u> (A)	<u>630</u> (B)	Prevalence Index = B/A = <u>3.8</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>30</u>	x 3 = <u>90</u>																			
FACU species <u>135</u>	x 4 = <u>540</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>165</u> (A)	<u>630</u> (B)																			
Prevalence Index = B/A = <u>3.8</u>																				
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. <u>Carya glabra</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>20.0</u> = Total Cover 50% of total cover: <u>10.0</u> 20% of total cover: <u>4.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Parthenocissus quinquefolia</u>	<u>50</u>	<input checked="" type="checkbox"/>	FACU																	
2. <u>Galium aparine</u>	<u>5</u>	_____	FACU																	
3. <u>Rubus sp.</u>	<u>5</u>	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>60.0</u> = Total Cover 50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>																
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WTL-37-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/2	100					loam	
3-18	2.5Y 6/3	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/20/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-37

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|-----------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |

2. Wetland depth slightly impacted (SI = 0.75)

- | | | |
|--|--------------------------|--------------------|
| <input checked="" type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |

3. Wetland depth moderately impacted (SI = 0.5)

- | | | |
|--|-------------------------|-----------------------|
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

4. Wetland depth significantly impacted (SI = 0.25)

- | | | |
|---|-------------------------|--------------------------|
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

5. Wetland depth severely impacted (SI = 0.1)

- | | | |
|--|--------------------------|---------------------------|
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 10

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 75

C = Percentage low density residential, construction, or similar 15

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.7375}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☒ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input checked="" type="checkbox"/> Sugar Berry	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar		<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak		Number native shrub spp. _____		
<input type="checkbox"/> _____		Number native herbaceous spp. _____		

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☒ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.165

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (WETDEPTH) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.165 (BUFFER)

V2 0.7375 (WSHEDINT) V4 1 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-37

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.744
	Function: Hydrologic Regime	
		0.835
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.727
	Function: Plant Community	
Total of Quantitative and Value Added Scores		0.587
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	72.3
	Value Added (Significant Size) Total	0
	TOTAL SCORE	72.3

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-38-WET
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.454715 Long: -88.332447 Datum: NAD83 TN
 Soil Map Unit Name: CaB2 - Calloway Silt Loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Forested wetland located west of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-38-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																												
1. <u><i>Acer rubrum</i></u>	30	✓	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)																																												
2. <u><i>Liquidambar styraciflua</i></u>	10	✓	FAC	Total Number of Dominant Species Across All Strata: <u>4</u> (B)																																												
3. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																																												
4. _____			NA																																													
5. _____			NA																																													
6. _____			NA																																													
7. _____			NA																																													
<u>40.0</u> = Total Cover 50% of total cover: <u>20.0</u> 20% of total cover: <u>8.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>64</u></td> <td>x 3 = <u>192</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>64</u> (A)</td> <td><u>192</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>64</u>	x 3 = <u>192</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>64</u> (A)	<u>192</u> (B)	Prevalence Index = B/A = <u>3.0</u>																													
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				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																																												
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																												
				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																																												
				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____																																												
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>) <table style="width: 100%;"> <tr> <td>1. <u><i>Ulmus americana</i></u></td> <td style="text-align: center;">5</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>7. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>8. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>9. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> </table> <div style="text-align: right;"> <u>5.0</u> = Total Cover 50% of total cover: <u>2.5</u> 20% of total cover: <u>1.0</u> </div>					1. <u><i>Ulmus americana</i></u>	5	✓	FAC	2. _____			NA	3. _____			NA	4. _____			NA	5. _____			NA	6. _____			NA	7. _____			NA	8. _____			NA	9. _____			NA								
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Herb Stratum (Plot size: <u>5 ft</u>) <table style="width: 100%;"> <tr> <td>1. <u><i>Toxicodendron radicans</i></u></td> <td style="text-align: center;">15</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td>2. <u><i>Campsis radicans</i></u></td> <td style="text-align: center;">2</td> <td></td> <td style="text-align: center;">FAC</td> </tr> <tr> <td>3. <u><i>Smilax rotundifolia</i></u></td> <td style="text-align: center;">2</td> <td></td> <td style="text-align: center;">FAC</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>7. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>8. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>9. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>10. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>11. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> </table> <div style="text-align: right;"> <u>19.0</u> = Total Cover 50% of total cover: <u>9.5</u> 20% of total cover: <u>3.8</u> </div>					1. <u><i>Toxicodendron radicans</i></u>	15	✓	FAC	2. <u><i>Campsis radicans</i></u>	2		FAC	3. <u><i>Smilax rotundifolia</i></u>	2		FAC	4. _____			NA	5. _____			NA	6. _____			NA	7. _____			NA	8. _____			NA	9. _____			NA	10. _____			NA	11. _____			NA
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Woody Vine Stratum (Plot size: <u>15 ft</u>) <table style="width: 100%;"> <tr> <td>1. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td style="text-align: center;">NA</td> </tr> </table> <div style="text-align: right;"> <u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u> </div>					1. _____			NA	2. _____			NA	3. _____			NA	4. _____			NA	5. _____			NA																								
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Remarks: (Include photo numbers here or on a separate sheet.)																																																

SOIL

Sampling Point: WTL-38-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/4	100					Sandy loam	
4-18	10YR 6/1	85	5YR 5/8	15	C	M&PL	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-38-UPL
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.454692 Long: -88.332447 Datum: NAD83 TN
 Soil Map Unit Name: CaB2 - Calloway silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-38.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-38-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Quercus stellata</i></u>	<u>60</u>	<input checked="" type="checkbox"/>	UPL	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u><i>Quercus falcata</i></u>	<u>30</u>	<input checked="" type="checkbox"/>	FACU	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	_____	_____	NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40.0</u> (A/B)
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
<u>90.0</u> = Total Cover 50% of total cover: <u>45.0</u> 20% of total cover: <u>18.0</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>85</u> x 3 = <u>255</u> FACU species <u>32</u> x 4 = <u>128</u> UPL species <u>65</u> x 5 = <u>325</u> Column Totals: <u>182</u> (A) <u>708</u> (B) Prevalence Index = B/A = <u>3.9</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u><i>Quercus stellata</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	UPL	
2. _____	_____	_____	NA	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
8. _____	_____	_____	NA	
9. _____	_____	_____	NA	
<u>5.0</u> = Total Cover 50% of total cover: <u>2.5</u> 20% of total cover: <u>1.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u><i>Toxicodendron radicans</i></u>	<u>70</u>	<input checked="" type="checkbox"/>	FAC	
2. <u><i>Galium aparine</i></u>	<u>2</u>	_____	FACU	
3. <u><i>Campsis radicans</i></u>	<u>5</u>	_____	FAC	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
6. _____	_____	_____	NA	
7. _____	_____	_____	NA	
8. _____	_____	_____	NA	
9. _____	_____	_____	NA	
10. _____	_____	_____	NA	
11. _____	_____	_____	NA	
<u>77.0</u> = Total Cover 50% of total cover: <u>38.5</u> 20% of total cover: <u>15.4</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u><i>Toxicodendron radicans</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC	
2. _____	_____	_____	NA	
3. _____	_____	_____	NA	
4. _____	_____	_____	NA	
5. _____	_____	_____	NA	
<u>10.0</u> = Total Cover 50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-38-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/3	100					Loam	
3-18	10YR 4/4	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-38

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 95

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 5

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.9875}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☒ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☒ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input checked="" type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.703

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☒ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.66

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 0.75 (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.66 (BUFFER)

V2 0.9875 (WSHEDINT) V4 1 (TDEN) V6 0 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-38

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.994
	Function: Biogeochemical Processes	0.965
	Function: Retain Particulates	N/A
	Function: Plant Community	0.848
	Function: Wildlife Community	0.801
	Quantitative Score (Average of FCIs x 100)	90.2
	Value Added (Significant Size) Total	0
	TOTAL SCORE	90.2
Total of Quantitative and Value Added Scores		

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/21
Assessors/Affiliation: ZB (#1186-TN19)		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-60		
HUC (12 digit): 06040060101		Lat/Long: 36.454723 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332360 °W
Precipitation this Season vs. Normal : <input type="checkbox"/> abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.8 acres	County: Henry	
Soil Type(s) / Geology : CaB2 - Calloway silt loam, 2-5% slopes, eroded		Source: NRCS
Surrounding Land Use : Residential, forested		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [10.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> 1.5	

N/A

C. Biology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 10.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Bed and bank defined. Several small root grade control. Small amount of sorting and partially downcut through profile.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB	Affiliation:	Stantec	Date:	5/21/21					
1-Station: from plans	N/A									
2-Map label and name	WWC-60									
3-Latitude/Longitude	36.454723, -88.332360									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	10.5									
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input checked="" type="checkbox"/>	leaf litter disturbed or absent	<input checked="" type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	1 ft			-top of bank width			2 ft			
-width at ordinary high water mark	6 inches									
-bank height	LDB - 1 ft				RDB - 1 ft					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: <i>P. quinquefolia</i> , <i>Allium canadense</i> , <i>Valerianella radiata</i> , <i>Schedonorus arundinaceus</i>									
----- (LDB /RDB) -----	RDB: <i>P. quinquefolia</i> , <i>Allium canadense</i> , <i>V. radiata</i> , <i>S. arundinaceus</i> , <i>L. styraciflua</i>									
-date of PJD request										
5-photo numbers	344 - 345									
6-HUC -8 Code & Name	06040006				East Fork Clarks River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Small channel connecting forested wetland to roadside ditch wetland									
Substrate	Gravel sand									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-39-WET
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.455638 Long: -88.332414 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents NWI classification: PEM/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Forested/Emergent wetland located west of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-39-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u><i>Acer rubrum</i></u>	<u>50</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>50.0</u> = Total Cover																				
50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>25</u></td> <td>x 1 = <u>25</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>92</u></td> <td>x 3 = <u>276</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>142</u> (A)</td> <td><u>351</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.5</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>25</u>	x 1 = <u>25</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>92</u>	x 3 = <u>276</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>142</u> (A)	<u>351</u> (B)	Prevalence Index = B/A = <u>2.5</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>25</u>	x 1 = <u>25</u>																			
FACW species <u>25</u>	x 2 = <u>50</u>																			
FAC species <u>92</u>	x 3 = <u>276</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>142</u> (A)	<u>351</u> (B)																			
Prevalence Index = B/A = <u>2.5</u>																				
1. <u><i>Ulmus americana</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	FAC																	
2. <u><i>Acer rubrum</i></u>	<u>2</u>	<input checked="" type="checkbox"/>	FAC																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>7.0</u> = Total Cover																				
50% of total cover: <u>3.5</u> 20% of total cover: <u>1.4</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u><i>Juncus effusus</i></u>	<u>25</u>	<input checked="" type="checkbox"/>	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
2. <u><i>Juncus tenuis</i></u>	<u>15</u>	_____	FAC																	
3. <u><i>Carex scoparia</i></u>	<u>25</u>	<input checked="" type="checkbox"/>	FACW																	
4. <u><i>Toxicodendron radicans</i></u>	<u>10</u>	_____	FAC																	
5. <u><i>Acer rubrum</i></u>	<u>10</u>	_____	FAC																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>85.0</u> = Total Cover																				
50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover																				
50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.) 																				

SOIL

Sampling Point: WTL-39-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 6/1	85	5YR 5/8	15	C	M	Silty clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-39-UPL
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Berm Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.455597 Long: -88.332282 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-39.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-39-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>2</u></td> <td>x 5 = <u>10</u></td> </tr> <tr> <td>Column Totals: <u>52</u> (A)</td> <td><u>170</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>2</u>	x 5 = <u>10</u>	Column Totals: <u>52</u> (A)	<u>170</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>40</u>	x 3 = <u>120</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>2</u>	x 5 = <u>10</u>																	
Column Totals: <u>52</u> (A)	<u>170</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. <u>Pyrus calleryana</u>	<u>5</u>	<input checked="" type="checkbox"/>	NA															
2. <u>Juniperus virginiana</u>	<u>5</u>	<input checked="" type="checkbox"/>	FACU															
3. <u>Acer rubrum</u>	<u>15</u>	<input checked="" type="checkbox"/>	FAC															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>25.0</u> = Total Cover 50% of total cover: <u>12.5</u> 20% of total cover: <u>5.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height. Woody vine – All woody vines greater than 3.28 ft in height.														
1. <u>Acer rubrum</u>	<u>20</u>	<input checked="" type="checkbox"/>	FAC															
2. <u>Rubus sp.</u>	<u>10</u>	<input checked="" type="checkbox"/>	NA															
3. <u>Campsis radicans</u>	<u>5</u>	_____	FAC															
4. <u>Oxalis stricta</u>	<u>2</u>	_____	UPL															
5. <u>Geranium maculatum</u>	<u>5</u>	_____	FACU															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>42.0</u> = Total Cover 50% of total cover: <u>21.0</u> 20% of total cover: <u>8.4</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-39-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 5/1	100					Clay Loam	
2-18	10YR 6/1	90	7.5YR 5/8	10	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-39

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 45

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 55

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.8625}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☒ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input checked="" type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.406

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**

☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**

☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**

☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.495

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 0.5 (TSIZE) V5 _____ (SCOV) V7 0.406 (COMP) V9 0.495 (BUFFER)

V2 0.8625 (WSHEDINT) V4 1 (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, <u>but not limited to</u>, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	Yes	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-39

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.929
	Function: Hydrologic Regime	
		0.901
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.733
	Function: Plant Community	
	0.674	
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	80.9
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	80.9

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-40-WET
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.456374 Long: -88.332049 Datum: NAD83 TN
 Soil Map Unit Name: Urban land (Ur), Udorthents, loamy (Ua) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Emergent wetland draining from inside fenced area to culvert pipe beneath Howard Rd.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-40-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>15</u> (A)</td> <td><u>45</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>15</u> (A)	<u>45</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>15</u>	x 3 = <u>45</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>15</u> (A)	<u>45</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>15</u>	<u>✓</u>	FAC															
2. <u>Juncus sp</u>	<u>20</u>	<u>✓</u>	NA															
3. <u>Carex sp</u>	<u>15</u>	<u>✓</u>	NA	Woody Vine Stratum (Plot size: <u>15 ft</u>)														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	50% of total cover: <u>25.0</u> 20% of total cover: <u>10.0</u>														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>														
<u>50.0</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															

Remarks: (Include photo numbers here or on a separate sheet.)
Disturbed- Veg mowed and unidentifiable

SOIL

Sampling Point: WTL-40-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	90	5YR 5/8	10	C	M&PL	Clay Loam	
8-12	10YR 5/1	85	5YR 5/8	15	C	M	Clay Loam	
12-18	10YR 6/1	95	5YR 4/6	5	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-40-UPL
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.456380 Long: -88.332073 Datum: NAD83 TN
 Soil Map Unit Name: Ur - Urban Land NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-40.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-40-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>310</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>310</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>310</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>70</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Digitaria sanguinalis</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACU															
3. <u>Plantago lanceolata</u>	<u>5</u>	_____	FACU															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-40-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel roadfill

Depth (inches): 4

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB

Wetland Name/Location WTL-40

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input checked="" type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces _____

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 15

C = Percentage low density residential, construction, or similar _____

D = Percentage high density residential, or similar _____

E = Percentage urban, commercial, industrial, or similar 85

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01) / (100) = \underline{0.121}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☒ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input checked="" type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.469

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.05

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.5 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.469 (COMP) V9 0.05 (BUFFER)

V2 0.121 (WSHEDINT) V4 _____ (TDEN) V6 0.5 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-40

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.246
	Function: Biogeochemical Processes	0.272
	Function: Retain Particulates	N/A
	Function: Plant Community	0.135
	Function: Wildlife Community	0.141
	Quantitative Score (Average of FCIs x 100)	19.9
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	19.9

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-41-WET
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.458698 Long: -88.332201 Datum: NAD83 TN
 Soil Map Unit Name: Ur - Urban Land NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Roadside ditch wetland with potential groundwater influence on the southern end. State-listed water purslane (<i>Didiplis diandra</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-41-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>65</u></td> <td>x 1 = <u>65</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>75</u> (A)</td> <td><u>95</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.3</u>	Total % Cover of:	Multiply by:	OBL species <u>65</u>	x 1 = <u>65</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>75</u> (A)	<u>95</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>65</u>	x 1 = <u>65</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>10</u>	x 3 = <u>30</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>75</u> (A)	<u>95</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Eleocharis palustris</u>	<u>30</u>	<input checked="" type="checkbox"/>	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Scirpus atrovirens</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
3. <u>Didiplis diandra</u>	<u>20</u>	<input checked="" type="checkbox"/>	OBL															
4. <u>Juncus tenuis</u>	<u>10</u>	_____	FAC															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>75.0</u> = Total Cover 50% of total cover: <u>37.5</u> 20% of total cover: <u>15.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-41-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 5/1	95	5YR 5/6	5	C	PL		
6-18	10YR 6/1	85	5YR 5/8	15	C	M & PL		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-41-UPL
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.458699 Long: -88.332163 Datum: NAD83 TN
 Soil Map Unit Name: Ur - Urban Land NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-41.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-41-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>310</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>310</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>310</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>70</u>	<u>✓</u>	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Digitaria sanguinalis</u>	<u>5</u>	_____	FACU															
3. <u>Plantago lanceolata</u>	<u>5</u>	_____	FACU															
4. <u>Houstonia pusilla</u>	<u>15</u>	_____	FACU															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Hydrophytic Vegetation Present? Yes <u>✓</u> No _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-41-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Sandy loam	
4-6	10YR 4/4	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)****Indicators for Problematic Hydric Soils³:**

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)
<input type="checkbox"/> Muck Presence (A8) (LRR U)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|---|---|---|

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: Gravel roadfill

Depth (inches): 6

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-41

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input checked="" type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 20

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 10

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar 70

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.282}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3 Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.704

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.05

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.704 (COMP) V9 0.05 (BUFFER)

V2 0.282 (WSHEDINT) V4 _____ (TDEN) V6 1 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	Yes	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-41

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.460
	Function: Hydrologic Regime	
		0.429
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.240
	Function: Plant Community	
	0.246	
	Function: Wildlife Community	
	Quantitative Score (Average of FCIs x 100)	34.4
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	34.4

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-42-WET
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P Lat: 36.460118 Long: -88.331906 Datum: NAD83 TN
 Soil Map Unit Name: GrB2 - Grenada silt loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Emergent partially forested wetland located on the east side of SR-54. State-listed water purslane (<i>Didiplis diandra</i>) observed throughout wetland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-42-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>40</u></td> <td>x 2 = <u>80</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>100</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.7</u>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>40</u>	x 2 = <u>80</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>60</u> (A)	<u>100</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>20</u>	x 1 = <u>20</u>																	
FACW species <u>40</u>	x 2 = <u>80</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>60</u> (A)	<u>100</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Carex vulpinoidea</u>	<u>40</u>	<input checked="" type="checkbox"/>	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
2. <u>Scirpus atrovirens</u>	<u>15</u>	<input checked="" type="checkbox"/>	OBL															
3. <u>Didiplis diandra</u>	<u>5</u>	_____	OBL															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>30.0</u> 20% of total cover: <u>12.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
_____ = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-42-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 5/1	90	5YR 5/6	5	C	PL		
4-18	10YR 6/1	85	5YR 5/8	15	C	M & PL		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5/21/21
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-42-UPL
 Investigator(s): ZB Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.460122 Long: -88.331968 Datum: NAD83 TN
 Soil Map Unit Name: GrB2 - Grenada silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-42.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-42-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>85</u></td> <td>x 3 = <u>255</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>295</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.1</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>85</u>	x 3 = <u>255</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>295</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>85</u>	x 3 = <u>255</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>295</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>85</u>	<u>✓</u>	FAC															
2. <u>Plantago lanceolata</u>	<u>10</u>	_____	FACU															
3. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
8. _____	_____	_____	NA															
9. _____	_____	_____	NA															
10. _____	_____	_____	NA															
11. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____														
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-42-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	100					Sandy loam	
4-6	10YR 4/4	100					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel roadfill

Depth (inches): 6

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/21

Project Name TDOT Henry Co. SR-54

Field Personnel ZB, KD

Wetland Name/Location WTL-42

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|-----------------|
| <input type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |

2. Wetland depth slightly impacted (SI = 0.75)

- | | | |
|--|--------------------------|--------------------|
| <input checked="" type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |

3. Wetland depth moderately impacted (SI = 0.5)

- | | | |
|--|-------------------------|-----------------------|
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

4. Wetland depth significantly impacted (SI = 0.25)

- | | | |
|---|-------------------------|--------------------------|
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |

5. Wetland depth severely impacted (SI = 0.1)

- | | | |
|--|--------------------------|---------------------------|
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces _____

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar ⁹⁰_____

C = Percentage low density residential, construction, or similar _____

D = Percentage high density residential, or similar _____

E = Percentage urban, commercial, industrial, or similar ¹⁰_____

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.676}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☒ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1) _____
- ☐ < 20 (SI=0.0)
- ☐

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☐ 75% – 89% (CI = 0.75) ☒ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☒ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.05

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 0.75 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.574 (COMP) V9 0.05 (BUFFER)

V2 0.676 (WSHEDINT) V4 _____ (TDEN) V6 0.75 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-42

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.712
	Function: Biogeochemical Processes	0.499
	Function: Retain Particulates	N/A
	Function: Plant Community	0.226
	Function: Wildlife Community	0.232
	Quantitative Score (Average of FCIs x 100)	41.7
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	41.7

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-43-WET
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5%
 Subregion (LRR or MLRA): LRR P Lat: 36.460463 Long: -88.332135 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-43 is a scrub shrub wetland on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-43-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Acer rubrum</i></u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. <u><i>Salix nigra</i></u>	<u>15</u>		OBL	
3. <u><i>Celtis laevigata</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
4. _____	_____		NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)
5. _____	_____		NA	
6. _____	_____		NA	
7. _____	_____		NA	
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index worksheet:
1. <u><i>Celtis laevigata</i></u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW	
2. <u><i>Acer rubrum</i></u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC	Total % Cover of: _____ Multiply by: _____
3. _____	_____		NA	OBL species <u>20</u> x 1 = <u>20</u>
4. _____	_____		NA	FACW species <u>40</u> x 2 = <u>80</u>
5. _____	_____		NA	FAC species <u>70</u> x 3 = <u>210</u>
6. _____	_____		NA	FACU species <u>0</u> x 4 = <u>0</u>
7. _____	_____		NA	UPL species <u>0</u> x 5 = <u>0</u>
8. _____	_____		NA	Column Totals: <u>130</u> (A) <u>310</u> (B)
9. _____	_____		NA	Prevalence Index = B/A = <u>2.4</u>
<u>30.0</u> = Total Cover 50% of total cover: <u>15.0</u> 20% of total cover: <u>6.0</u>				
Herb Stratum (Plot size: <u>5 ft</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u><i>Juncus effusus</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	OBL	
2. _____	_____		NA	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
3. _____	_____		NA	
4. _____	_____		NA	
5. _____	_____		NA	
6. _____	_____		NA	
7. _____	_____		NA	
8. _____	_____		NA	
9. _____	_____		NA	
10. _____	_____		NA	
11. _____	_____		NA	
<u>5.0</u> = Total Cover 50% of total cover: <u>2.5</u> 20% of total cover: <u>1.0</u>				
Woody Vine Stratum (Plot size: <u>15 ft</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____		NA	
2. _____	_____		NA	
3. _____	_____		NA	
4. _____	_____		NA	
5. _____	_____		NA	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: WTL-43-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/2	98	7.5YR 4/6	2	C	M	Silty clay loam	
12-18	10YR 5/2	90	7.5YR 4/6	5	C	M	Silty clay loam	
			10YR 2/2	5	D	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-43-UPL
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR P Lat: 36.460463 Long: -88.332135 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-43.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-43-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>12</u></td> <td>x 4 = <u>48</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>82</u> (A)</td> <td><u>258</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.1</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>12</u>	x 4 = <u>48</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>82</u> (A)	<u>258</u> (B)	Prevalence Index = B/A = <u>3.1</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>70</u>	x 3 = <u>210</u>																			
FACU species <u>12</u>	x 4 = <u>48</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>82</u> (A)	<u>258</u> (B)																			
Prevalence Index = B/A = <u>3.1</u>																				
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA																	
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Schedonorus arundinaceus</u>	<u>60</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																
2. <u>Toxicodendron radicans</u>	<u>10</u>	_____	FAC																	
3. <u>Parthenocissus quinquefolia</u>	<u>10</u>	_____	FACU																	
4. <u>Trifolium campestre</u>	<u>5</u>	_____	NA																	
5. <u>Taraxacum officinale</u>	<u>2</u>	_____	FACU																	
6. _____	_____	_____	NA																	
7. _____	_____	_____	NA																	
8. _____	_____	_____	NA																	
9. _____	_____	_____	NA																	
10. _____	_____	_____	NA																	
11. _____	_____	_____	NA																	
<u>87.0</u> = Total Cover 50% of total cover: <u>43.5</u> 20% of total cover: <u>17.4</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																
2. _____	_____	_____	NA																	
3. _____	_____	_____	NA																	
4. _____	_____	_____	NA																	
5. _____	_____	_____	NA																	
6. _____	_____	_____	NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WTL-43-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	100					Sandy clay Loam	
6-18	10YR 4/3	40	5YR 4/6	60			Sandy clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/2021

Project Name TDOT Henry Co. SR-54

Field Personnel KD, NV

Wetland Name/Location WTL-43

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 40

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 30

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar 30

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.628}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☒ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☒ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☒ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☒ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☐ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	2 _____ Number native shrub spp.		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	_____ Number native herbaceous spp.		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.574

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

- ☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**
- ☐ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**
- ☒ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**
- ☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.248

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 1 (SCOV) V7 0.574 (COMP) V9 0.248 (BUFFER)

V2 0.628 (WSHEDINT) V4 _____ (TDEN) V6 _____ (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-43

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.791
	Function: Biogeochemical Processes	0.726
	Function: Retain Particulates	N/A
	Function: Plant Community	0.394
	Function: Wildlife Community	0.436
	Quantitative Score (Average of FCIs x 100)	58.7
	Value Added (Significant Size) Total	0
	TOTAL SCORE	58.7
Total of Quantitative and Value Added Scores		

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: East Fork Clarks River		Date/Time: 5/21/21
Assessors/Affiliation: ZB (#1186-TN19)		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-61		
HUC (12 digit): 06040060101		Lat/Long: 36.460556 °N
Previous Rainfall (7-days) : 0.3 inches		-88.331899 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 5.2 acres	County: Henry	
Soil Type(s) / Geology : RtA - Routon silt loam, 0-2% slopes		Source: NRCS
Surrounding Land Use : Agriculture, residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [5](#)

Justification / Notes :

[Drains to culvert beneath SR-54](#)

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = ¹)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0 <input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0 <input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = ²)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

C. Biology (Subtotal = ²)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Poorly defined bed and bank. Minimal sorting. Wrack present behind obstructions

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	ZB	Affiliation:	Stantec	Date:	5/21/21				
1-Station: from plans	N/A								
2-Map label and name	WWC-61								
3-Latitude/Longitude	36.460556, -88.331899								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>	intermittent stream <input type="checkbox"/>	ephemeral stream <input checked="" type="checkbox"/>	wwc <input checked="" type="checkbox"/>					
-HD score (if applicable)	5								
-OHWM indicators	bed & banks <input type="checkbox"/>	deposition <input type="checkbox"/>	presence of litter / debris <input type="checkbox"/>	scour <input type="checkbox"/>	veg absent, bent, matted <input checked="" type="checkbox"/>				
	change in plant community <input type="checkbox"/>	destruction of terrestrial veg <input type="checkbox"/>	multiple observed flow events <input type="checkbox"/>	sediment sorting <input type="checkbox"/>	water staining <input type="checkbox"/>				
	change in soil character <input type="checkbox"/>	leaf litter disturbed or absent <input type="checkbox"/>	natural line impressed on bank <input checked="" type="checkbox"/>	shelving <input type="checkbox"/>	wracking <input type="checkbox"/>				
-channel bottom width	6 inches		-top of bank width		1 ft				
-width at ordinary high water mark	6 inches								
-bank height	LDB - 3 inches			RDB - 3 inches					
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species:	LDB: Parthenocissus quinquefolia, Schedonorus arundinaceus								
----- (LDB / RDB) -----	RDB: Parthenocissus quinquefolia, Microstegium vimineum, Field Corn								
-date of PJD request									
5-photo numbers	357 - 358								
6-HUC -8 Code & Name	06040006			East Fork Clarks River					
7-Assessed	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
8-ETW	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>							
9-303 (d) List	yes <input type="checkbox"/>	siltation <input type="checkbox"/>	habitat: <input type="checkbox"/>	other: <input type="checkbox"/>					
	no <input type="checkbox"/>								
10-Notes	Agriculture impacted swale draining wetland to culvert								
Substrate	Silt								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Mormon Branch		Date/Time: 5/21/21
Assessors/Affiliation: ZB (#1186-TN19)		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-62		
HUC (12 digit): 06040060101		Lat/Long: 36.462179 °N
Previous Rainfall (7-days) : 0.3 inches		-88.331864 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 1.8 acres	County: Henry	
Soil Type(s) / Geology : Ua - Udorthents, loamy		Source: NRCS
Surrounding Land Use : Agriculture, residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = **Wet Weather Conveyance**

Secondary Indicator Score (if applicable) = **6.5**

Justification / Notes :

Roadside ditch

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/>	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input checked="" type="checkbox"/>	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 2)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No <input checked="" type="checkbox"/> = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 3)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/>	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 6.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Poorly defined bank and bank in upper portion. More defined downstream has hill gets steeper.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd										
Biologist:	ZB	Affiliation:	Stantec	Date:	5/21/21					
1-Station: from plans	N/A									
2-Map label and name	WWC-62									
3-Latitude/Longitude	36.462179, -88.331864									
4-Feature description:										
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>		
-HD score (if applicable)	6.5									
-OHWM indicators	bed & banks	<input type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>
	change in soil character	<input type="checkbox"/>	leaf litter disturbed or absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>
-channel bottom width	6 inches			-top of bank width			1 ft			
-width at ordinary high water mark	6 inches									
-bank height	LDB - 3 inches				RDB - 3 inches					
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species:	LDB: Schedonorus arundinaceus, Lonicera japonica									
----- (LDB /RDB) -----	RDB: Liquidambar styraciflua, Galium sp., Ulmus sp.									
-date of PJD request										
5-photo numbers	359 -360									
6-HUC -8 Code & Name	06040006				East Fork Clarks River					
7-Assessed	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
8-ETW	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>						
9-303 (d) List	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>		
	no	<input type="checkbox"/>								
10-Notes	Feature located in roadside ditch									
Substrate	Silt									

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-44-WET
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR P Lat: 36.461944 Long: -88.332072 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: WTL-44 is a emergent wetland on the west side of SR-54.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-44-WET

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u>Liquidambar styraciflua</u>	40	✓	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)																
2. <u>Albizia julibrissin</u>	25	✓	NA																	
3. _____			NA	Total Number of Dominant Species Across All Strata: <u>6</u> (B)																
4. _____			NA																	
5. _____			NA	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)																
6. _____			NA																	
7. _____			NA																	
<u>65.0</u> = Total Cover 50% of total cover: <u>32.5</u> 20% of total cover: <u>13.0</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>120</u> (A)</td> <td><u>360</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>120</u> (A)	<u>360</u> (B)	Prevalence Index = B/A = <u>3.0</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>20</u>	x 2 = <u>40</u>																			
FAC species <u>80</u>	x 3 = <u>240</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>120</u> (A)	<u>360</u> (B)																			
Prevalence Index = B/A = <u>3.0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																				
1. <u>Ulmus rubra</u>	10	✓	FAC																	
2. <u>Liquidambar styraciflua</u>	25	✓	FAC																	
3. _____			NA																	
4. _____			NA																	
5. _____			NA																	
6. _____			NA																	
7. _____			NA																	
8. _____			NA																	
9. _____			NA																	
<u>35.0</u> = Total Cover 50% of total cover: <u>17.5</u> 20% of total cover: <u>7.0</u>																				
Herb Stratum (Plot size: <u>5 ft</u>)																				
1. <u>Acer saccharinum</u>	5		FAC																	
2. <u>Carex scoparia</u>	20	✓	FACW																	
3. <u>Lonicera japonica</u>	15	✓	FACU																	
4. <u>Parthenocissus quinquefolia</u>	5		FACU																	
5. _____			NA																	
6. _____			NA																	
7. _____			NA																	
8. _____			NA																	
9. _____			NA																	
10. _____			NA																	
11. _____			NA																	
<u>45.0</u> = Total Cover 50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>																				
Woody Vine Stratum (Plot size: <u>15 ft</u>)																				
1. _____			NA																	
2. _____			NA																	
3. _____			NA																	
4. _____			NA																	
5. _____			NA																	
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____																

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.

Woody vine – All woody vines greater than 3.28 ft in height.

SOIL

Sampling Point: WTL-44-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/2	100					Clay loam	
2-10	10YR 4/2	95	7.5YR 4/6	5	C	M	Clay loam	
10-18	10YR 6/1	40	7.5YR 5/6	60	C	M	Silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

TDOT PE: 40003-0200-14

TDOT PIN: 101886.02

Project/Site: Henry Co SR-54 from Smith Rd to Near Howard Rd City/County: Paris / Henry County Sampling Date: 5-21-2021
 Applicant/Owner: TDOT State: TN Sampling Point: WTL-44-UPL
 Investigator(s): KD, NV Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.461933 Long: -88.332039 Datum: NAD83 TN
 Soil Map Unit Name: Ua - Udorthents, loamy NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland point associated with WTL-44.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WTL-44-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	NA	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0</u> (A/B)														
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>310</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.3</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>310</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>70</u>	x 3 = <u>210</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>310</u> (B)																	
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
9. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Herb Stratum (Plot size: <u>5 ft</u>)																		
1. <u>Schedonorus arundinaceus</u>	<u>70</u>	<input checked="" type="checkbox"/>	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Plantago lanceolata</u>	<u>15</u>	_____	FACU															
3. <u>Trifolium repens</u>	<u>10</u>	_____	FACU															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.														
6. _____	_____	_____	NA															
7. _____	_____	_____	NA															
8. _____	_____	_____	NA															
9. _____	_____	_____	NA	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
10. _____	_____	_____	NA															
11. _____	_____	_____	NA															
<u>95.0</u> = Total Cover 50% of total cover: <u>47.5</u> 20% of total cover: <u>19.0</u>																		
Woody Vine Stratum (Plot size: <u>15 ft</u>)																		
1. _____	_____	_____	NA															
2. _____	_____	_____	NA															
3. _____	_____	_____	NA															
4. _____	_____	_____	NA															
5. _____	_____	_____	NA															
<u>0.0</u> = Total Cover 50% of total cover: <u>0.0</u> 20% of total cover: <u>0.0</u>																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: WTL-44-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/2	100					Sandy clay Loam	Road fill

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- (MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Roadfill

Depth (inches): 2

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HGM FUNCTIONAL ASSESSMENT SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 5/21/2021

Project Name TDOT Henry Co. SR-54

Field Personnel KD, NV

Wetland Name/Location WTL-44

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Wetland Depth (WETDEPTH)

1. Wetland Depth not impacted (SI = 1.0)

- | | | |
|---|--------------------------|---------------------------|
| <input checked="" type="checkbox"/> - no fill material or sediment | - outlet unaltered | - no excavation |
| <input checked="" type="checkbox"/> - no ditches/drainage tiles | - runoff/input unaltered | |
| 2. Wetland depth slightly impacted (SI = 0.75) | | |
| <input type="checkbox"/> - portion of site with minimal fill material or sediment | - outlet lowered/raised | - minor excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - runoff/input increased | |
| 3. Wetland depth moderately impacted (SI = 0.5) | | |
| <input type="checkbox"/> - portion of site with moderate fill material or sediment | - outlet lowered/raised | - moderate excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 4. Wetland depth significantly impacted (SI = 0.25) | | |
| <input type="checkbox"/> - portion of site with significant fill material or sediment | - outlet lowered/raised | - significant excavation |
| <input type="checkbox"/> - portion of site with ditches/drainage tiles | - increased hydroperiod | |
| 5. Wetland depth severely impacted (SI = 0.1) | | |
| <input type="checkbox"/> - excessive fill material or sediment | - outlet removed/blocked | - entire wetland affected |
| <input type="checkbox"/> - numerous ditches/drainage tiles | - increased hydroperiod | - recovery potential lost |

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 60

B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 20

C = Percentage low density residential, construction, or similar

D = Percentage high density residential, or similar

E = Percentage urban, commercial, industrial, or similar 20

$$V2 = (A \times 1.0) + (B \times 0.75) + (C \times 0.5) + (D \times 0.25) + (E \times 0.01)/(100) = \underline{0.752}$$

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH

- ☐ ≥ 13 in. (SI = 1.0) ☐ 10 – 12 in. (SI = 0.75) ☐ 6 – 9 in. (SI = 0.5) ☐ 4 – 5 in. (SI = 0.25)
- ☐ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

- ☐ 3 – 7 (SI = 1.0) ☐ 8 – 11 (SI = 0.75) ☐ > 11 (SI = 0.5) ☐ 1 – 2 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

- ☐ ≥ 20 (SI = 1.0) ☐ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

- ☐ ≥ 70 (SI = 1.0) ☐ 55 – 69 (SI = 0.75) ☐ 45 – 54 (SI = 0.5) ☒ 30 – 44 (SI = 0.25) ☐ 20 – 29 (SI = 0.1)
- ☐ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
<input type="checkbox"/> Water oak	<input type="checkbox"/> Pin oak	<input type="checkbox"/> American elm	<input type="checkbox"/> Green ash	<input type="checkbox"/> European/Chinese privet
<input type="checkbox"/> Bur oak	<input type="checkbox"/> Shumard oak	<input type="checkbox"/> Slippery elm	<input type="checkbox"/> Red maple	<input checked="" type="checkbox"/> Japanese honeysuckle
<input type="checkbox"/> Willow oak	<input type="checkbox"/> Bald cypress	<input type="checkbox"/> Sweetgum	<input type="checkbox"/> Silver maple	<input type="checkbox"/> Japanese Stiltgrass
<input type="checkbox"/> Swamp chestnut oak	<input type="checkbox"/> Water tupelo	<input type="checkbox"/> Blackgum	<input type="checkbox"/> Black willow	<input type="checkbox"/> Purple loosestrife
<input type="checkbox"/> Cherrybark oak	<input type="checkbox"/> S. black gum	<input type="checkbox"/> Silky dogwood	<input type="checkbox"/> Sycamore	<input type="checkbox"/> Giant reed
<input type="checkbox"/> Swamp white oak	<input type="checkbox"/> Persimmon	<input type="checkbox"/> Boxelder	<input type="checkbox"/>	<input type="checkbox"/> Tall fescue
<input type="checkbox"/> Nuttall oak	<input type="checkbox"/> Am. hornbeam	<input type="checkbox"/> Tulip poplar	<input type="checkbox"/>	<input type="checkbox"/> Phragmites
<input type="checkbox"/> Overcup oak	<input type="checkbox"/>	Number native shrub spp. _____		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	1 Number native herbaceous spp. _____		<input type="checkbox"/>

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: $[(1.0 \times \# \text{ of checked dominants in Group 1}) + (0.66 \times \# \text{ of checked dominants in Group 2}) + (0.0 \times \# \text{ of checked dominants in Group 3})] / \text{total } \# \text{ of checked dominants in all groups} =$ _____

3. Multiply Q above by one of the following constants that reflects species richness:¹

- a) if ≥ 4 species from Groups 1 and/or 2 occur as dominants, multiply Q by 1.0 _____
- b) if 3 species from Groups 1 and/or 2 occur as dominant, multiply Q by 0.75 _____
- c) if 2 species from Groups 1 and/or 2 occur as dominants, multiply Q by 0.50 _____
- d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
- e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for V7= 0.287

*In some Depression wetlands and in some small WAAs (e.g., <0.5 acres), relatively few species (e.g., overcup oak) may be present. In cases in which this is the normal condition, Q can be multiplied by 1.0 if only 1 or 2 species are dominant.

V8: Soil Organic Matter (ORGANIC)

1. Surface horizons unaltered

☒ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. ☐ Surface horizons altered (estimate the percent of the WAA in which neither an O or A horizon is present)

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V8= _____

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

☐ 90% – 100% (CI = 1.0) ☒ 75% – 89% (CI = 0.75) ☐ 40% – 74% (CI = 0.5) ☐ 10% – 39% (CI = 0.25)

☐ < 10% (CI = 0.1)

2. Multiply the CI by one of the following values:

☐ a) if average buffer width is ≥ 492 ft., multiply by **1.0**

☒ b) if average buffer is 98 ft. to 491 ft., multiply by **0.66**

☐ c) if average buffer width is 33 ft. to 97 ft., multiply by **0.33**

☐ d) if average buffer width is < 33 ft., multiply by **0.1**

2. This value is the SI for V9= 0.495

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)**SUBINDEX VALUES:**

V1 1 (WETDEPTH) V3 _____ (TSIZE) V5 _____ (SCOV) V7 0.287 (COMP) V9 0.495 (BUFFER)

V2 0.752 (WSHEDINT) V4 _____ (TDEN) V6 0.25 (GVC) V8 1 (ORGANIC)

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an Outstanding Natural Resource Water (ONRW) by the Department under 0400-40-03-.06(5)(a).	No	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " Critical Habitat " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	ETW
7	The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee ranked G2, G1, or more imperiled at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is an uncommon resource (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an older aged forested wetland comprised of overstory trees with an average diameter at breast height (dbh) being greater than or equal to 30 in within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is hydrologically connected to and/or has significant ecological contribution to an ETW	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a score of 75 and above using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

TRAM Summary Worksheet

Wetland Map Label: WTL-44

Exceptional Status Wetlands		Check if applicable
	1. ONRW	<input type="checkbox"/>
	2. ETW	<input type="checkbox"/>
	3. Further Review Requested: Attach Wetland Background and Exceptional Status Wetlands Worksheet	<input type="checkbox"/>
	COMMENTS/NOTES:	
Quantitative Rating scores		0.867
	Function: Hydrologic Regime	
		0.466
	Function: Biogeochemical Processes	
		N/A
	Function: Retain Particulates	
		0.156
	Function: Plant Community	
	0.211	
	Quantitative Score (Average of FCIs x 100)	42.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	TOTAL SCORE	42.5

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Mormon Branch		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-63		
HUC (12 digit): 060400060101		Lat/Long: 36.462197 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332044 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.7 acres	County: Henry	
Soil Type(s) / Geology : Ua - Udorthents, loamy		Source: NRCS
Surrounding Land Use : Railroad		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [5.25](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5	

N/A

C. Biology (Subtotal = 0.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 5.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel runs alongside the road with minimal sorting and all riffle. Vegetation in half the channel. Hydric soils.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd											
Biologist:	KD, NV		Affiliation:	Stantec		Date:	5/21/2021				
1-Station: from plans	N/A										
2-Map label and name	WWC-63										
3-Latitude/Longitude	36.462184, -88.332049										
4-Feature description:											
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>				
-HD score (if applicable)	5.25										
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>		
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>		
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>		
-channel bottom width	0.5 ft				-top of bank width		1 ft				
-width at ordinary high water mark	0.5 ft										
-bank height	LDB - 3 in				RDB - 3 in						
-riffle/pool complex or other specialized habitat present?											
-dominant riparian species:	LDB: Microstegium vimineum, P. quinquefolia, Ulmus rubra, Liquidambar styraciflua										
----- (LDB /RDB) -----	RDB: Microstegium vimineum, P. quinquefolia, Robinia pseudoacacia, L. styraciflua										
-date of PJD request											
5-photo numbers	364 -365										
6-HUC -8 Code & Name	06040006				East Fork Clarks River						
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>								
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>								
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>				
	no <input type="checkbox"/>										
10-Notes											
Substrate	Sandy clay with gravel										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Mormon Branch		Date/Time: 5/21/2021
Assessors/Affiliation: KD, NV		Project ID : PIN101886.02 (TDOT) 172678144
Site Name/Description: Henry Co SR-54 from Smith Rd to Near Howard Rd		
Site Location: WWC-64		
HUC (12 digit): 060400060101		Lat/Long: 36.462446 °N
Previous Rainfall (7-days) : 0.3 inches		-88.332169 °W
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 3.0 acres	County: Henry	
Soil Type(s) / Geology : Ua - Udorthents, loamy		Source: NRCS
Surrounding Land Use : Railroad		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input type="checkbox"/> Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="checkbox"/>	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	<input checked="" type="checkbox"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input checked="" type="checkbox"/>	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input checked="" type="checkbox"/>	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="checkbox"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="checkbox"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="checkbox"/>	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	<input checked="" type="checkbox"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="checkbox"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = [Wet Weather Conveyance](#)

Secondary Indicator Score (if applicable) = [9.5](#)

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Sinuous channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. In-channel structure: riffle-pool sequences	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Sorting of soil textures or other substrate	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3
5. Active/relic floodplain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Braided channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8. Recent alluvial deposits	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
9. Natural levees	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10. Headcuts	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11. Grade controls	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
12. Natural valley or drainageway	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
13. At least second order channel on existing USGS or NRCS map	No <input checked="" type="checkbox"/> = 0		Yes = 3	

B. Hydrology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15. Water in channel and >48 hours since sig. rain	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
16. Leaf litter in channel (January – September)	<input type="checkbox"/> 1.5	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 0
17. Sediment on plants or on debris	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
18. Organic debris lines or piles (wrack lines)	<input type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 1.5
19. Hydric soils in stream bed or sides of channel	No = 0		Yes <input checked="" type="checkbox"/> = 1.5	

N/A

C. Biology (Subtotal = 2)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ¹	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 0
21. Rooted plants in thalweg ¹	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
23. Bivalves/mussels	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
24. Amphibians	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5
28. Wetland plants in channel bed ²	<input checked="" type="checkbox"/> 0	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1	<input type="checkbox"/> 1.5

¹ Focus is on the presence of terrestrial plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 9.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Channel runs alongside a railroad with minimal sorting and all riffle. Vegetation sporadic. Hydric soils.

Ecology Field Data Sheet: **Water Resources**

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd									
Biologist:	KD, NV		Affiliation:	Stantec		Date:	5/21/2021		
1-Station: from plans	N/A								
2-Map label and name	WWC-64								
3-Latitude/Longitude	36.462542, -88.332158								
4-Feature description:									
-channel identification	perennial stream <input type="checkbox"/>		intermittent stream <input type="checkbox"/>		ephemeral stream <input checked="" type="checkbox"/>		wwc <input checked="" type="checkbox"/>		
-HD score (if applicable)	9.5								
-OHWM indicators	bed & banks <input checked="" type="checkbox"/>		deposition <input checked="" type="checkbox"/>		presence of litter / debris <input type="checkbox"/>		scour <input type="checkbox"/>		veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/>		destruction of terrestrial veg <input type="checkbox"/>		multiple observed flow events <input type="checkbox"/>		sediment sorting <input type="checkbox"/>		water staining <input type="checkbox"/>
	change in soil character <input checked="" type="checkbox"/>		leaf litter disturbed or absent <input type="checkbox"/>		natural line impressed on bank <input type="checkbox"/>		shelving <input type="checkbox"/>		wracking <input type="checkbox"/>
-channel bottom width	2 ft				-top of bank width		2.5 ft		
-width at ordinary high water mark	1 ft								
-bank height	LDB - 3 in				RDB - 3 in				
-riffle/pool complex or other specialized habitat present?									
-dominant riparian species:	LDB: Toxicodendron radicans, Parthenocissus quinquefolia, Ulmus americana								
----- (LDB / RDB) -----	RDB: Toxicodendron radicans, P. quinquefolia, Acer rubrum, Lonicera japonica								
-date of PJD request									
5-photo numbers	366 -367								
6-HUC -8 Code & Name	06040006				East Fork Clarks River				
7-Assessed	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
8-ETW	yes <input type="checkbox"/>		no <input checked="" type="checkbox"/>						
9-303 (d) List	yes <input type="checkbox"/>		siltation <input type="checkbox"/>		habitat: <input type="checkbox"/>		other: <input type="checkbox"/>		<input type="checkbox"/>
	no <input type="checkbox"/>								
10-Notes	Channel runs alongside a railroad with minimal sorting and all riffle.								
Substrate	Sandy clay with gravel								

TABLE 2. CALCULATIONS OF NORMAL WEATHER CONDITIONS FOR 05/17/2021 SITE VISIT

		LONG TERM RAINFALL RECORDS				ACTUAL RAINFALL	CONDITION (Elevated, Average, Low)	CONDITION VALUE	MONTH WEIGHT VALUE	PRODUCT
	MONTH	NORMAL RAINFALL (Mean inches)	STANDARD DEVIATION	NORMAL RAINFALL MINUS 1 STANDARD DEVIATION	NORMAL RAINFALL PLUS 1 STANDARD DEVIATION					
1st Month Prior	April	4.70	2.09	2.61	6.79	2.66	average	2	3	6
2nd Month Prior	March	4.66	2.62	2.04	7.28	6.44	average	2	2	4
3rd Month Prior	February	4.50	2.46	2.04	6.96	1.48	low	1	1	1
									SUM =	11

NOTE

IF SUM IS:	
6-9	Then prior period has been abnormally dry
10-14	Then prior period has been normal (average)
15-18	Then prior period has been abnormally wet

CONDITION VALUE:	
Low =	1
Average =	2
Elevated =	3

SOURCE OF PRECIPITATION DATA:

Daily:	CoCoRaHS Station# TN-HY-7, Henry 4.5 N
Long Term:	National Climatic Data Center (NCDC) Web Site, Prail 2 SE, TN
Standard Deviation:	NOAA Research Physical Sciences Division Web Site, Paris 5 E, TN

CONCLUSIONS:

Precipitation falls within the AVERAGE range for prior 3-month period; normal conditions exist at time of determination.
- 1 inches of rain previous 7 days prior to determination
- 0 inches of rain previous 48 hours prior to determination

CoCoRaHS Station TN-HY-7		
Site Visit		17-May-21

Previous Precipitation (48 hrs, in.)		
5/16/2021		0
5/15/2021		0
Total		0

Previous Precipitation (7 days, in.)		
5/16/2021		0
5/15/2021		0
5/14/2021		0
5/13/2021		0
5/12/2021		0
5/11/2021		0
5/10/2021		1
Total		1

Field Day	Previous Precip (7 days, in)	
5/17/2021		1
5/18/2021		0
5/19/2021		0.3
5/20/2021		0.3
5/21/2021		0.3

1st Month Prior		Apr-21
Date		Precip (in.)
4/1/2021		0
4/2/2021		0
4/3/2021		0
4/4/2021		0
4/5/2021		0
4/6/2021		0
4/7/2021		0
4/8/2021		0.6
4/9/2021		0
4/10/2021		0.07
4/11/2021		0
4/12/2021		0
4/13/2021		0
4/14/2021		0.12
4/15/2021		0
4/16/2021		0
4/17/2021		0
4/18/2021		0
4/19/2021		0
4/20/2021		0
4/21/2021		0.12
4/22/2021		0
4/23/2021		0.05
4/24/2021		0.95
4/25/2021		0.05
4/26/2021		0
4/27/2021		0
4/28/2021		0
4/29/2021		0.5
4/30/2021		0.2
Total		2.66

2nd Month Prior		Mar-21
Date		Precip (in.)
3/1/2021		1.05
3/2/2021		0
3/3/2021		0
3/4/2021		0
3/5/2021		0
3/6/2021		0
3/7/2021		0
3/8/2021		0
3/9/2021		0
3/10/2021		0
3/11/2021		0
3/12/2021		0
3/13/2021		0.57
3/14/2021		0
3/15/2021		0.22
3/16/2021		0
3/17/2021		0
3/18/2021		1.83
3/19/2021		0
3/20/2021		0
3/21/2021		0
3/22/2021		0
3/23/2021		0.11
3/24/2021		0
3/25/2021		0.95
3/26/2021		0.05
3/27/2021		0
3/28/2021		1.05
3/29/2021		0
3/30/2021		0
3/31/2021		0.61
Total		6.44

3rd Month Prior		Feb-21
Date		Precip (in.)
2/1/2021		0
2/2/2021		0
2/3/2021		0
2/4/2021		0.1
2/5/2021		0.2
2/6/2021		0
2/7/2021		0.12
2/8/2021		0
2/9/2021		0
2/10/2021		0
2/11/2021		0
2/12/2021		0
2/13/2021		0
2/14/2021		0
2/15/2021		0
2/16/2021		0
2/17/2021		0
2/18/2021		0.8
2/19/2021		0
2/20/2021		0
2/21/2021		0
2/22/2021		0.26
2/23/2021		0
2/24/2021		0
2/25/2021		0
2/26/2021		0
2/27/2021		0
2/28/2021		0
Total		1.48

Data Tools: 1981-2010 Normals

The 1981-2010 Climate Normals are NCDC's latest three-decade averages of climatological variables, including temperature and precipitation. This new product replaces the [1971-2000 Climate Normals](http://hurricane.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl?directive=prod_select&subnum=) (http://hurricane.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl?directive=prod_select&subnum=), product, which remains available as historical data.

The tool below provides temperature and precipitation Climate Normals for over 9,800 stations across the United States. Begin by selecting the desired dataset tab to view monthly, daily, annual/seasonal, or hourly Normals. Then select the desired location and a corresponding station.

Monthly Normals

Daily Normals

Annual/Seasonal Normals

Hourly Normals

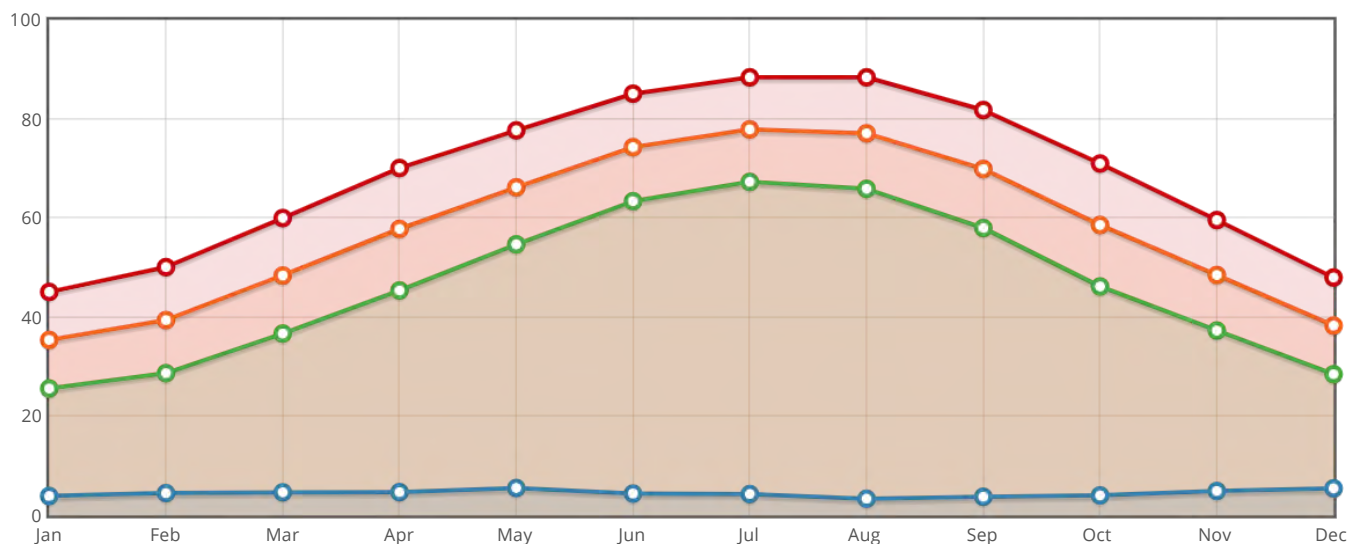
Use the form below to select the geographic region in the first pane, then select the station name in the next pane as the name list is populated.

TENNESSEE
TEXAS
UTAH
VERMONT
VIRGINIA
WASHINGTON
WEST VIRGINIA
WISCONSIN





ROCKWOOD 2, TN US
RIPLEY, TN US
ROCK ISLAND STATE PARK, TN US
ROCKWOOD 2, TN US
ROGERSVILLE 1 NE, TN US
SAMBURG W. L. REFUGE, TN US
SAVANNAH 6 SW, TN US
SELMER, TN US
SEVIERVILLE, TN US

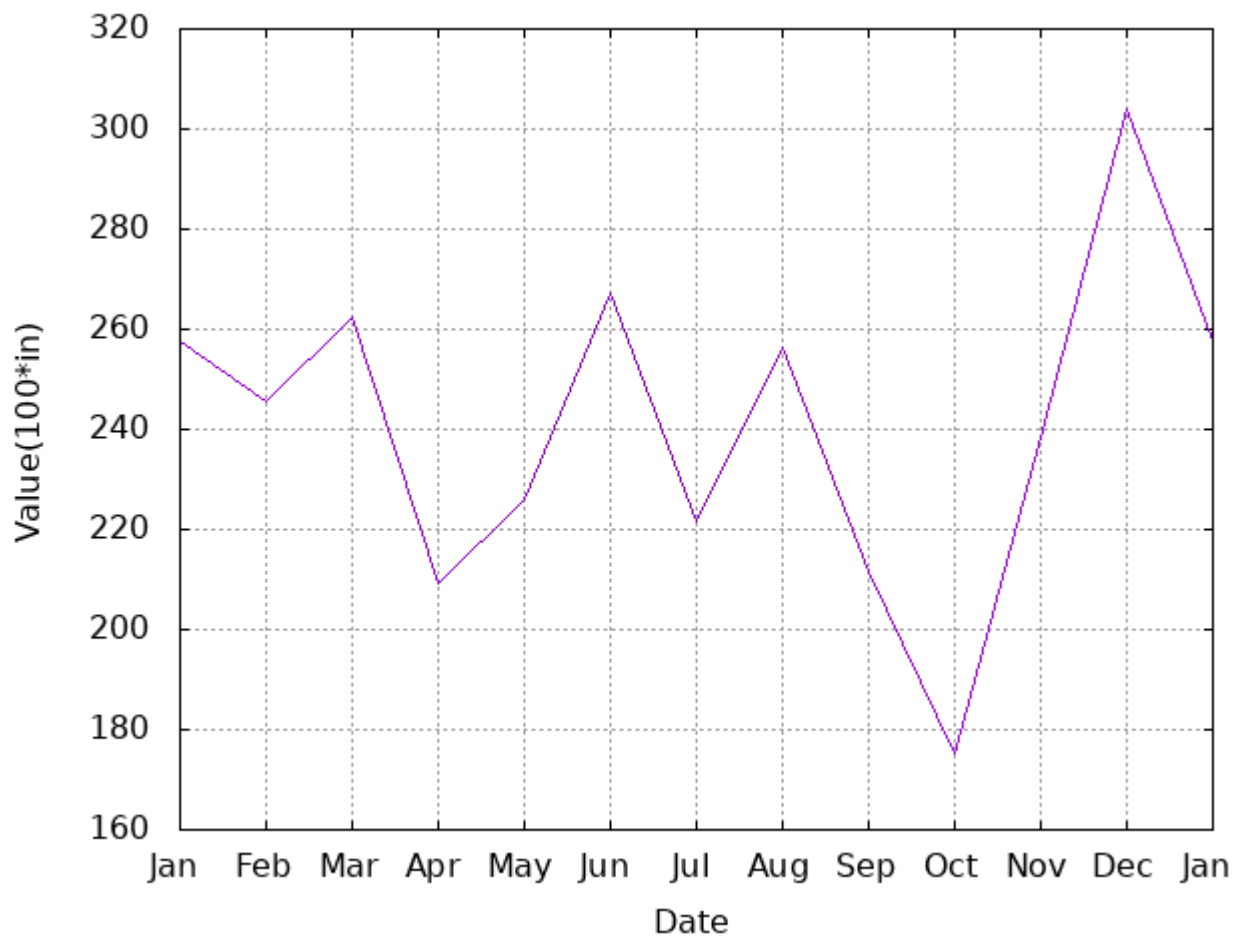
PARIS 2 SE, TN US

[View Station Details](https://www.ncdc.noaa.gov/cdo-web/datasets/normal_mly/stations/GHCND:USC00406977/detail) (https://www.ncdc.noaa.gov/cdo-web/datasets/normal_mly/stations/GHCND:USC00406977/detail) | [View Station Report](#)



MONTH	● PRECIP (IN)	● MIN TMP (°F)	● AVG TMP (°F)	● MAX TMP (°F)
01	3.92	25.6	35.4	45.1
02	4.50	28.7	39.4	50.1
03	4.66	36.7	48.4	60.0
04	4.70	45.4	57.8	70.1

MONTH	 PRECIP (IN)	 MIN TMP (°F)	 AVG TMP (°F)	 MAX TMP (°F)
05	5.53	54.7	66.2	77.7
06	4.41	63.4	74.3	85.1
07	4.31	67.3	77.9	88.4
08	3.37	65.9	77.1	88.4
09	3.77	58.0	69.9	81.8
10	4.04	46.2	58.6	71.0
11	4.93	37.3	48.5	59.6
12	5.46	28.5	38.3	48.0



Values plotted Get file (/tmp/data.12.179.104.42.145.15.15.23)

Date submitted: **5/26/2021 at 15:15**

Mailing Address

NOAA PSL
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Boulder, CO 80305-3328

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Precipitation Standard Deviation for Paris, TN

1 January	2.576301288
2 February	2.457196312
3 March	2.622138588
4 April	2.090734623
5 May	2.261266658
6 June	2.672029795
7 July	2.215978487
8 August	2.565416949
9 September	2.116076703
10 October	1.751540069
11 November	2.382754571
12 December	3.040691892

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
Wetlands								
WTL-01	N/A*	36.342261°	-88.329889°	0.0577 ac.	Scrub-Shrub/Forested	Threemile Branch	filtration/wildlife habitat	TRAM score 66.2
WTL-02	N/A*	36.34517°	-88.330766°	0.1608 ac.	Emergent	Threemile Branch	filtration/particulate retention	TRAM score 53.5
WTL-03	N/A*	36.345153°	-88.330131°	0.9959 ac.	Emergent/Forested	Threemile Branch	filtration/wildlife habitat	TRAM score 70.3
WTL-04	N/A*	36.345693°	-88.331038°	0.0537 ac.	Emergent	Threemile Branch	filtration of stormwater runoff	TRAM score 53.6
WTL-05	N/A*	36.34993°	-88.331742°	0.2233 ac.	Forested	Threemile Branch	filtration/wildlife habitat	TRAM score 90.5
WTL-06	N/A*	36.350866°	-88.332827°	0.3187 ac.	Forested	Threemile Branch	filtration/wildlife habitat	TRAM score 82.9
WTL-07	N/A*	36.35658°	-88.33399°	0.0311 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 39.6
WTL-08	N/A*	36.377829°	-88.333635°	0.2121 ac.	Forested	North Fork Obion River	filtration/wildlife habitat	TRAM score 80.5
WTL-09	N/A*	36.377895°	-88.33426°	0.3903 ac.	Scrub-Shrub/Forested	North Fork Obion River	filtration/wildlife habitat	TRAM score 73.5
WTL-10	N/A*	36.378895°	-88.333583°	1.3961 ac.	Forested	North Fork Obion River	filtration/wildlife habitat	TRAM score 77.6
WTL-11	N/A*	36.37915°	-88.334224°	1.1639 ac.	Forested	North Fork Obion River	particulate retention/ wildlife habitat	TRAM score 77.3
WTL-12	N/A*	36.386857°	-88.333385°	0.0125 ac.	Emergent	Rowe Creek	filtration of stormwater runoff	TRAM score 41.2
WTL-13	N/A*	36.387284°	-88.334051°	0.6174 ac.	Forested	Rowe Creek	particulate retention/ wildlife habitat	TRAM score 78.6
WTL-14	N/A*	36.388623°	-88.333362°	2.877 ac.	Scrub-Shrub/Forested	Rowe Creek	particulate retention/ wildlife habitat	TRAM score 42.5/74.5/52.5
WTL-15	N/A*	36.388485°	-88.333985°	1.0116 ac.	Scrub-Shrub	Rowe Creek	filtration of stormwater runoff	TRAM score 45.4
WTL-16	N/A*	36.389571°	-88.333968°	0.8502 ac.	Emergent	Rowe Creek	filtration of stormwater runoff	TRAM score 45.4
WTL-17	N/A*	36.390136°	-88.333219°	0.0059 ac.	Emergent	Rowe Creek	filtration of stormwater runoff	Undetermined at this time
WTL-18	N/A*	36.40292°	-88.333708°	0.2238 ac.	Emergent	Rowe Creek	filtration of stormwater runoff	TRAM score 49.3
WTL-19	N/A*	36.405038°	-88.333681°	0.107 ac.	Emergent	Rowe Creek	filtration of stormwater runoff	TRAM score 47.3
WTL-20	N/A*	36.410715°	-88.332809°	0.0751 ac.	Forested	North Fork Obion River	filtration/wildlife habitat	TRAM score 75.7

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
WTL-21	N/A*	36.410924°	-88.333699°	0.007 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 45.4
WTL-22	N/A*	36.411871°	-88.333065°	0.0315 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 42.9
WTL-23	N/A*	36.412549°	-88.333061°	0.0075 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 43.6
WTL-24	N/A*	36.414679°	-88.332759°	0.1168 ac.	Forested	North Fork Obion River	filtration/wildlife habitat	TRAM score 71.2
WTL-25	N/A*	36.415108°	-88.33337°	0.0174 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 49.5
WTL-26	N/A*	36.41541°	-88.332752°	0.0445 ac.	Forested	North Fork Obion River	particulate retention/ wildlife habitat	TRAM score 64.0
WTL-27	N/A*	36.423045°	-88.332521°	0.4675 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 52.3
WTL-28	N/A*	36.423297°	-88.33331°	0.4182 ac.	Emergent	North Fork Obion River	filtration of stormwater runoff	TRAM score 53.1
WTL-29	N/A*	36.427639°	-88.333141°	0.0726 ac.	Drained Open Water	North Fork Obion River	filtration of stormwater runoff	Undetermined at this time
WTL-30	N/A*	36.436352°	-88.332842°	0.1811 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	Undetermined at this time
WTL-31	N/A*	36.435121°	-88.332938°	0.0292 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	TRAM score 32.8
WTL-32	N/A*	36.437362°	-88.332452°	0.0523 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	Undetermined at this time
WTL-33	N/A*	36.440474°	-88.332572°	0.0104 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	Undetermined at this time
WTL-34	N/A*	36.449135°	-88.332206°	0.0338 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	Undetermined at this time
WTL-35	N/A*	36.451017°	-88.33207°	0.0071 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	TRAM score 35.1
WTL-36	N/A*	36.45427°	-88.332275°	0.0439 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	TRAM score 32.1
WTL-37	N/A*	36.454473°	-88.331964°	0.3285 ac.	Emergent/Forested	East Fork Clarks River	filtration/wildlife habitat	TRAM score 72.3
WTL-38	N/A*	36.454724°	-88.332498°	0.0186 ac.	Forested	East Fork Clarks River	filtration/wildlife habitat	TRAM score 90.2
WTL-39	N/A*	36.455543°	-88.332381°	0.5174 ac.	Emergent/Forested	East Fork Clarks River	filtration/wildlife habitat	TRAM score 80.9
WTL-40	N/A*	36.456317°	-88.331997°	0.0519 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	TRAM score 19.9
WTL-41	N/A*	36.458952°	-88.332188°	0.0756 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	TRAM score 34.4

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
WTL-42	N/A*	36.460151°	-88.331899°	0.0422 ac.	Emergent	East Fork Clarks River	filtration of stormwater runoff	TRAM score 41.7
WTL-43	N/A*	36.460447°	-88.332215°	0.0683 ac.	Scrub-Shrub	East Fork Clarks River	filtration of stormwater runoff	TRAM score 58.7
WTL-44	N/A*	36.461874°	-88.332072°	0.0091 ac.	Emergent	Mormon Branch	filtration of stormwater runoff	TRAM score 42.5
POND-01	N/A*	36.344821°	-88.330734°	0.763 ac.	Open Water	Threemile Branch	filtration of stormwater runoff	Undetermined at this time
POND-02	N/A*	36.366225°	-88.333766°	0.177 ac.	Open Water	North Fork Obion River	filtration of stormwater runoff	Undetermined at this time
POND-03	N/A*	36.412166°	-88.333347°	0.021 ac.	Open Water	North Fork Obion River	filtration of stormwater runoff	Undetermined at this time
Streams								
STR-01	N/A*	36.34464°	-88.32993°	121.88 ft.	Perennial	Threemile Branch		Not Supporting
STR-02 (Threemile Branch)	N/A*	36.350521°	-88.332097°	353.4 ft.	Perennial	Threemile Branch		Not Supporting
STR-03	N/A*	36.350426°	-88.332558°	19.75 ft.	Intermittent	Threemile Branch		Undetermined at this time
STR-04	N/A*	36.350615°	-88.332848°	51.63 ft.	Intermittent	Threemile Branch		Undetermined at this time
STR-05	N/A*	36.351613°	-88.332537°	651.06 ft.	Intermittent	Threemile Branch		Not Assessed
STR-06	N/A*	36.377683°	-88.334291°	63.17 ft.	Perennial	North Fork Obion River		Not Assessed
STR-07 (North Fork Obion River)	N/A*	36.378157°	-88.333822°	298.6 ft.	Perennial	North Fork Obion River		Not Assessed/ETW
STR-08	N/A*	36.378331°	-88.333645°	150.13 ft.	Perennial	North Fork Obion River		Not Assessed
STR-09	N/A*	36.381248°	-88.333353°	324.63 ft.	Perennial	North Fork Obion River		Not Assessed
STR-10	N/A*	36.387034°	-88.333341°	70.19 ft.	Intermittent	Rowe Creek		Not Assessed
STR-11	N/A*	36.38767°	-88.333625°	145.81 ft.	Perennial	Rowe Creek		Not Assessed
STR-12 (Rowe Creek)	N/A*	36.387733°	-88.333689°	326.18 ft.	Perennial	Rowe Creek		Not Assessed/ETW
STR-13	N/A*	36.388°	-88.333409°	217.26 ft.	Perennial	Rowe Creek		Not Assessed
STR-14	N/A*	36.388034°	-88.333545°	100.43 ft.	Perennial	Rowe Creek		Not Assessed

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
STR-15	N/A*	36.393915°	-88.333373°	350.01 ft.	Intermittent	Rowe Creek		Not Assessed
STR-16	N/A*	36.422509°	-88.332682°	336.03 ft.	Perennial	North Fork Obion River		Not Assessed
STR-17	N/A*	36.42269°	-88.332664°	44.22 ft.	Perennial	North Fork Obion River		Not Assessed
STR-18	N/A*	36.422858°	-88.332596°	61.74 ft.	Perennial	North Fork Obion River		Not Assessed
STR-19	N/A*	36.423237°	-88.33273°	207.39 ft.	Perennial	North Fork Obion River		Not Assessed
STR-20	N/A*	36.437105°	-88.332666°	404.84 ft.	Perennial	East Fork Clarks River		Not Assessed
STR-21	N/A*	36.45203°	-88.332084°	464.73 ft.	Intermittent	East Fork Clarks River		Not Assessed
STR-22	N/A*	36.45266°	-88.331875°	195.2 ft.	Perennial	East Fork Clarks River		Not Assessed
Wet Weather Conveyances								
WWC-01/EPH-01	N/A*	36.343002°	-88.329858°	659.24 ft.	Ephemeral	Threemile Branch		Undetermined at this time
WWC-02/EPH-02	N/A*	36.345642°	-88.330548°	139.53 ft.	Ephemeral	Threemile Branch		Undetermined at this time
WWC-03/EPH-03	N/A*	36.348431°	-88.331395°	239.51 ft.	Ephemeral	Threemile Branch		Undetermined at this time
WWC-04/EPH-04	N/A*	36.350148°	-88.332345°	254.74 ft.	Ephemeral	Threemile Branch		Undetermined at this time
WWC-05/EPH-05	N/A*	36.351671°	-88.332973°	489.36 ft.	Ephemeral	Threemile Branch		Undetermined at this time
WWC-06/EPH-06	N/A*	36.352659°	-88.33263°	197.21 ft.	Ephemeral	Threemile Branch		Undetermined at this time
WWC-07/EPH-07	N/A*	36.361565°	-88.334415°	76.38 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-08/EPH-08	N/A*	36.361681°	-88.334522°	71.11 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-09/EPH-09	N/A*	36.361858°	-88.333484°	166.54 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-10/EPH-10	N/A*	36.365991°	-88.333648°	41.96 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-11/EPH-11	N/A*	36.365998°	-88.333705°	42.83 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-12/EPH-12	N/A*	36.373541°	-88.334437°	124.61 ft.	Ephemeral	North Fork Obion River		Undetermined at this time

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
WWC-13/EPH-13	N/A*	36.373628°	-88.334375°	110.77 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-14/EPH-14	N/A*	36.375126°	-88.333781°	69.1 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-15/EPH-15	N/A*	36.375642°	-88.333634°	117 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-16/EPH-16	N/A*	36.377029°	-88.334026°	225.97 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-17/EPH-17	N/A*	36.381211°	-88.334018°	177.34 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-18/EPH-18	N/A*	36.381312°	-88.333653°	75.49 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-19/EPH-19	N/A*	36.381452°	-88.334025°	13.37 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-20/EPH-20	N/A*	36.383248°	-88.333716°	30.56 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-21/EPH-21	N/A*	36.383385°	-88.33371°	65.43 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-22/EPH-22	N/A*	36.386124°	-88.333619°	182.5 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-23/EPH-23	N/A*	36.385936°	-88.333616°	15.91 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-24/EPH-24	N/A*	36.390788°	-88.334103°	109.17 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-25/EPH-25	N/A*	36.394444°	-88.333737°	275.23 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-26/EPH-26	N/A*	36.399656°	-88.333232°	243.47 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-27/EPH-27	N/A*	36.400737°	-88.333017°	168.07 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-28/EPH-28	N/A*	36.400791°	-88.33297°	50.94 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-29/EPH-29	N/A*	36.40325°	-88.333074°	221.38 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-30/EPH-30	N/A*	36.40536°	-88.333463°	231.12 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-31/EPH-31	N/A*	36.407853°	-88.332887°	443.22 ft.	Ephemeral	Rowe Creek		Undetermined at this time
WWC-32/EPH-32	N/A*	36.40976°	-88.333636°	67.32 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-33/EPH-33	N/A*	36.410939°	-88.332645°	48.29 ft.	Ephemeral	North Fork Obion River		Undetermined at this time

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
WWC-34/EPH-34	N/A*	36.412078°	-88.333003°	55.84 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-35/EPH-35	N/A*	36.412209°	-88.332765°	137.96 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-36/EPH-36	N/A*	36.413012°	-88.333001°	138.18 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-37/EPH-37	N/A*	36.41455°	-88.333381°	181.97 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-38/EPH-38	N/A*	36.415236°	-88.333284°	59.63 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-39/EPH-39	N/A*	36.415342°	-88.332913°	368.86 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-40/EPH-40	N/A*	36.415964°	-88.332851°	400.42 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-41/EPH-41	N/A*	36.418152°	-88.333336°	261.88 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-42/EPH-42	N/A*	36.418651°	-88.333284°	282.43 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-43/EPH-43	N/A*	36.41858°	-88.332871°	62.64 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-44/EPH-44	N/A*	36.418708°	-88.333231°	47.75 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-45/EPH-45	N/A*	36.418819°	-88.332863°	119.53 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-46/EPH-46	N/A*	36.422702°	-88.33305°	211.81 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-47/EPH-47	N/A*	36.42374°	-88.332716°	285.6 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-48/EPH-48	N/A*	36.427871°	-88.332929°	109.27 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-49/EPH-49	N/A*	36.429424°	-88.333091°	78.56 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-50/EPH-50	N/A*	36.429485°	-88.333047°	52.68 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-51/EPH-51	N/A*	36.430057°	-88.333155°	36.19 ft.	Ephemeral	North Fork Obion River		Undetermined at this time
WWC-52/EPH-52	N/A*	36.441736°	-88.332679°	170.13 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-53/EPH-53	N/A*	36.442855°	-88.332827°	173.3 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-54/EPH-54	N/A*	36.448283°	-88.332394°	340.56 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time

Impact Table: PIN 101886.02 - Henry Co SR-54 from Smith Rd to Near Howard Rd

Site Number (Label)	Station Number from Plans	Latitude	Longitude	Estimated amount of aquatic resource in review area	Type	Receiving Water	Function	Quality
WWC-55/EPH-55	N/A*	36.44962°	-88.332189°	86.06 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-56/EPH-56	N/A*	36.449883°	-88.332029°	87.34 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-57/EPH-57	N/A*	36.452614°	-88.33234°	24.41 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-58/EPH-58	N/A*	36.453127°	-88.332293°	250.6 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-59/EPH-59	N/A*	36.453664°	-88.332109°	513.2 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-60/EPH-60	N/A*	36.454723°	-88.33236°	49.22 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-61/EPH-61	N/A*	36.460556°	-88.331899°	64.93 ft.	Ephemeral	East Fork Clarks River		Undetermined at this time
WWC-62/EPH-62	N/A*	36.462179°	-88.331864°	244.92 ft.	Ephemeral	Mormon Branch		Undetermined at this time
WWC-63/EPH-63	N/A*	36.462197°	-88.332044°	162.51 ft.	Ephemeral	Mormon Branch		Undetermined at this time
WWC-64/EPH-64	N/A*	36.462446°	-88.332169°	66.43 ft.	Ephemeral	Mormon Branch		Undetermined at this time

* Plans are functional at this time and have not been assigned station numbers

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 1			
Photo Location: WTL-01			
Direction: South			
Survey Date: 5/17/2021			
Comments: WTL-01 wetland overview.			
Photograph ID: 2			
Photo Location: WTL-01			
Direction: Northwest			
Survey Date: 5/17/2021			
Comments: WTL-01 wetland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 3			
Photo Location: WTL-01			
Direction: Northwest			
Survey Date: 5/17/2021			
Comments: WTL-01 upland point.			
Photograph ID: 4			
Photo Location: WWC-01			
Direction: South southeast			
Survey Date: 5/17/2021			
Comments: WWC-01 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 5			
Photo Location: WWC-01			
Direction: North northwest			
Survey Date: 5/17/2021			
Comments: WWC-01 downstream view.			
Photograph ID: 6			
Photo Location: WWC-01			
Direction: South southeast			
Survey Date: 5/17/2021			
Comments: WWC-01 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 7			
Photo Location: WWC-01			
Direction: North northwest			
Survey Date: 5/17/2021			
Comments: WWC-01 downstream view.			
Photograph ID: 8			
Photo Location: WWC-01			
Direction: South southeast			
Survey Date: 5/17/2021			
Comments: WWC-01 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 9			
Photo Location: WWC-01			
Direction: North northwest			
Survey Date: 5/17/2021			
Comments: WWC-01 downstream view.			
Photograph ID: 10			
Photo Location: WTL-02			
Direction: South southwest			
Survey Date: 5/17/2021			
Comments: WTL-02 wetland overview.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 11			
Photo Location: WTL-02			
Direction: South			
Survey Date: 5/17/2021			
Comments: WTL-02 wetland point.			
Photograph ID: 12			
Photo Location: WTL-02			
Direction: South			
Survey Date: 5/17/2021			
Comments: WTL-02 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 13			
Photo Location: PND-01			
Direction: West			
Survey Date: 5/17/2021			
Comments: PND-01 overview.			
Photograph ID: 14			
Photo Location: PND-01			
Direction: Northwest			
Survey Date: 5/17/2021			
Comments: PND-01 overview.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 15			
Photo Location: STR-01			
Direction: Southwest			
Survey Date: 5/17/2021			
Comments: STR-01 upstream view.			
Photograph ID: 16			
Photo Location: STR-01			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: STR-01 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 17			
Photo Location: WTL-03 PEM			
Direction: South			
Survey Date: 5/17/2021			
Comments: WTL-03 PEM wetland point.			
Photograph ID: 18			
Photo Location: WTL-03 PFO			
Direction: South southwest			
Survey Date: 5/17/2021			
Comments: WTL-03 PFO wetland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 19			
Photo Location: WTL-03			
Direction: North northeast			
Survey Date: 5/17/2021			
Comments: WTL-03 upland point.			
Photograph ID: 20			
Photo Location: WWC-02			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: WWC-02 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 21			
Photo Location: WWC-02			
Direction: Northwest			
Survey Date: 5/18/2021			
Comments: WWC-02 downstream view.			
Photograph ID: 22			
Photo Location: WWC-02			
Direction: West			
Survey Date: 5/18/2021			
Comments: WWC-02 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 23			
Photo Location: WWC-02			
Direction: East			
Survey Date: 5/18/2021			
Comments: WWC-02 downstream view.			
Photograph ID: 24			
Photo Location: WTL-04			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WTL-04 wetland point.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 25			
Photo Location: WTL-04			
Direction: Southeast			
Survey Date: 5/18/2021			
Comments: WTL-04 upland point.			
Photograph ID: 26			
Photo Location: WWC-03			
Direction: Northeast			
Survey Date: 5/18/2021			
Comments: WWC-03 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 27			
Photo Location: WWC-03			
Direction: East			
Survey Date: 5/18/2021			
Comments: WWC-03 downstream view.			
Photograph ID: 28			
Photo Location: WWC-03			
Direction: Northeast			
Survey Date: 5/18/2021			
Comments: WWC-03 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 29			
Photo Location: WWC-03			
Direction: South southwest			
Survey Date: 5/18/2021			
Comments: WWC-03 downstream view.			
Photograph ID: 30			
Photo Location: WTL-05			
Direction: Northeast			
Survey Date: 5/18/2021			
Comments: WTL-05 wetland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 31			
Photo Location: WTL-05			
Direction: West northwest			
Survey Date: 5/18/2021			
Comments: WTL-05 upland point.			
Photograph ID: 32			
Photo Location: WWC-04			
Direction: South			
Survey Date: 5/18/2021			
Comments: WWC-04 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 33			
Photo Location: WWC-04			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: WWC-04 downstream view.			
Photograph ID: 34			
Photo Location: WWC-04			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WWC-04 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 35			
Photo Location: WWC-04			
Direction: North northwest			
Survey Date: 5/18/2021			
Comments: WWC-04 downstream view.			
Photograph ID: 36			
Photo Location: STR-02			
Direction: East northeast			
Survey Date: 5/18/2021			
Comments: STR-02 upstream view			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 37			
Photo Location: STR-02			
Direction: North northwest			
Survey Date: 5/18/2021			
Comments: STR-02 downstream view.			
Photograph ID: 38			
Photo Location: STR-03			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: STR-03 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 39			
Photo Location: STR-03			
Direction: North northeast			
Survey Date: 5/18/2021			
Comments: STR-03 downstream view.			
Photograph ID: 40			
Photo Location: STR-04			
Direction: Northeast			
Survey Date: 5/18/2021			
Comments: STR-04 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 41			
Photo Location: STR-04			
Direction: South			
Survey Date: 5/18/2021			
Comments: STR-04 downstream view.			
Photograph ID: 42			
Photo Location: STR-04			
Direction: Southwest			
Survey Date: 5/18/2021			
Comments: STR-04 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 43			
Photo Location: WTL-06			
Direction: Southeast			
Survey Date: 5/18/2021			
Comments: WTL-06 wetland point.			
Photograph ID: 44			
Photo Location: WTL-06			
Direction: North northwest			
Survey Date: 5/18/2021			
Comments: WTL-06 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 45			
Photo Location: STR-05			
Direction: East northeast			
Survey Date: 5/18/2021			
Comments: STR-05 upstream view.			
Photograph ID: 46			
Photo Location: STR-05			
Direction: West			
Survey Date: 5/18/2021			
Comments: STR-05 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 47			
Photo Location: WWC-05			
Direction: South southwest			
Survey Date: 5/18/2021			
Comments: WWC-05 upstream view.			
Photograph ID: 48			
Photo Location: WWC-05			
Direction: Northwest			
Survey Date: 5/18/2021			
Comments: WWC-05 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 49			
Photo Location: WWC-06			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: WWC-06 upstream view.			
Photograph ID: 50			
Photo Location: WWC-06			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WWC-06 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 51			
Photo Location: WTL-07			
Direction: North			
Survey Date: 5/18/2021			
Comments: WTL-07 wetland point.			
Photograph ID: 52			
Photo Location: WTL-07			
Direction: West northwest			
Survey Date: 5/18/2021			
Comments: WTL-07 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 53			
Photo Location: WWC-07			
Direction: North northeast			
Survey Date: 5/18/2021			
Comments: WWC-07 upstream view.			
Photograph ID: 54			
Photo Location: WWC-07			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: WWC-07 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 55			
Photo Location: WWC-08			
Direction: North			
Survey Date: 5/18/2021			
Comments: WWC-08 upstream view.			
Photograph ID: 56			
Photo Location: WWC-08			
Direction: West southwest			
Survey Date: 5/18/2021			
Comments: WWC-08 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 57			
Photo Location: WWC-09			
Direction: South			
Survey Date: 7/20/2021			
Comments: WWC-09 upstream view.			
Photograph ID: 58			
Photo Location: WWC-09			
Direction: Northeast			
Survey Date: 7/20/2021			
Comments: WWC-09 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 59			
Photo Location: WWC-10			
Direction: Southwest			
Survey Date: 5/18/2021			
Comments: WWC-10 upstream view.			
Photograph ID: 60			
Photo Location: WWC-10			
Direction: Southeast			
Survey Date: 5/18/2021			
Comments: WWC-10 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 61			
Photo Location: WWC-11			
Direction: East			
Survey Date: 5/18/2021			
Comments: WWC-11 upstream view.			
Photograph ID: 62			
Photo Location: WWC-11			
Direction: North northeast			
Survey Date: 5/18/2021			
Comments: WWC-11 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 63			
Photo Location: PND-02			
Direction: Southwest			
Survey Date: 5/18/2021			
Comments: PND-02 overview.			
Photograph ID: 64			
Photo Location: PND-02			
Direction: North			
Survey Date: 5/18/2021			
Comments: PND-02 overview.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 65			
Photo Location: PND-02			
Direction: Southwest			
Survey Date: 5/18/2021			
Comments: PND-02 overview.			
Photograph ID: 66			
Photo Location: WWC-12			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: WWC-12 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 67			
Photo Location: WWC-12			
Direction: Northwest			
Survey Date: 5/17/2021			
Comments: WWC-12 downstream view.			
Photograph ID: 68			
Photo Location: WWC-12			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: WWC-12 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 69			
Photo Location: WWC-13			
Direction: Northeast			
Survey Date: 5/17/2021			
Comments: WWC-13 upstream view.			
Photograph ID: 70			
Photo Location: WWC-13			
Direction: Northeast			
Survey Date: 5/17/2021			
Comments: WWC-13 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 71			
Photo Location: WWC-13			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: WWC-13 upstream view			
Photograph ID: 72			
Photo Location: WWC-13			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: WWC-13 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 73			
Photo Location: WWC-14			
Direction: West			
Survey Date: 5/18/2021			
Comments: WWC-14 upstream view.			
Photograph ID: 74			
Photo Location: WWC-14			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WWC-14 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 75			
Photo Location: WWC-15			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: WWC-15 upstream view.			
Photograph ID: 76			
Photo Location: WWC-15			
Direction: East northeast			
Survey Date: 5/18/2021			
Comments: WWC-15 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 77			
Photo Location: WWC-15			
Direction: South southwest			
Survey Date: 5/18/2021			
Comments: WWC-16 upstream view			
Photograph ID: 78			
Photo Location: WWC-15			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WWC-16 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 79			
Photo Location: WWC-16			
Direction: South			
Survey Date: 5/17/2021			
Comments: WWC-16 upstream view.			
Photograph ID: 80			
Photo Location: WWC-16			
Direction: North			
Survey Date: 5/17/2021			
Comments: WWC-16 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 81			
Photo Location: WWC-16			
Direction: South			
Survey Date: 5/17/2021			
Comments: WWC-16 upstream view.			
Photograph ID: 82			
Photo Location: WWC-16			
Direction: North			
Survey Date: 5/17/2021			
Comments: WWC-16 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 83			
Photo Location: WWC-16			
Direction: South			
Survey Date: 5/17/2021			
Comments: WWC-16 upstream view.			
Photograph ID: 84			
Photo Location: WWC-16			
Direction: North			
Survey Date: 5/17/2021			
Comments: WWC-16 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 85			
Photo Location: WTL-08			
Direction: Northeast			
Survey Date: 5/18/2021			
Comments: WTL-08 wetland overview.			
Photograph ID: 86			
Photo Location: WTL-08			
Direction: South southwest			
Survey Date: 5/18/2021			
Comments: WTL-08 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 87			
Photo Location: WTL-08			
Direction: West southwest			
Survey Date: 5/18/2021			
Comments: WTL-08 upland point.			
Photograph ID: 88			
Photo Location: WTL-09			
Direction: North			
Survey Date: 5/17/2021			
Comments: WTL-09 wetland overview.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 89			
Photo Location: WTL-09			
Direction: Northeast			
Survey Date: 5/17/2021			
Comments: WTL-09 wetland point.			
Photograph ID: 90			
Photo Location: WTL-09			
Direction: East			
Survey Date: 5/17/2021			
Comments: WTL-09 upland point.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 91			
Photo Location: STR-06			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: STR-06 upstream view.			
Photograph ID: 92			
Photo Location: STR-06			
Direction: Northwest			
Survey Date: 5/17/2021			
Comments: STR-06 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 93			
Photo Location: STR-07			
Direction: East			
Survey Date: 5/17/2021			
Comments: STR-07 upstream view.			
Photograph ID: 94			
Photo Location: STR-07			
Direction: West			
Survey Date: 5/17/2021			
Comments: STR-07 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 95			
Photo Location: STR-07			
Direction: West			
Survey Date: 5/17/2021			
Comments: STR-07 upstream view.			
Photograph ID: 96			
Photo Location: STR-07			
Direction: East			
Survey Date: 5/17/2021			
Comments: STR-07 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 97			
Photo Location: STR-08			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: STR-08 upstream view.			
Photograph ID: 98			
Photo Location: STR-08			
Direction: East northeast			
Survey Date: 5/18/2021			
Comments: STR-08 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 99			
Photo Location: WTL-10			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WTL-10 wetland overview.			
Photograph ID: 100			
Photo Location: WTL-10			
Direction: Southwest			
Survey Date: 5/18/2021			
Comments: WTL-10 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 101			
Photo Location: WTL-10			
Direction: Northwest			
Survey Date: 5/18/2021			
Comments: WTL-10 upland point.			
Photograph ID: 102			
Photo Location: WTL-11			
Direction: North			
Survey Date: 5/17/2021			
Comments: WTL-11 wetland overview.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 103			
Photo Location: WTL-11			
Direction: Northeast			
Survey Date: 5/17/2021			
Comments: WTL-11 wetland point.			
Photograph ID: 104			
Photo Location: WTL-11			
Direction: Southeast			
Survey Date: 5/17/2021			
Comments: WTL-11 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 105			
Photo Location: STR-09			
Direction: West northwest			
Survey Date: 5/18/2021			
Comments: STR-09 upstream view.			
Photograph ID: 106			
Photo Location: STR-09			
Direction: Southwest			
Survey Date: 5/18/2021			
Comments: STR-09 upstream view towards culvert inlet.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 107			
Photo Location: STR-09			
Direction: West northwest			
Survey Date: 5/18/2021			
Comments: STR-09 upstream view.			
Photograph ID: 108			
Photo Location: STR-09			
Direction: Northwest			
Survey Date: 5/18/2021			
Comments: STR-09 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 109			
Photo Location: WWC-17			
Direction: Northwest			
Survey Date: 5/18/2021			
Comments: WWC-17 upstream view.			
Photograph ID: 110			
Photo Location: WWC-17			
Direction: Southeast			
Survey Date: 5/18/2021			
Comments: WWC-17 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 111			
Photo Location: WWC-17			
Direction: East			
Survey Date: 5/18/2021			
Comments: WWC-17 upstream view.			
Photograph ID: 112			
Photo Location: WWC-18			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WWC-18 upstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 113			
Photo Location: WWC-18			
Direction: Southeast			
Survey Date: 5/18/2021			
Comments: WWC-18 downstream view.			
Photograph ID: 114			
Photo Location: WWC-18			
Direction: South			
Survey Date: 5/18/2021			
Comments: WWC-18 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 115			
Photo Location: WWC-19			
Direction: Southeast			
Survey Date: 5/18/2021			
Comments: WWC-19 upstream view.			
Photograph ID: 116			
Photo Location: WWC-19			
Direction: East			
Survey Date: 5/18/2021			
Comments: WWC-19 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 117			
Photo Location: WWC-20			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WWC-20 upstream view.			
Photograph ID: 118			
Photo Location: WWC-20			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-20 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 119			
Photo Location: WWC-20			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WWC-20 downstream view.			
Photograph ID: 120			
Photo Location: WWC-21			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: WWC-21 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 121			
Photo Location: WWC-21			
Direction: South southeast			
Survey Date: 5/19/2021			
Comments: WWC-21 downstream view.			
Photograph ID: 122			
Photo Location: WWC-22			
Direction: West northwest			
Survey Date: 5/18/2021			
Comments: WWC-22 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 123			
Photo Location: WWC-22			
Direction: North			
Survey Date: 5/18/2021			
Comments: WWC-22 downstream view.			
Photograph ID: 124			
Photo Location: WWC-22			
Direction: North northeast			
Survey Date: 5/18/2021			
Comments: WWC-22 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 125			
Photo Location: WWC-22			
Direction: West southwest			
Survey Date: 5/18/2021			
Comments: WWC-22 downstream view.			
Photograph ID: 126			
Photo Location: WWC-23			
Direction: Northwest			
Survey Date: 5/18/2021			
Comments: WWC-23 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 127			
Photo Location: WWC-23			
Direction: East northeast			
Survey Date: 5/18/2021			
Comments: WWC-23 downstream view.			
Photograph ID: 128			
Photo Location: WTL-12			
Direction: South			
Survey Date: 5/18/2021			
Comments: WTL-12 wetland overview.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 129			
Photo Location: WTL-12			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: WTL-12 wetland point.			
Photograph ID: 130			
Photo Location: WTL-12			
Direction: East southeast			
Survey Date: 5/18/2021			
Comments: WTL-12 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 131			
Photo Location: WTL-13			
Direction: Southeast			
Survey Date: 5/19/2021			
Comments: WTL-13 wetland point.			
Photograph ID: 132			
Photo Location: WTL-13			
Direction: Southeast			
Survey Date: 5/19/2021			
Comments: WTL-13 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 133			
Photo Location: STR-10			
Direction: Northeast			
Survey Date: 5/18/2021			
Comments: STR-10 upstream view.			
Photograph ID: 134			
Photo Location: STR-10			
Direction: South southeast			
Survey Date: 5/18/2021			
Comments: STR-10 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 135			
Photo Location: WTL-14			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WTL-14 wetland overview.			
Photograph ID: 136			
Photo Location: WTL-14			
Direction: South			
Survey Date: 5/19/2021			
Comments: WTL-14 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 137			
Photo Location: WTL-14			
Direction: Southwest			
Survey Date: 5/19/2021			
Comments: WTL-14 upland point.			
Photograph ID: 138			
Photo Location: STR-11			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: STR-11 upstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 139			
Photo Location: STR-11			
Direction: North			
Survey Date: 5/19/2021			
Comments: STR-11 downstream view.			
Photograph ID: 140			
Photo Location: STR-11			
Direction: North			
Survey Date: 5/19/2021			
Comments: STR-11 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 141			
Photo Location: STR-11			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: STR-11 downstream view.			
Photograph ID: 142			
Photo Location: STR-11			
Direction: South			
Survey Date: 5/19/2021			
Comments: STR-11 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 143			
Photo Location: STR-11			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: STR-11 downstream view.			
Photograph ID: 144			
Photo Location: STR-12			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: STR-12 upstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 145			
Photo Location: STR-12			
Direction: South			
Survey Date: 5/19/2021			
Comments: STR-12 downstream view.			
Photograph ID: 146			
Photo Location: STR-12			
Direction: North			
Survey Date: 5/19/2021			
Comments: STR-12 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 147			
Photo Location: STR-12			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: STR-12 downstream view.			
Photograph ID: 148			
Photo Location: STR-13			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: STR-13 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 149			
Photo Location: STR-13			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: STR-13 downstream view.			
Photograph ID: 150			
Photo Location: STR-13			
Direction: North northwest			
Survey Date: 5/19/2021			
Comments: STR-13 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 151			
Photo Location: STR-13			
Direction: North			
Survey Date: 5/19/2021			
Comments: STR-13 downstream view.			
Photograph ID: 152			
Photo Location: STR-14			
Direction: Northeast			
Survey Date: 5/19/2021			
Comments: STR-14 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 153			
Photo Location: STR-14			
Direction: South southeast			
Survey Date: 5/19/2021			
Comments: STR-14 downstream view.			
Photograph ID: 154			
Photo Location: WTL-15			
Direction: South			
Survey Date: 5/19/2021			
Comments: WTL-15 wetland overview.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 155			
Photo Location: WTL-15			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-15 wetland point.			
Photograph ID: 156			
Photo Location: WTL-15			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-15 upland point.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 157			
Photo Location: WTL-16			
Direction: West			
Survey Date: 5/19/2021			
Comments: WTL-16 upland point.			
Photograph ID: 158			
Photo Location: WTL-17			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WTL-17 wetland overview.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 159			
Photo Location: WTL-17			
Direction: East northeast			
Survey Date: 5/19/2021			
Comments: WTL-17 wetland point.			
Photograph ID: 160			
Photo Location: WTL-17			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-17 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 161			
Photo Location: WWC-24			
Direction: Southeast			
Survey Date: 5/20/2021			
Comments: WWC-24 upstream view.			
Photograph ID: 162			
Photo Location: WWC-24			
Direction: Southeast			
Survey Date: 5/20/2021			
Comments: WWC-24 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 163			
Photo Location: WWC-24			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: WWC-24 upstream view.			
Photograph ID: 164			
Photo Location: WWC-24			
Direction: East southeast			
Survey Date: 5/20/2021			
Comments: WWC-24 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 165			
Photo Location: STR-15			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: STR-15 upstream view.			
Photograph ID: 166			
Photo Location: STR-15			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: STR-15 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 167			
Photo Location: STR-15			
Direction: South southeast			
Survey Date: 5/20/2021			
Comments: STR-15 upstream view.			
Photograph ID: 168			
Photo Location: STR-15			
Direction: East			
Survey Date: 5/20/2021			
Comments: STR-15 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 169			
Photo Location: WWC-25			
Direction: Southwest			
Survey Date: 5/20/2021			
Comments: WWC-25 upstream view.			
Photograph ID: 170			
Photo Location: WWC-25			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-25 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 171			
Photo Location: WWC-26			
Direction: North			
Survey Date: 5/18/2021			
Comments: WWC-26 upstream view.			
Photograph ID: 172			
Photo Location: WWC-26			
Direction: East			
Survey Date: 5/18/2021			
Comments: WWC-26 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 173			
Photo Location: WWC-26			
Direction: East			
Survey Date: 5/19/2021			
Comments: WWC-26 downstream view.			
Photograph ID: 174			
Photo Location: WWC-26			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: WWC-26 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 175			
Photo Location: WWC-27			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: WWC-27 upstream view.			
Photograph ID: 176			
Photo Location: WWC-27			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-27 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 177			
Photo Location: WWC-28			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-28 upstream view.			
Photograph ID: 178			
Photo Location: WWC-28			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-28 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 179			
Photo Location: WTL-18			
Direction: North northwest			
Survey Date: 5/19/2021			
Comments: WTL-18 wetland point.			
Photograph ID: 180			
Photo Location: WTL-18			
Direction: South southeast			
Survey Date: 5/19/2021			
Comments: WTL-18 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 181			
Photo Location: WWC-29			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-29 upstream view.			
Photograph ID: 182			
Photo Location: WWC-29			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: WWC-29 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 183			
Photo Location: WWC-30			
Direction: North			
Survey Date: 5/19/2021			
Comments: WWC-30 upstream view.			
Photograph ID: 184			
Photo Location: WWC-30			
Direction: Northeast			
Survey Date: 5/19/2021			
Comments: WWC-30 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 185			
Photo Location: WWC-30			
Direction: North northwest			
Survey Date: 5/19/2021			
Comments: WWC-30 upstream view.			
Photograph ID: 186			
Photo Location: WWC-30			
Direction: East northeast			
Survey Date: 5/19/2021			
Comments: WWC-30 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 187			
Photo Location: WTL-19			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-19 wetland point.			
Photograph ID: 188			
Photo Location: WWC-31			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: WWC-31 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 189			
Photo Location: WWC-31			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: WWC-31 downstream view.			
Photograph ID: 190			
Photo Location: WWC-31			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: WWC-31 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 191			
Photo Location: WWC-31			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WWC-31 upstream view.			
Photograph ID: 192			
Photo Location: WWC-31			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WWC-31 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 193			
Photo Location: WWC-32			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: WWC-32 upstream view.			
Photograph ID: 194			
Photo Location: WWC-32			
Direction: South southeast			
Survey Date: 5/19/2021			
Comments: WWC-32 downstream view			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 195			
Photo Location: WWC-32			
Direction: West southwest			
Survey Date: 5/19/2021			
Comments: WWC-32 upstream view.			
Photograph ID: 196			
Photo Location: WWC-32			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WWC-32 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 197			
Photo Location: WTL-20			
Direction: North northwest			
Survey Date: 5/19/2021			
Comments: WTL-20 wetland point.			
Photograph ID: 198			
Photo Location: WTL-20			
Direction: East			
Survey Date: 5/19/2021			
Comments: WTL-20 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 199			
Photo Location: WTL-21			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-21 wetland point.			
Photograph ID: 200			
Photo Location: WTL-21			
Direction: Northeast			
Survey Date: 5/19/2021			
Comments: WTL-21 upland point.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 201			
Photo Location: WWC-33			
Direction: West southwest			
Survey Date: 5/19/2021			
Comments: WWC-33 upstream view.			
Photograph ID: 202			
Photo Location: WWC-33			
Direction: West			
Survey Date: 5/19/2021			
Comments: WWC-33 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 203			
Photo Location: WTL-22			
Direction: North			
Survey Date: 5/19/2021			
Comments: WTL-22 wetland point.			
Photograph ID: 204			
Photo Location: WTL-22			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-22 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 205			
Photo Location: WWC-34			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WWC-34 upstream view.			
Photograph ID: 206			
Photo Location: WWC-34			
Direction: East southeast			
Survey Date: 5/19/2021			
Comments: WWC-34 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 207			
Photo Location: PND-03			
Direction: West			
Survey Date: 5/19/2021			
Comments: PND-03 overview.			
Photograph ID: 208			
Photo Location: PND-03			
Direction: Southwest			
Survey Date: 5/19/2021			
Comments: PND-03 overview.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 209			
Photo Location: WWC-35			
Direction: Southwest			
Survey Date: 5/19/2021			
Comments: WWC-35 upstream view.			
Photograph ID: 210			
Photo Location: WWC-35			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: WWC-35 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 211			
Photo Location: WTL-23			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WTL-23 wetland point.			
Photograph ID: 212			
Photo Location: WTL-23			
Direction: North			
Survey Date: 5/19/2021			
Comments: WTL-23 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 213			
Photo Location: WWC-36			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-36 upstream view.			
Photograph ID: 214			
Photo Location: WWC-36			
Direction: West northwest			
Survey Date: 5/19/2021			
Comments: WWC-36 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 215			
Photo Location: WWC-37			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WWC-37 upstream view.			
Photograph ID: 216			
Photo Location: WWC-37			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WWC-37 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 217			
Photo Location: WTL-24			
Direction: South southwest			
Survey Date: 5/20/2021			
Comments: WTL-24 wetland point.			
Photograph ID: 218			
Photo Location: WTL-24			
Direction: North			
Survey Date: 5/20/2021			
Comments: WTL-24 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 219			
Photo Location: WTL-25			
Direction: East southeast			
Survey Date: 5/19/2021			
Comments: WTL-25 wetland point.			
Photograph ID: 220			
Photo Location: WTL-25			
Direction: North			
Survey Date: 5/19/2021			
Comments: WTL-25 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 221			
Photo Location: WWC-38			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: WWC-38 upstream view.			
Photograph ID: 222			
Photo Location: WWC-38			
Direction: North northeast			
Survey Date: 5/19/2021			
Comments: WWC-38 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 223			
Photo Location: WTL-26			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-26 wetland point.			
Photograph ID: 224			
Photo Location: WTL-26			
Direction: South southwest			
Survey Date: 5/19/2021			
Comments: WTL-26 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 225			
Photo Location: WWC-39			
Direction: East southeast			
Survey Date: 5/19/2021			
Comments: WWC-39 upstream view.			
Photograph ID: 226			
Photo Location: WWC-39			
Direction: South			
Survey Date: 5/19/2021			
Comments: WWC-39 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 227			
Photo Location: WWC-39			
Direction: Northeast			
Survey Date: 5/19/2021			
Comments: WWC-39 upstream view.			
Photograph ID: 228			
Photo Location: WWC-39			
Direction: Southwest			
Survey Date: 5/19/2021			
Comments: WWC-39 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 229			
Photo Location: WWC-39			
Direction: South southwest			
Survey Date: 5/20/2021			
Comments: WWC-39 upstream view.			
Photograph ID: 230			
Photo Location: WWC-39			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: WWC-39 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 231			
Photo Location: WWC-39			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WWC-39 upstream view.			
Photograph ID: 232			
Photo Location: WWC-39			
Direction: North northwest			
Survey Date: 5/20/2021			
Comments: WWC-39 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 233			
Photo Location: WWC-39			
Direction: Southwest			
Survey Date: 5/20/2021			
Comments: WWC-39 downstream view.			
Photograph ID: 234			
Photo Location: WWC-40			
Direction: East southeast			
Survey Date: 5/20/2021			
Comments: WWC-40 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 235			
Photo Location: WWC-40			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: WWC-40 downstream view.			
Photograph ID: 236			
Photo Location: WWC-40			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-40 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 237			
Photo Location: WWC-41			
Direction: Southwest			
Survey Date: 5/20/2021			
Comments: WWC-41 upstream view.			
Photograph ID: 238			
Photo Location: WWC-41			
Direction: East southeast			
Survey Date: 5/20/2021			
Comments: WWC-41 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 239			
Photo Location: WWC-41			
Direction: Southwest			
Survey Date: 5/20/2021			
Comments: WWC-41 upstream view.			
Photograph ID: 240			
Photo Location: WWC-42			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WWC-42 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 241			
Photo Location: WWC-42			
Direction: West			
Survey Date: 5/20/2021			
Comments: WWC-42 downstream view.			
Photograph ID: 242			
Photo Location: WWC-42			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WWC-42 upstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 243			
Photo Location: WWC-42			
Direction: Southeast			
Survey Date: 5/20/2021			
Comments: WWC-42 downstream view.			
Photograph ID: 244			
Photo Location: WWC-42			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WWC-42 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 245			
Photo Location: WWC-42			
Direction: North northwest			
Survey Date: 5/20/2021			
Comments: WWC-42 downstream view.			
Photograph ID: 246			
Photo Location: WWC-42			
Direction: Northwest			
Survey Date: 5/20/2021			
Comments: WWC-42 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 247			
Photo Location: WWC-43			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WWC-43 upstream view.			
Photograph ID: 248			
Photo Location: WWC-43			
Direction: Northeast			
Survey Date: 5/20/2021			
Comments: WWC-43 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 249			
Photo Location: WWC-44			
Direction: South southwest			
Survey Date: 5/20/2021			
Comments: WWC-44 upstream view.			
Photograph ID: 250			
Photo Location: WWC-44			
Direction: Southwest			
Survey Date: 5/20/2021			
Comments: WWC-44 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 251			
Photo Location: WWC-45			
Direction: North northwest			
Survey Date: 5/20/2021			
Comments: WWC-45 upstream view.			
Photograph ID: 252			
Photo Location: WWC-45			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: WWC-45 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 253			
Photo Location: STR-16			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: STR-16 upstream view.			
Photograph ID: 254			
Photo Location: STR-16			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: STR-16 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 255			
Photo Location: WWC-46			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: WWC-46 upstream view.			
Photograph ID: 256			
Photo Location: WWC-46			
Direction: North			
Survey Date: 5/20/2021			
Comments: WWC-46 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 257			
Photo Location: WWC-46			
Direction: Southeast			
Survey Date: 5/20/2021			
Comments: WWC-46 upstream view.			
Photograph ID: 258			
Photo Location: WWC-46			
Direction: North			
Survey Date: 5/20/2021			
Comments: WWC-46 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 259			
Photo Location: WTL-27			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WTL-27 wetland point.			
Photograph ID: 260			
Photo Location: WTL-27			
Direction: South			
Survey Date: 5/20/2021			
Comments: WTL-27 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 261			
Photo Location: STR-17			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: STR-17 upstream view.			
Photograph ID: 262			
Photo Location: STR-17			
Direction: West			
Survey Date: 5/20/2021			
Comments: STR-17 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 263			
Photo Location: STR-17			
Direction: North			
Survey Date: 5/20/2021			
Comments: STR-17 upstream view.			
Photograph ID: 264			
Photo Location: STR-17			
Direction: West			
Survey Date: 5/20/2021			
Comments: STR-17 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 265			
Photo Location: STR-18			
Direction: Southeast			
Survey Date: 5/20/2021			
Comments: STR-18 upstream view.			
Photograph ID: 266			
Photo Location: STR-18			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: STR-18 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 267			
Photo Location: STR-18			
Direction: North			
Survey Date: 5/20/2021			
Comments: STR-18 upstream view.			
Photograph ID: 268			
Photo Location: STR-18			
Direction: East			
Survey Date: 5/20/2021			
Comments: STR-18 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 269			
Photo Location: WTL-28			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WTL-28 wetland point.			
Photograph ID: 270			
Photo Location: WTL-28			
Direction: Northeast			
Survey Date: 5/20/2021			
Comments: WTL-28 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 271			
Photo Location: STR-19			
Direction: East			
Survey Date: 5/20/2021			
Comments: STR-19 upstream view.			
Photograph ID: 272			
Photo Location: STR-19			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: STR-19 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 273			
Photo Location: STR-19			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: STR-19 upstream view.			
Photograph ID: 274			
Photo Location: STR-19			
Direction: Southwest			
Survey Date: 5/20/2021			
Comments: STR-19 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 275			
Photo Location: WWC-47			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-47 upstream view.			
Photograph ID: 276			
Photo Location: WWC-47			
Direction: North			
Survey Date: 5/20/2021			
Comments: WWC-47 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 277			
Photo Location: WWC-47			
Direction: North northwest			
Survey Date: 5/20/2021			
Comments: WWC-47 downstream view.			
Photograph ID: 278			
Photo Location: WWC-47			
Direction: West			
Survey Date: 5/20/2021			
Comments: WWC-47 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 279			
Photo Location: WTL-29			
Direction: Northeast			
Survey Date: 5/20/2021			
Comments: WTL-29 wetland point.			
Photograph ID: 280			
Photo Location: WTL-29			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WTL-29 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 281			
Photo Location: WWC-48			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WWC-48 upstream view.			
Photograph ID: 282			
Photo Location: WWC-48			
Direction: South southwest			
Survey Date: 5/20/2021			
Comments: WWC-48 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 283			
Photo Location: WWC-49			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WWC-49 upstream view.			
Photograph ID: 284			
Photo Location: WWC-49			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-49 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 285			
Photo Location: WWC-50			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WWC-50 upstream view.			
Photograph ID: 286			
Photo Location: WWC-50			
Direction: West			
Survey Date: 5/20/2021			
Comments: WWC-50 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 287			
Photo Location: WWC-51			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: WWC-51 upstream view.			
Photograph ID: 288			
Photo Location: WWC-51			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-51 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 289			
Photo Location: WTL-30			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WTL-30 wetland overview.			
Photograph ID: 290			
Photo Location: WTL-30			
Direction: West			
Survey Date: 5/20/2021			
Comments: WTL-30 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 291			
Photo Location: WTL-30			
Direction: West			
Survey Date: 5/20/2021			
Comments: WTL-30 upland point.			
Photograph ID: 292			
Photo Location: WTL-31			
Direction: West southwest			
Survey Date: 5/20/2021			
Comments: WTL-31 wetland overview.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 293			
Photo Location: WTL-31			
Direction: East			
Survey Date: 5/20/2021			
Comments: WTL-31 wetland point.			
Photograph ID: 294			
Photo Location: WTL-31			
Direction: Northeast			
Survey Date: 5/20/2021			
Comments: WTL-31 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 295			
Photo Location: STR-20			
Direction: West northwest			
Survey Date: 5/20/2021			
Comments: STR-20 upstream view.			
Photograph ID: 296			
Photo Location: STR-20			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: STR-20 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 297			
Photo Location: STR-20			
Direction: East			
Survey Date: 5/20/2021			
Comments: STR-20 upstream view.			
Photograph ID: 298			
Photo Location: STR-20			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: STR-20 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 299			
Photo Location: STR-20			
Direction: North			
Survey Date: 5/20/2021			
Comments: STR-20 upstream view.			
Photograph ID: 300			
Photo Location: STR-20			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: STR-20 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 301			
Photo Location: WTL-32			
Direction: Northwest			
Survey Date: 5/20/2021			
Comments: WTL-32 wetland overview.			
Photograph ID: 302			
Photo Location: WTL-32			
Direction: East northeast			
Survey Date: 5/20/2021			
Comments: WTL-32 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 303			
Photo Location: WTL-32			
Direction: South			
Survey Date: 5/20/2021			
Comments: WTL-32 upland point.			
Photograph ID: 304			
Photo Location: WTL-33			
Direction: South southwest			
Survey Date: 5/21/2021			
Comments: WTL-33 overview.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 305			
Photo Location: WTL-33			
Direction: South southwest			
Survey Date: 5/21/2021			
Comments: WTL-33 wetland point.			
Photograph ID: 306			
Photo Location: WTL-33			
Direction: Northwest			
Survey Date: 5/21/2021			
Comments: WTL-33 upland point.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 307			
Photo Location: WWC-52			
Direction: East southeast			
Survey Date: 5/21/2021			
Comments: WWC-52 upstream view.			
Photograph ID: 308			
Photo Location: WWC-52			
Direction: North northeast			
Survey Date: 5/21/2021			
Comments: WWC-52 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 309			
Photo Location: WWC-52			
Direction: East			
Survey Date: 5/21/2021			
Comments: WWC-52 upstream view			
Photograph ID: 310			
Photo Location: WWC-52			
Direction: West southwest			
Survey Date: 5/21/2021			
Comments: WWC-52 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 311			
Photo Location: WWC-52			
Direction: West southwest			
Survey Date: 5/21/2021			
Comments: WWC-52 upstream view.			
Photograph ID: 312			
Photo Location: WWC-52			
Direction: East southeast			
Survey Date: 5/21/2021			
Comments: WWC-52 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 313			
Photo Location: WWC-52			
Direction: Southeast			
Survey Date: 5/21/2021			
Comments: WWC-52 upstream view.			
Photograph ID: 314			
Photo Location: WWC-53			
Direction: North northeast			
Survey Date: 5/21/2021			
Comments: WWC-53 downstream view.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 315			
Photo Location: WWC-54			
Direction: East			
Survey Date: 5/21/2021			
Comments: WWC-54 upstream view.			
Photograph ID: 316			
Photo Location: WWC-54			
Direction: West southwest			
Survey Date: 5/21/2021			
Comments: WWC-54 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 317			
Photo Location: WTL-34			
Direction: Northwest			
Survey Date: 5/21/2021			
Comments: WTL-34 wetland overview.			
Photograph ID: 318			
Photo Location: WTL-34			
Direction: North northeast			
Survey Date: 5/21/2021			
Comments: WTL-34 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 319			
Photo Location: WTL-34			
Direction: East southeast			
Survey Date: 5/21/2021			
Comments: WTL-34 upland point.			
Photograph ID: 320			
Photo Location: WWC-55			
Direction: West			
Survey Date: 5/21/2021			
Comments: WWC-55 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 321			
Photo Location: WWC-55			
Direction: East			
Survey Date: 5/21/2021			
Comments: WWC-55 downstream view.			
Photograph ID: 322			
Photo Location: WWC-55			
Direction: South			
Survey Date: 5/21/2021			
Comments: WWC-55 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 323			
Photo Location: WWC-56			
Direction: Northeast			
Survey Date: 5/21/2021			
Comments: WWC-56 downstream view.			
Photograph ID: 324			
Photo Location: WTL-35			
Direction: North northeast			
Survey Date: 5/21/2021			
Comments: WTL-35 wetland overview.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 325			
Photo Location: WTL-35			
Direction: South			
Survey Date: 5/21/2021			
Comments: WTL-35 wetland point.			
Photograph ID: 326			
Photo Location: WTL-35			
Direction: West northwest			
Survey Date: 5/21/2021			
Comments: WTL-35 upland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 327			
Photo Location: STR-21			
Direction: Northwest			
Survey Date: 5/19/2021			
Comments: STR-21 upstream view.			
Photograph ID: 328			
Photo Location: STR-21			
Direction: South southeast			
Survey Date: 5/19/2021			
Comments: STR-21 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 329			
Photo Location: WWC-57			
Direction: East southeast			
Survey Date: 5/20/2021			
Comments: WWC-57 upstream view.			
Photograph ID: 330			
Photo Location: WWC-57			
Direction: Northeast			
Survey Date: 5/20/2021			
Comments: WWC-57 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 331			
Photo Location: STR-22			
Direction: Northwest			
Survey Date: 5/20/2021			
Comments: STR-22 upstream view.			
Photograph ID: 332			
Photo Location: STR-22			
Direction: East southeast			
Survey Date: 5/20/2021			
Comments: STR-22 downstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 333			
Photo Location: WWC-58			
Direction: West northwest			
Survey Date: 5/21/2021			
Comments: WWC-58 upstream view.			
Photograph ID: 334			
Photo Location: WWC-58			
Direction: South southwest			
Survey Date: 5/21/2021			
Comments: WWC-58 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 335			
Photo Location: WWC-58			
Direction: South			
Survey Date: 5/21/2021			
Comments: WWC-58 upstream view.			
Photograph ID: 336			
Photo Location: WWC-59			
Direction: North			
Survey Date: 5/20/2021			
Comments: WWC-59 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 337			
Photo Location: WWC-59			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-59 downstream view.			
Photograph ID: 338			
Photo Location: WWC-59			
Direction: North			
Survey Date: 5/20/2021			
Comments: WWC-59 upstream view.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 339			
Photo Location: WWC-59			
Direction: South			
Survey Date: 5/20/2021			
Comments: WWC-59 downstream view.			
Photograph ID: 340			
Photo Location: WTL-36			
Direction: West			
Survey Date: 5/21/2021			
Comments: WTL-36 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 341			
Photo Location: WTL-36			
Direction: South southwest			
Survey Date: 5/21/2021			
Comments: WTL-36 upland point.			
Photograph ID: 342			
Photo Location: WTL-37			
Direction: North northwest			
Survey Date: 5/20/2021			
Comments: WTL-37 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 343			
Photo Location: WTL-37			
Direction: Northwest			
Survey Date: 5/20/2021			
Comments: WTL-37 upland point.			
Photograph ID: 344			
Photo Location: WTL-38			
Direction: East southeast			
Survey Date: 5/21/2021			
Comments: WTL-38 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 345			
Photo Location: WTL-38			
Direction: West southwest			
Survey Date: 5/21/2021			
Comments: WTL-38 upland point.			
Photograph ID: 346			
Photo Location: WWC-60			
Direction: Southeast			
Survey Date: 5/21/2021			
Comments: WWC-60 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 347			
Photo Location: WWC-60			
Direction: Northeast			
Survey Date: 5/21/2021			
Comments: WWC-60 downstream view.			
Photograph ID: 348			
Photo Location: WTL-39			
Direction: North			
Survey Date: 5/21/2021			
Comments: WTL-39 wetland point.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 349			
Photo Location: WTL-39			
Direction: Northwest			
Survey Date: 5/21/2021			
Comments: WTL-39 upland point.			
Photograph ID: 350			
Photo Location: WTL-40			
Direction: South			
Survey Date: 5/21/2021			
Comments: WTL-40 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 351			
Photo Location: WTL-40			
Direction: North			
Survey Date: 5/21/2021			
Comments: WTL-40 upland point.			
Photograph ID: 352			
Photo Location: WTL-41			
Direction: Northwest			
Survey Date: 5/21/2021			
Comments: WTL-41 wetland point.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 353			
Photo Location: WTL-41			
Direction: North			
Survey Date: 5/21/2021			
Comments: WTL-41 upland point.			
Photograph ID: 354			
Photo Location: WTL-42			
Direction: North northwest			
Survey Date: 5/21/2021			
Comments: WTL-42 wetland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 355			
Photo Location: WTL-42			
Direction: Northeast			
Survey Date: 5/21/2021			
Comments: WTL-42 upland point.			
Photograph ID: 356			
Photo Location: WTL-43			
Direction: West northwest			
Survey Date: 5/21/2021			
Comments: WTL-43 wetland overview.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 357			
Photo Location: WTL-43			
Direction: South southeast			
Survey Date: 5/21/2021			
Comments: WTL-43 wetland point.			
Photograph ID: 358			
Photo Location: WTL-43			
Direction: South			
Survey Date: 5/21/2021			
Comments: WTL-43 upland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 359			
Photo Location: WWC-61			
Direction: Southwest			
Survey Date: 5/21/2021			
Comments: WWC-61 upstream view.			
Photograph ID: 360			
Photo Location: WWC-61			
Direction: South southeast			
Survey Date: 5/21/2021			
Comments: WWC-61 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 361			
Photo Location: WWC-62			
Direction: Northwest			
Survey Date: 5/21/2021			
Comments: WWC-62 upstream view.			
Photograph ID: 362			
Photo Location: WWC-62			
Direction: West northwest			
Survey Date: 5/21/2021			
Comments: WWC-62 downstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 363			
Photo Location: WTL-44			
Direction: West			
Survey Date: 5/21/2021			
Comments: WTL-44 wetland overview.			
Photograph ID: 364			
Photo Location: WTL-44			
Direction: West southwest			
Survey Date: 5/21/2021			
Comments: WTL-44 wetland point.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 365			
Photo Location: WTL-44			
Direction: South southwest			
Survey Date: 5/21/2021			
Comments: WTL-44 upland point.			
Photograph ID: 366			
Photo Location: WWC-63			
Direction: South southeast			
Survey Date: 5/21/2021			
Comments: WWC-63 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 367			
Photo Location: WWC-63			
Direction: North			
Survey Date: 5/21/2021			
Comments: WWC-63 downstream view.			
Photograph ID: 368			
Photo Location: WWC-64			
Direction: Southeast			
Survey Date: 5/21/2021			
Comments: WWC-64 upstream view.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 369			
Photo Location: WWC-64			
Direction: Southeast			
Survey Date: 5/21/2021			
Comments: WWC-64 downstream view.			
Photograph ID: 370			
Photo Location: WTL-09			
Direction: West			
Survey Date: 5/17/2021			
Comments: Halberd-leaf tearthumb (<i>Polygonum arifolium</i>) within WTL-09.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 371			
Photo Location: WTL-09			
Direction: West			
Survey Date: 5/17/2021			
Comments: Halberd-leaf tearthumb (Polygonum arifolium) within WTL-09.			
Photograph ID: 372			
Photo Location: WTL-09			
Direction: Southwest			
Survey Date: 5/17/2021			
Comments: Halberd-leaf tearthumb (Polygonum arifolium) within WTL-09.			



Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 373			
Photo Location: STR-07			
Direction: East			
Survey Date: 5/17/2021			
Comments: Swallow nests under STR-07 (North Fork Obion River) bridge.			
Photograph ID: 374			
Photo Location: STR-07			
Direction: North northeast			
Survey Date: 5/17/2021			
Comments: Swallow nests under STR-07 (North Fork Obion River) bridge.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 375			
Photo Location: WTL-10			
Direction: East northeast			
Survey Date: 5/18/2021			
Comments: Halberd-leaf tearthumb (Polygonum arifolium) within WTL-10.			
Photograph ID: 376			
Photo Location: WTL-11			
Direction: Northeast			
Survey Date: 5/17/2021			
Comments: Halberd-leaf tearthumb (Polygonum arifolium) within WTL-11.			


Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 377			
Photo Location: WTL-11			
Direction: Northeast			
Survey Date: 5/17/2021			
Comments: Halberd-leaf tearthumb (Polygonum arifolium) within WTL-11.			
Photograph ID: 378			
Photo Location: STR-12			
Direction: East northeast			
Survey Date: 5/19/2021			
Comments: Cliff swallow nests under STR-12 (Rowe Creek) bridge.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 379			
Photo Location: WTL-27			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: Water purslane (Didiplis diandra) within WTL-27.			
Photograph ID: 380			
Photo Location: WTL-27			
Direction: South southeast			
Survey Date: 5/20/2021			
Comments: Water purslane (Didiplis diandra) within WTL-27.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 381			
Photo Location: WTL-27			
Direction: North northeast			
Survey Date: 5/20/2021			
Comments: Water purslane (Didiplis diandra) within WTL-27.			
Photograph ID: 382			
Photo Location: WTL-36			
Direction: Southwest			
Survey Date: 5/21/2021			
Comments: Water purslane (Didiplis diandra) within WTL-36.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 383			
Photo Location: WTL-36			
Direction: North			
Survey Date: 5/21/2021			
Comments: Water purslane (Didiplis diandra) within WTL-36.			
Photograph ID: 384			
Photo Location: WTL-41			
Direction: South southeast			
Survey Date: 5/21/2021			
Comments: Water purslane (Didiplis diandra) within WTL-41.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 385			
Photo Location: WTL-41			
Direction: West			
Survey Date: 5/21/2021			
Comments: Water purslane (Didiplis diandra) within WTL-41.			
Photograph ID: 386			
Photo Location: WTL-41			
Direction: East			
Survey Date: 5/21/2021			
Comments: Water purslane (Didiplis diandra) within WTL-41.			

Client:	TN TDOT	Project:	PE: 40003-0200-14 PIN: 101886.02
Site Name:	SR-54 from Smith Rd to Near Howard Rd	Site Location:	Henry County, TN
Photograph ID: 387			
Photo Location: WTL-41			
Direction: South			
Survey Date: 5/21/2021			
Comments: Water purslane (Didiplis diandra) within WTL-41.			

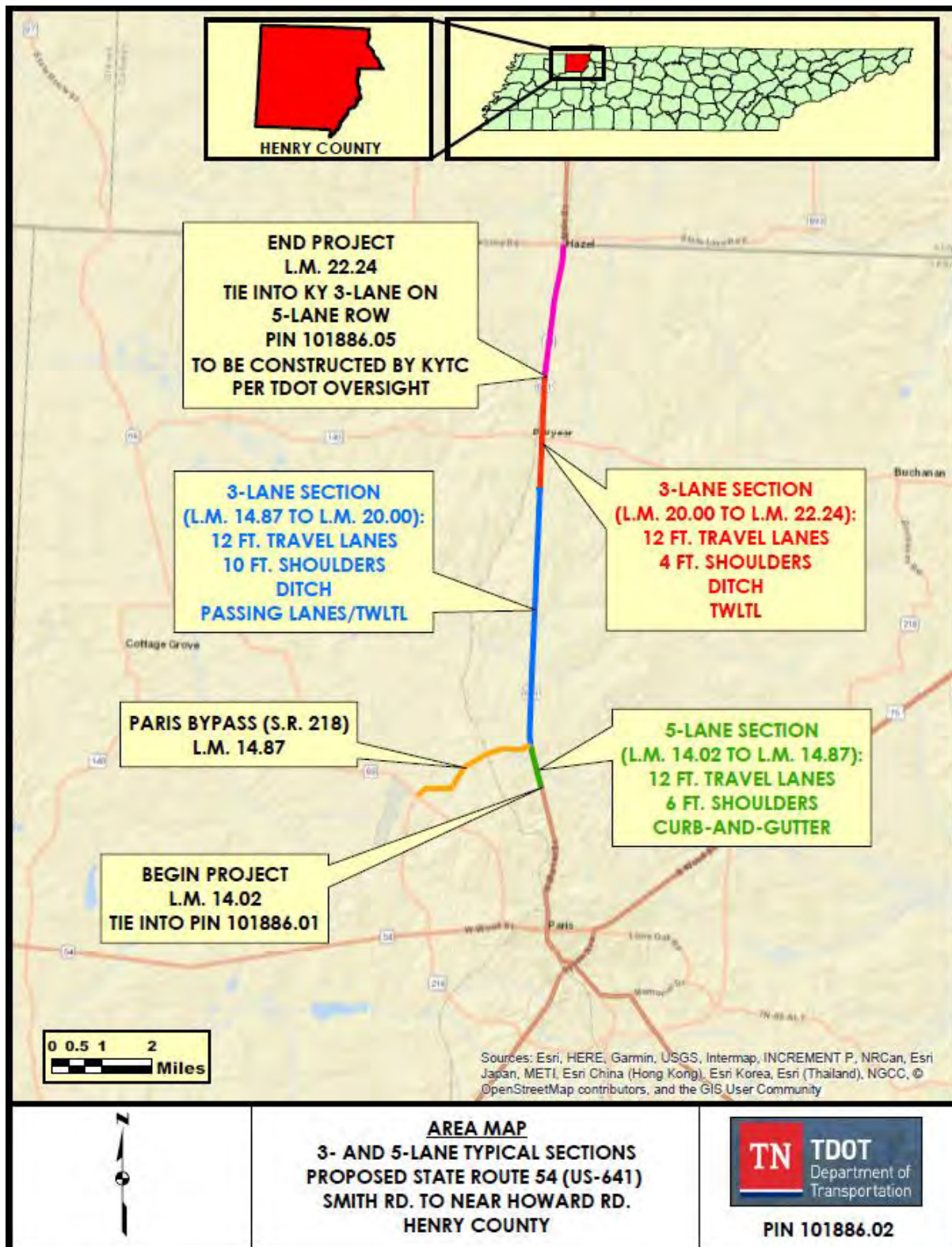
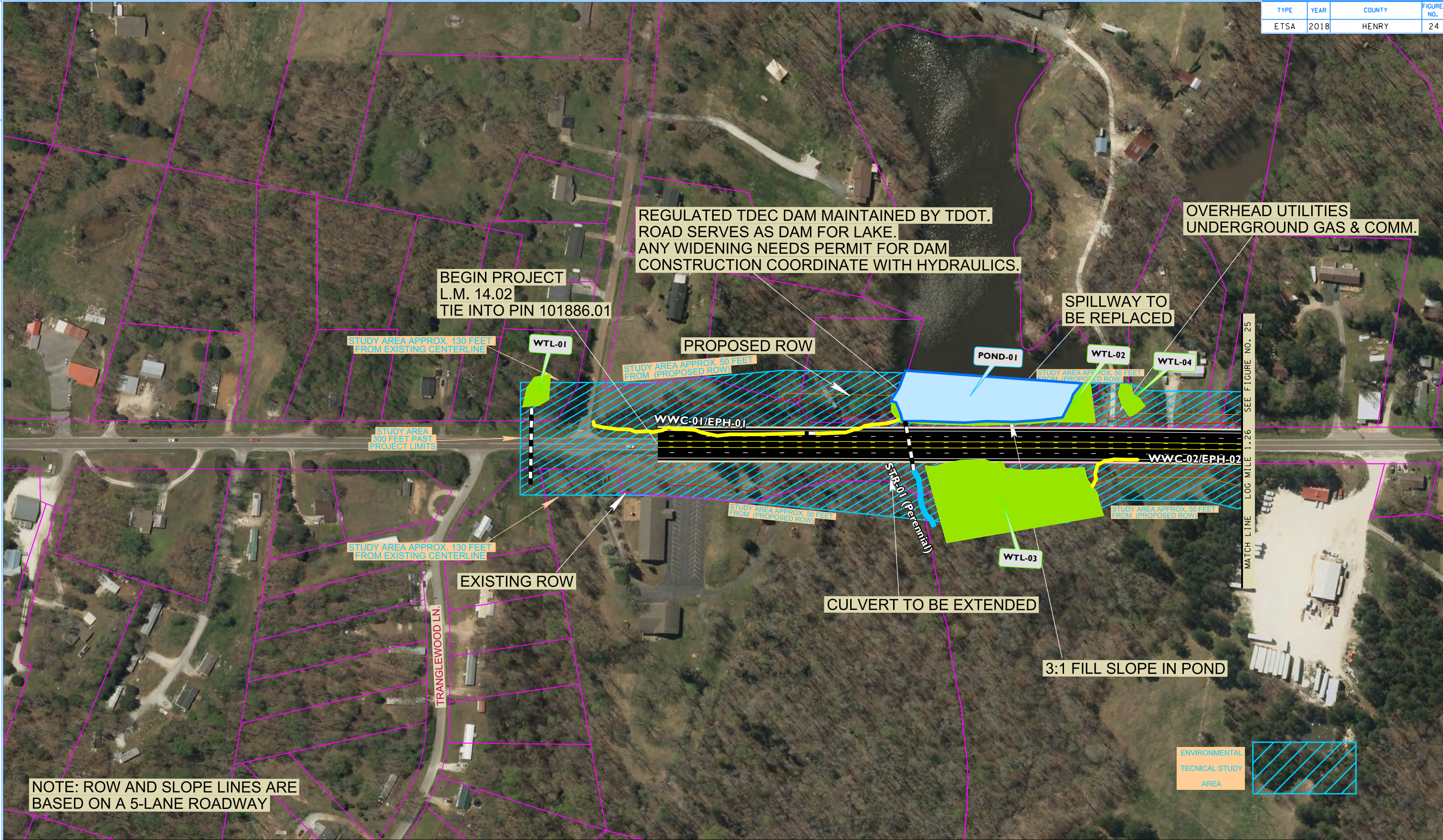


Figure 4. Area Map of Proposed S.R. 54 Typical Sections

3/24/2020 10:32:23 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 24 SR 54.dgn



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 24
S.R. 54
L.M. 14.02 to
L.M. 14.36

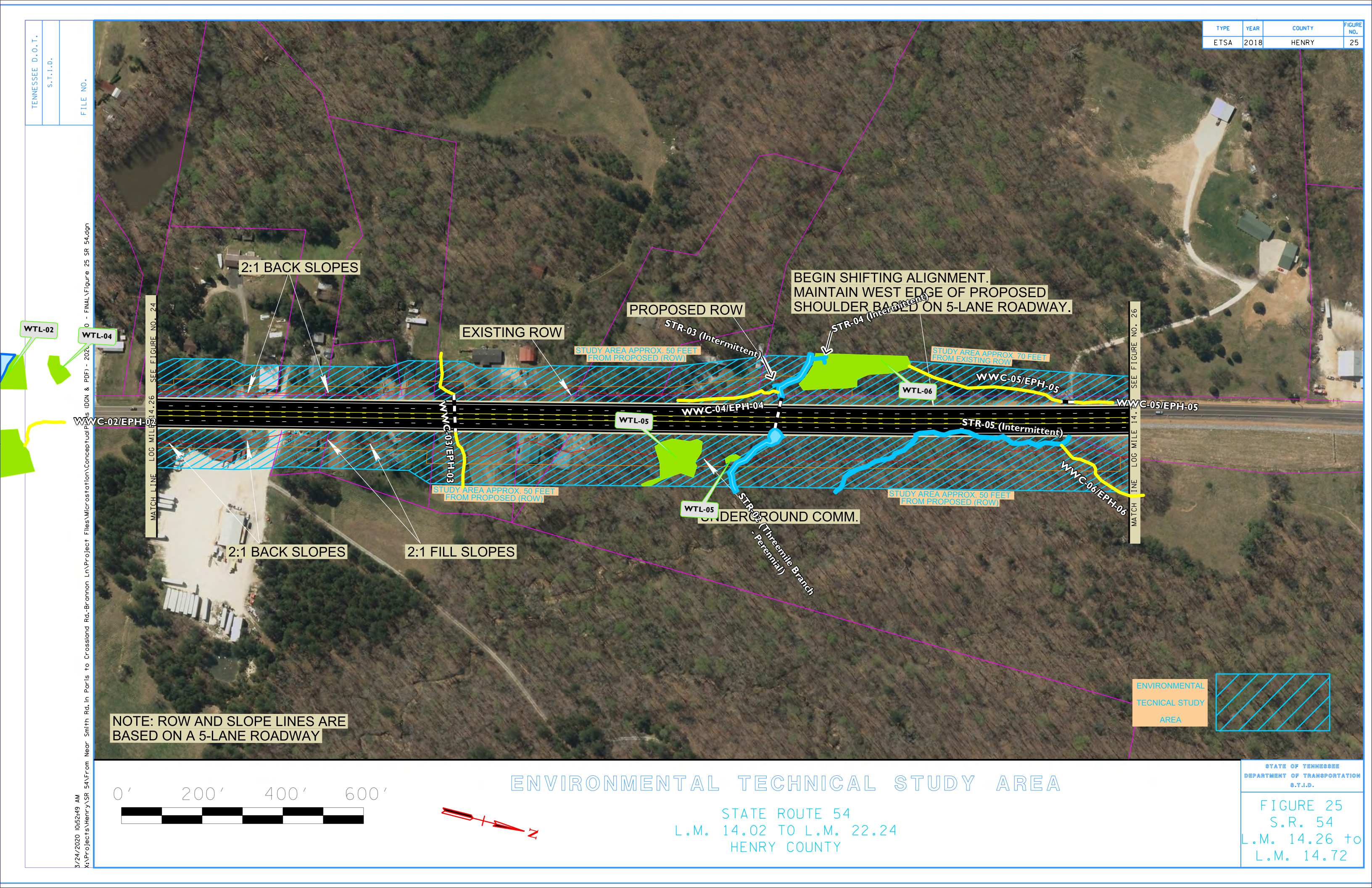
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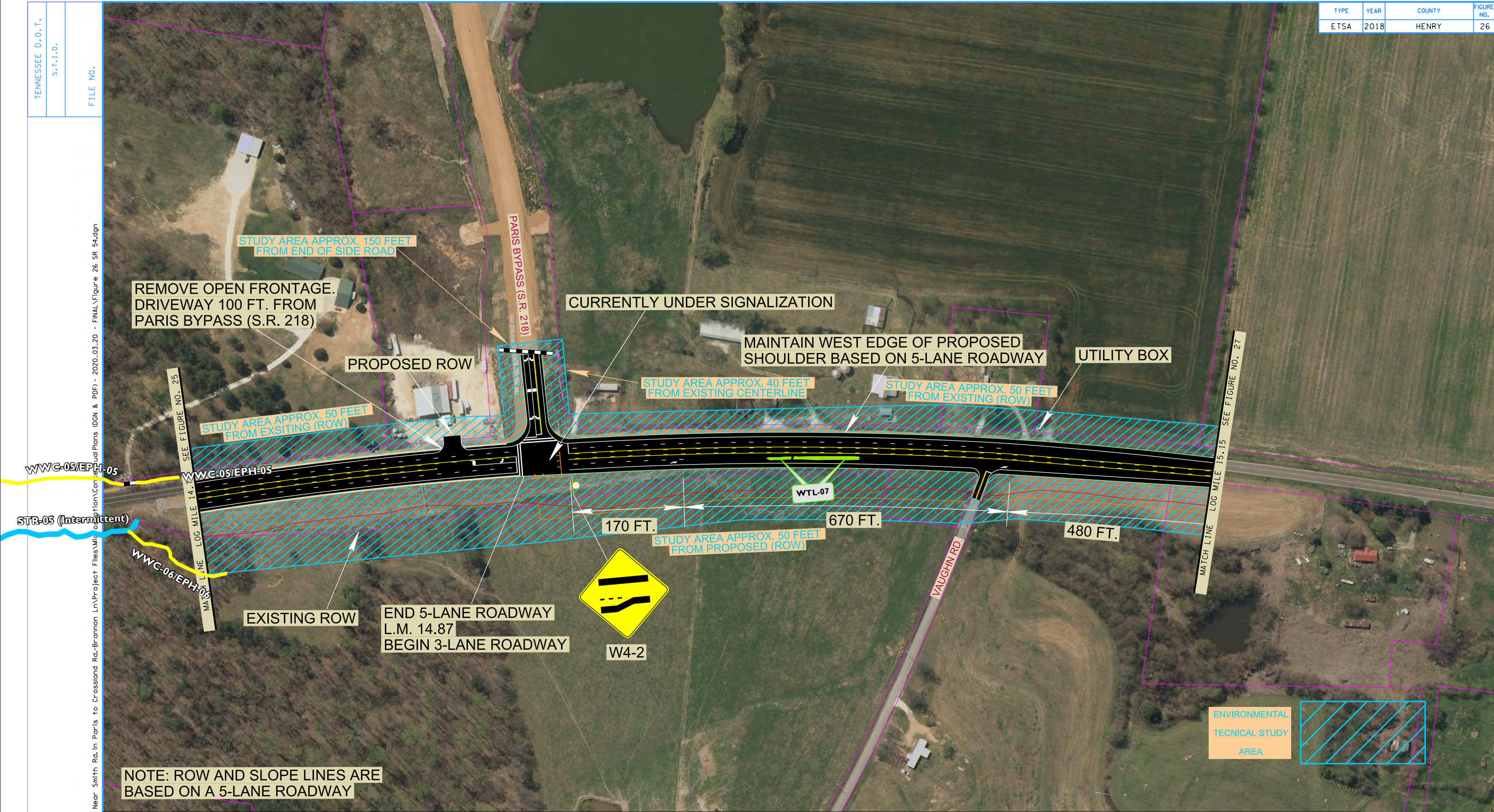
NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



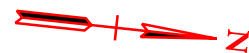
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY





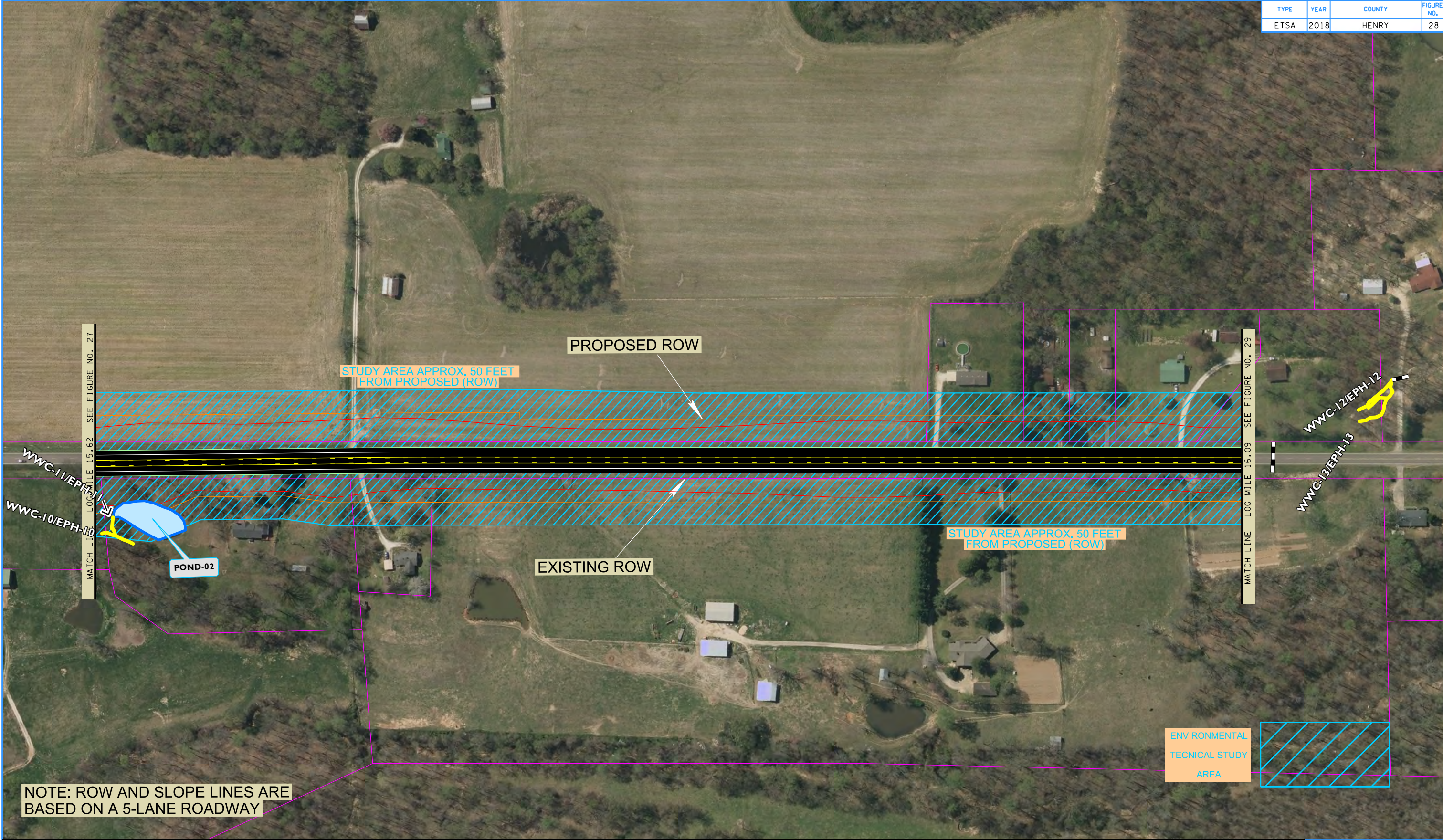
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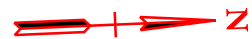
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

3/25/2020 9:25:20 AM
X:\Projects\HenrySR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 28 SR 54.dgn



NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY



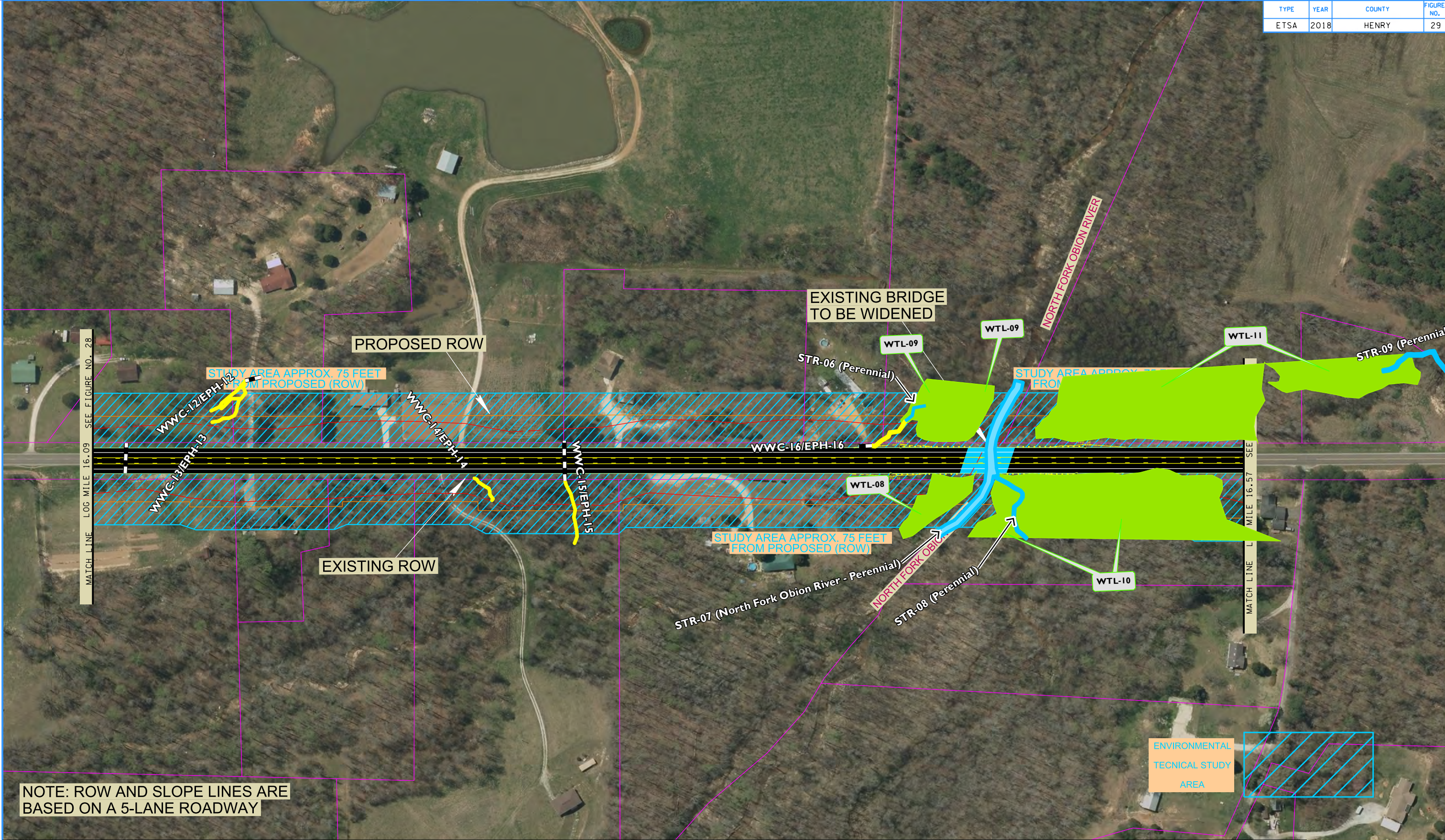
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 28
S.R. 54
L.M. 15.62 to
L.M. 16.09

3/25/2020 9:58:35 AM
X:\Projects\HenrySR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 29 SR 54.dgn



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

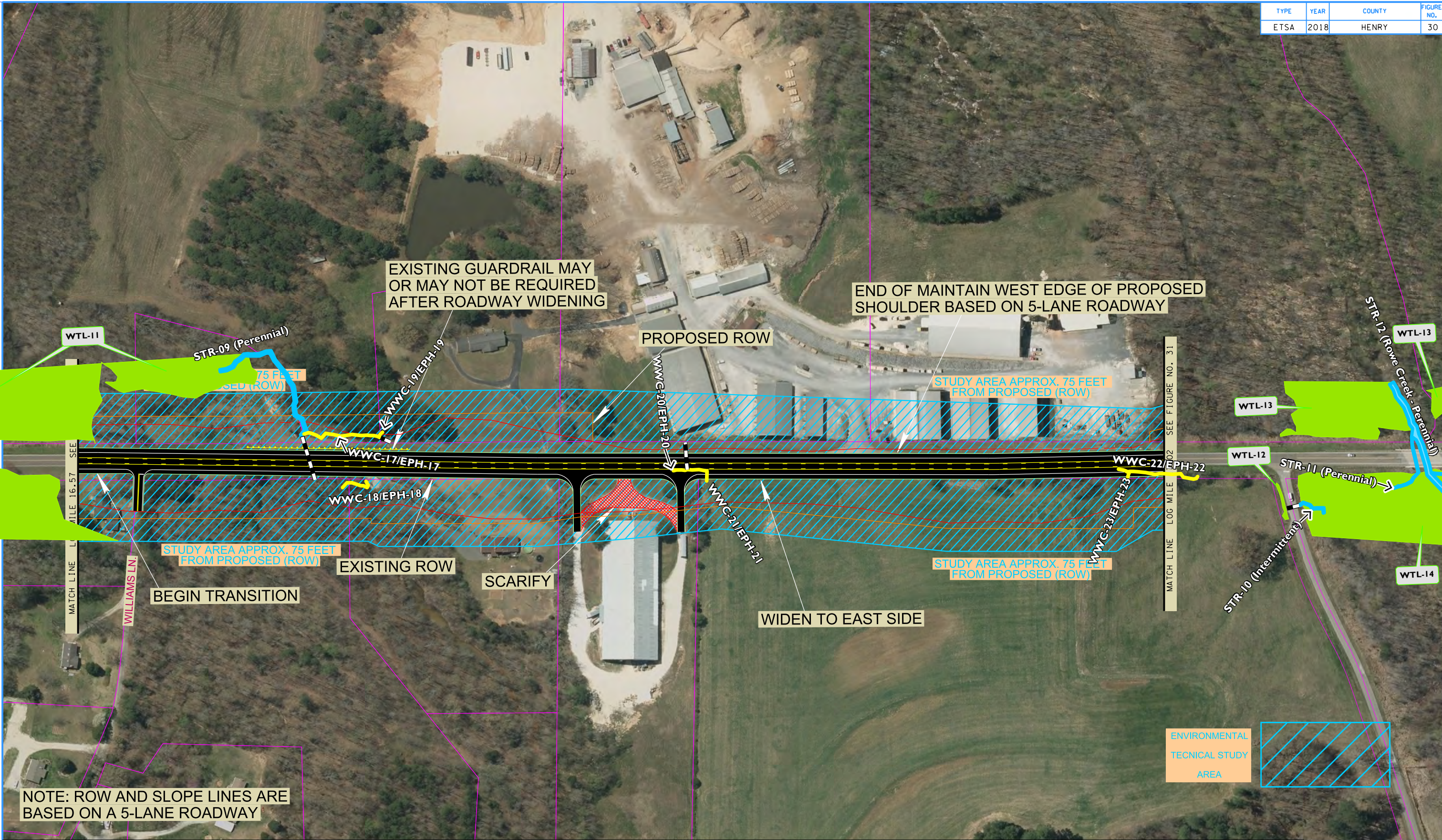
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 29
S.R. 54
L.M. 16.09 to
L.M. 16.57

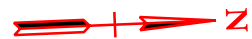
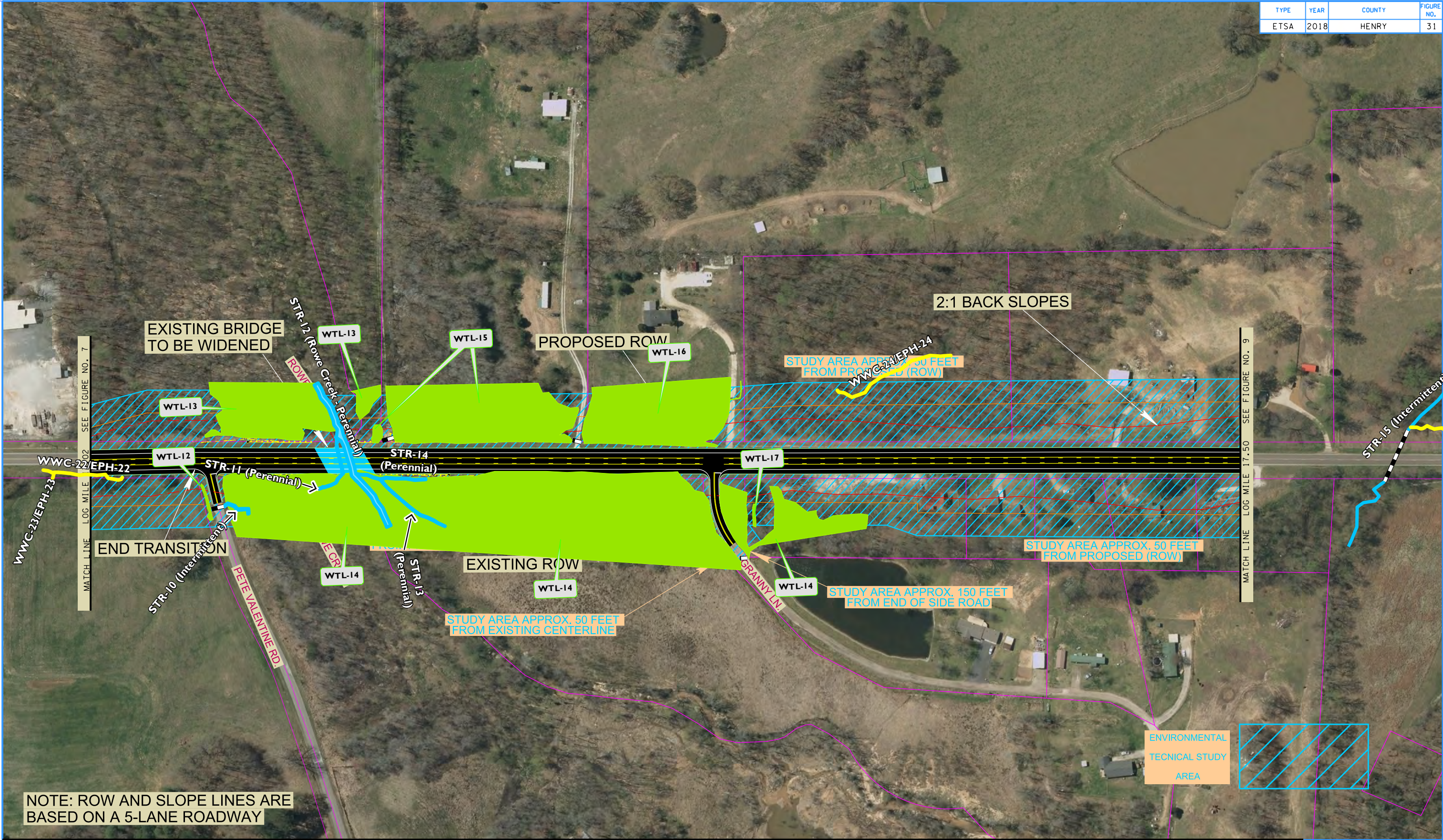
03.20 - FINAL Figure 30 SR 54.dgn

Plans

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X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 31SR 54.dgn



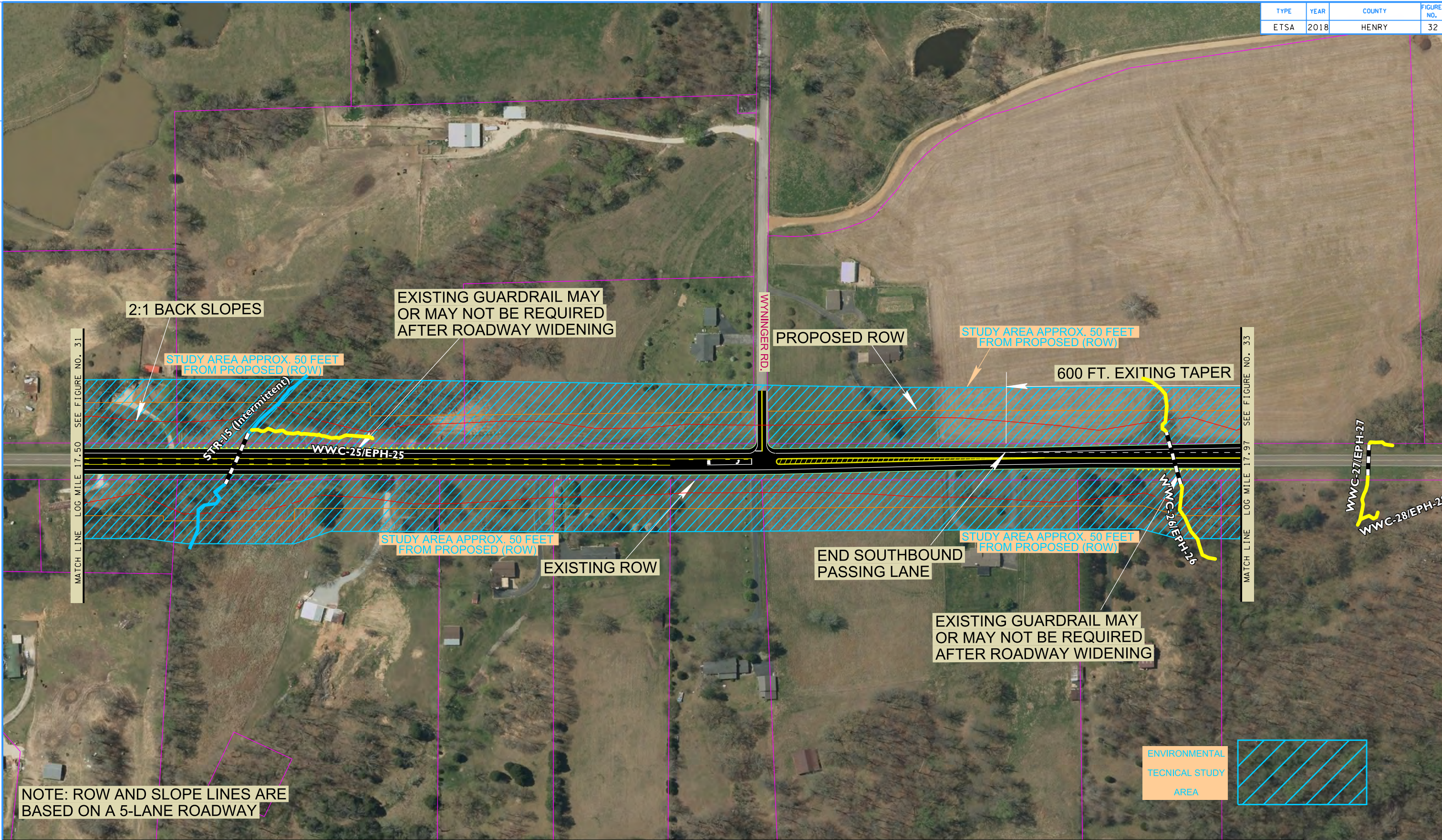
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 31
S.R. 54
L.M. 17.02 to
L.M. 17.50

3/25/2020 2:24:11 PM
X:\Projects\Henry\SR 54\From Near Smith Rd. to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 32 SR 54.dgn



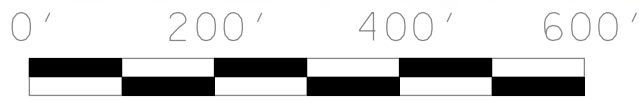
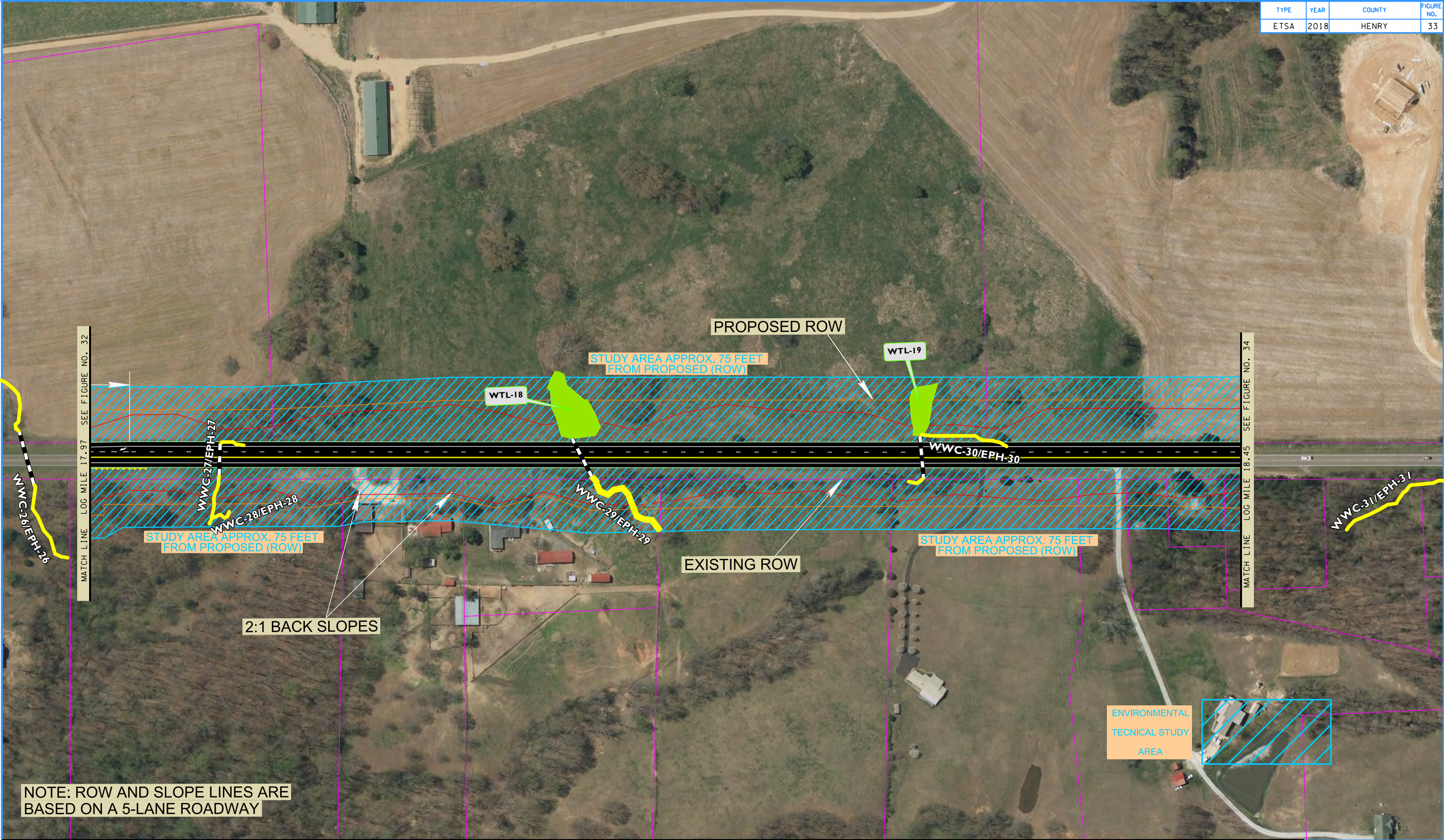
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 32
S.R. 54
L.M. 17.50 to
L.M. 17.97

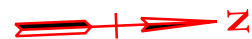
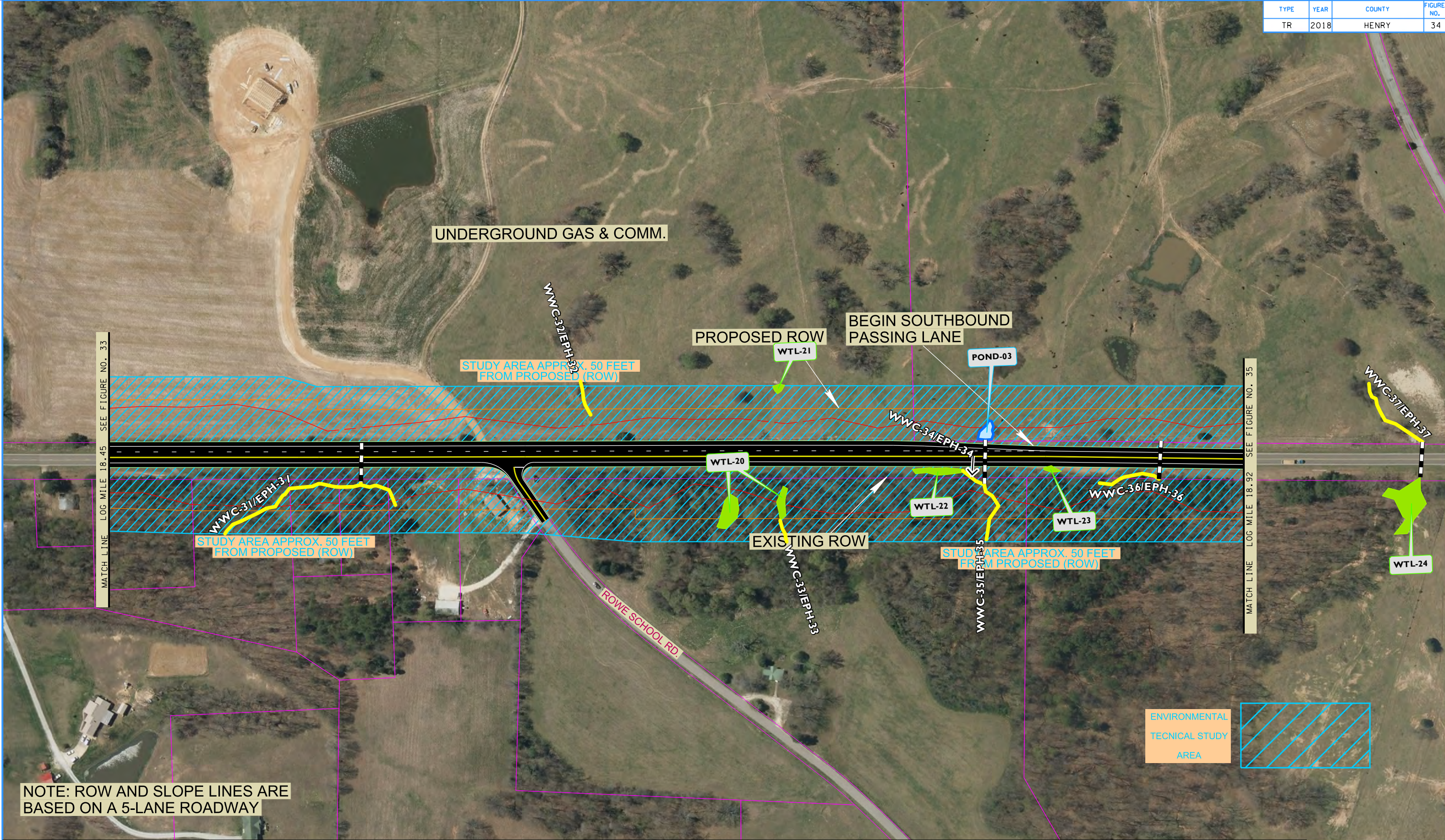
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ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

3/26/2020 8:42:20 AM
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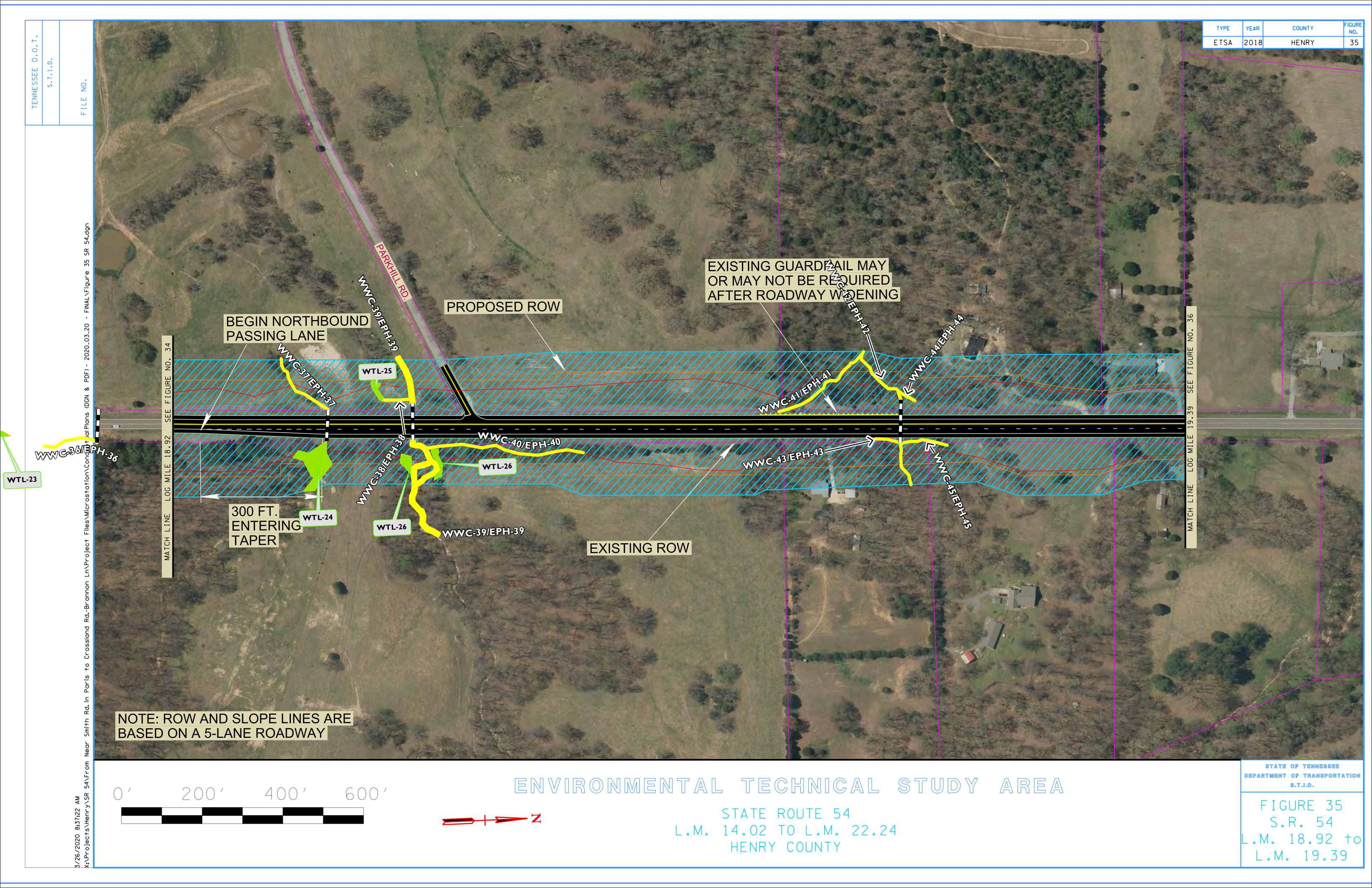
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 34
S.R. 54
L.M. 18.45 to
L.M. 18.92

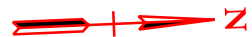
3/26/2020 8:37:22 AM
X:\Projects\HenrySR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conduct\Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 35 SR 54.dgn



MATCH LINE LOG MILE 19.39 SEE FIGURE NO. 36

MATCH LINE LOG MILE 18.92 SEE FIGURE NO. 34

NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY



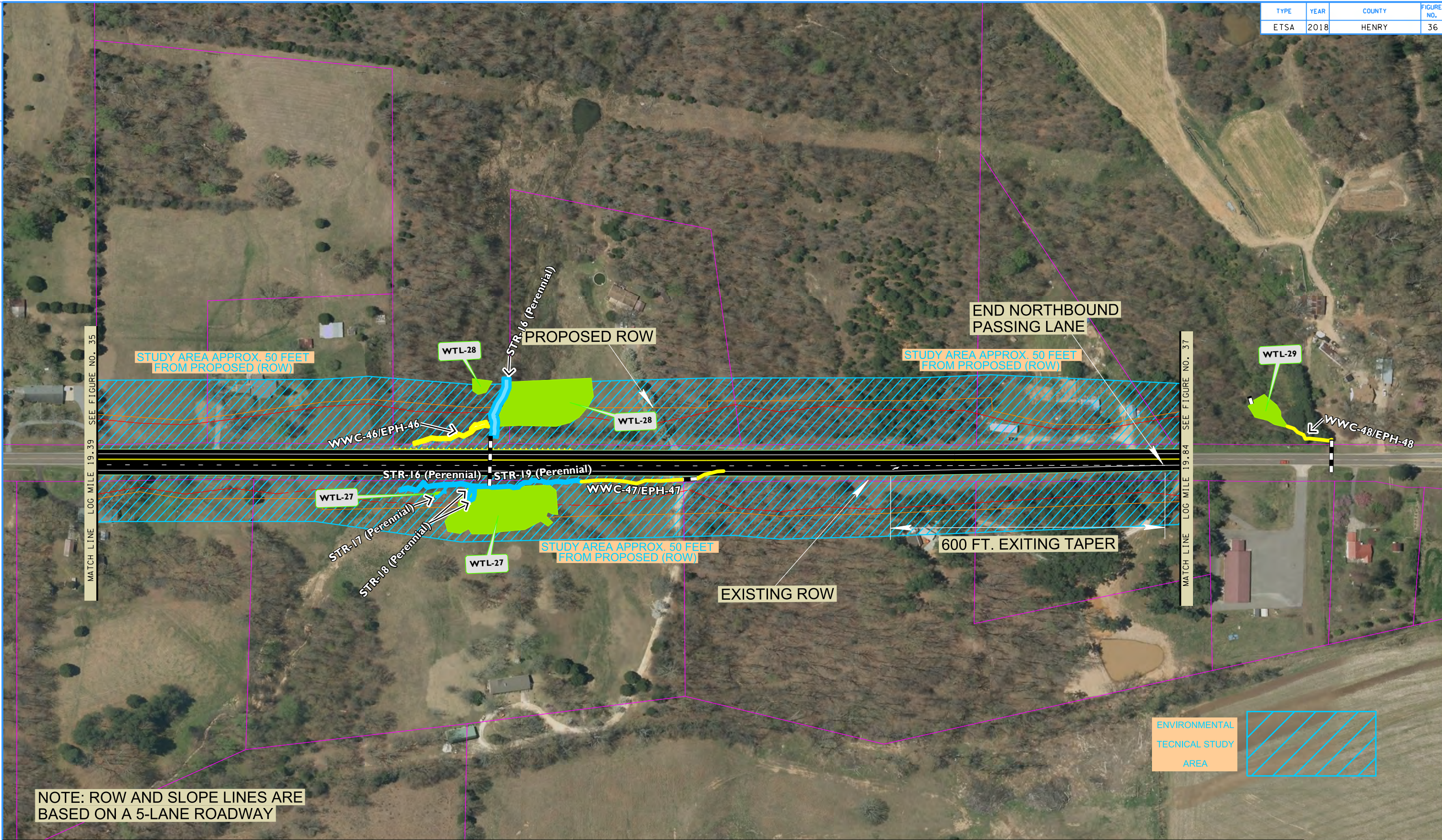
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

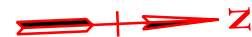
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 35
S.R. 54
L.M. 18.92 to
L.M. 19.39

3/26/2020 9:49:53 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 36 SR 54.dgn



NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY



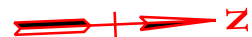
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 36
S.R. 54
L.M. 19.39 to
L.M. 19.84

3/26/2020 9:53:08 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 37 SR 54.dgn



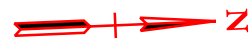
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 37
S.R. 54
L.M. 19.84 to
L.M. 20.30

3/26/2020 10:40:14 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020-03-20 - FINAL\Figure 38 SR 54.dgn



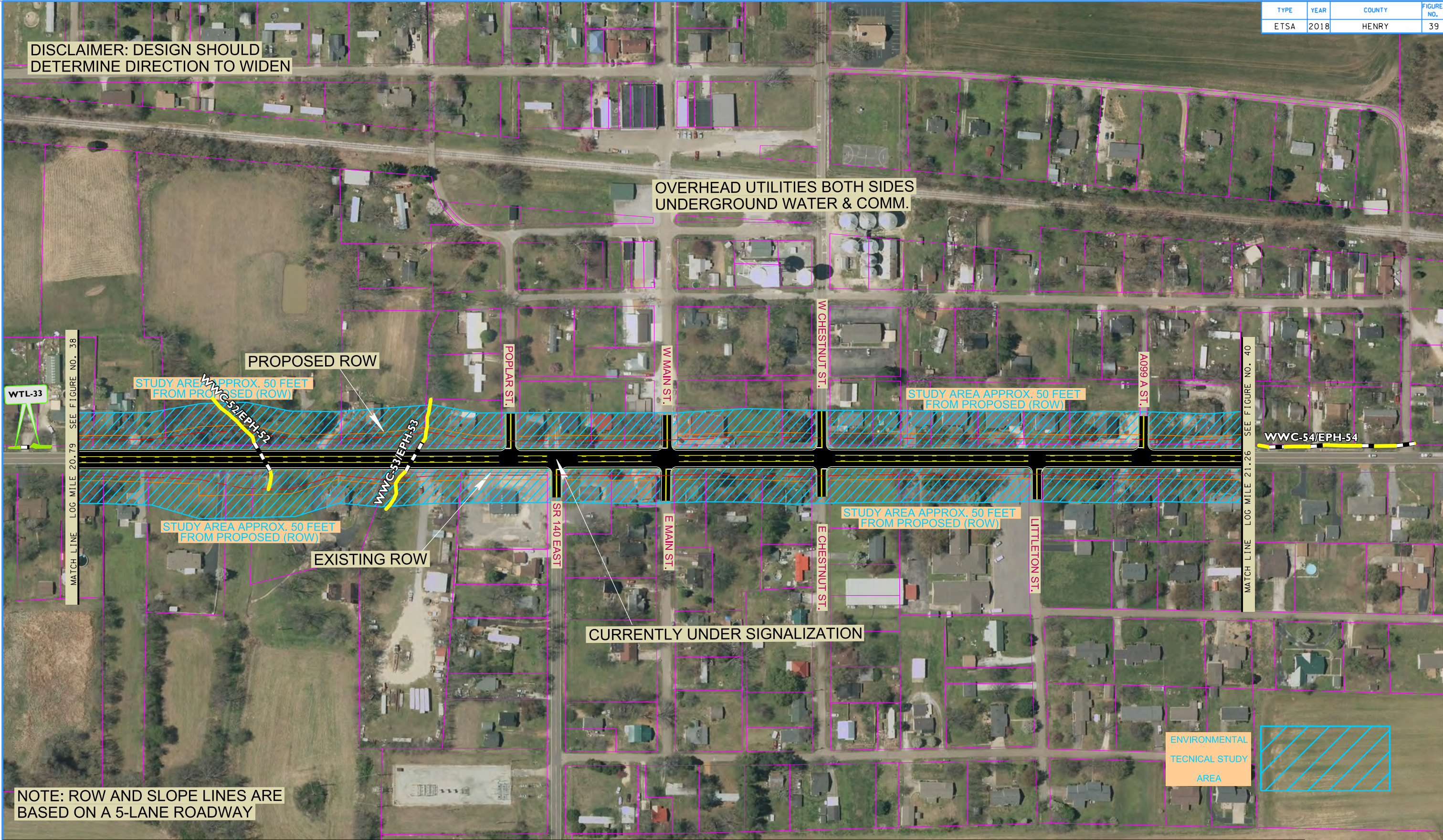
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 38
S.R. 54
L.M. 20.30 to
L.M. 20.79

3/26/2020 11:33:30 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (DGN & PDF) - 2020.03.20 - FINAL\Figure 39 SR 54.dgn



NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



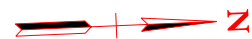
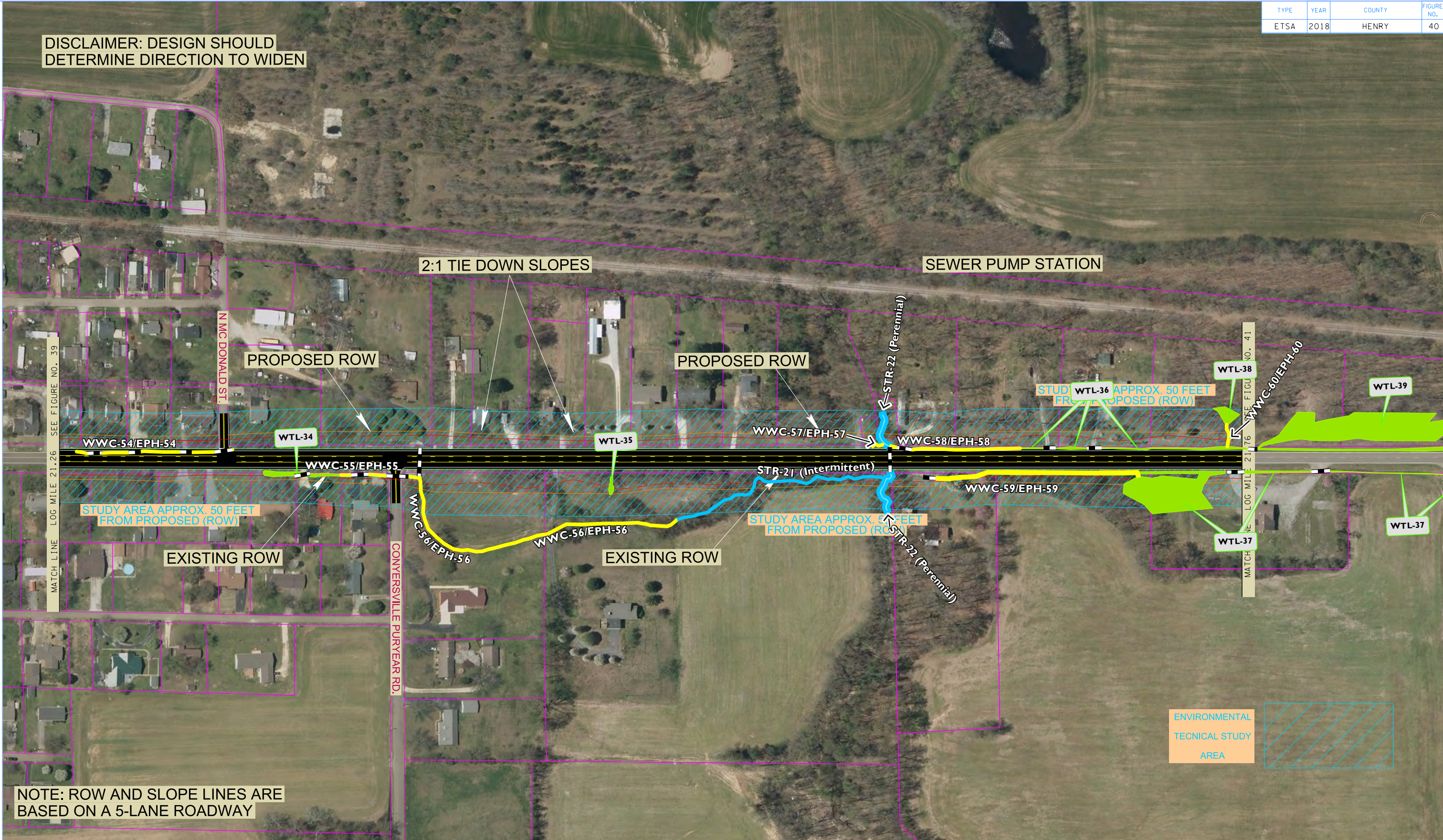
ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 39
S.R. 54
L.M. 20.79 to
L.M. 21.26

3/26/2020 11:40:47 AM
X:\Projects\Henry\SR 54\From Near Smith Rd. in Paris to Crossland Rd.-Brannon Ln\Project Files\Microstation\Conceptual Plans (IGN & PDF) - 2020.03.20 - FINAL\Figure 40 SR 54.dgn



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN



NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 41
S.R. 54
L.M. 21.76 to
L.M. 22.19

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

END PROJECT L.M. 22.24
BEGIN KYTC ALTERNATE 4I
PIN 101886.05
TO BE CONSTRUCTED BY KYTC
PER TDOT OVERSIGHT

STUDY AREA APPROX. 40 FEET
FROM EXISTING CENTERLINE

STUDY AREA
300 FEET PAST
PROJECT LIMITS

STUDY AREA APPROX. 40 FEET
FROM EXISTING CENTERLINE

PROPOSED ROW

ENVIRONMENTAL
TECNICAL STUDY
AREA

NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY



ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 42
S.R. 54
L.M. 22.19 to
L.M. 22.24

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd

PE No. 40003-0200-14

PIN: 101886.02

Date of field study: 5-17-2021

Date TDEC database checked: 10-28-2020

Completed by: Rita Thompson

Species reported within 1-mile radius of project:

Species Scientific and common names, followed by (A) for animal or (P) for plant	Status		Species is potentially present in R-O-W because: (A) it is listed by TDEC within ROW (B) habitat is present (C) observed during site visit (D) critical habitat present within ROW	Species is considered likely NOT present in R-O-W because: (A) Present habitat unsuitable (B) Not observed during site visit (C) Original record questionable (D) Considered extinct/extirpated	Accommodations to minimize impacts: (A) BMPs are sufficient to protect species (B) Special Notes are included on project plans (C) Individuals will be impacted. (D) Accommodations not practical due to broad habitat description or mobility of species	Habitat (include blooming, breeding or other information; where found according to TDEC database; year last observed; reference)	Notes
	Fed	TN					
<i>Juncus brachyphyllus</i> (Shortleaf Rush)	-	S	B		A	Wet Sandy Areas	
<i>Myriophyllum pinnatum</i> (Cutleaf Water-Milfoil)	-	E	B		A	Acidic Wetland and Ponds	
<i>Polygonum arifolium</i> (Halberd-Leaf Tearthumb)	-	T	C		C	Wetlands and Marshes	
<i>Salvia azurea</i> var. <i>grandiflora</i> (Blue Sage)	-	S		A	A	Barrens	No barrens habitat observed within project limits
<i>Silphium laciniatum</i> (Compass Plant)	-	T		A	A	Barrens	No barrens habitat observed within project limits
<i>Etheostoma pyrrhogaster</i> (Firebelly Darter)	-	D	B		A	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.	

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd

PE No. 40003-0200-14

PIN: 101886.02

Species reported within 1-mile to 4-mile radius of project:

Species Scientific and common names, followed by (A) for animal or (P) for plant	Status		Species is potentially present in R-O-W because: (A) it is listed by TDEC within ROW (B) habitat is present (C) observed during site visit (D) critical habitat present within ROW	Species is considered likely NOT present in R-O-W because: (A) Present habitat unsuitable (B) Not observed during site visit (C) Original record questionable (D) Considered extinct/extirpated	Accommodations to minimize impacts: (A) BMPs are sufficient to protect species (B) Special Notes are included on project plans (C) Individuals will be impacted. (D) Accommodations not practical due to broad habitat description or mobility of species	Habitat (include blooming, breeding or other information; where found according to TDEC database; year last observed; reference)	Notes
	Fed	TN					
<i>Didiplis diandra</i> (Water-Purslane)	-	T	C		C	Swamps	
<i>Faxonius burri</i> (Blood River Crayfish)	-	E		A	A	In woody debris or leaf piles, small-medium sized streams with sand-gravel substrates; Blood River drainage (TN River), Henry County.	
<i>Faxonius taylori</i> (Crescent Crayfish)	-	T	B		A	Found among woody debris & tree roots; small-med size tribs of N Fk Obion River with slow-med current; Henry County.	

Migratory BirdsList **significant concentrations** of migratory birds encountered within the project area (rookeries, aggregations, nesting areas, etc.).

Species (Scientific and Common Name)	Approximate No. of Nests (or Individuals)	Location of Nests (or Individuals) (Include Latitude & Longitude)	Nesting Dates and Reference	Photograph #
None				

USFWS letter: Yes X (attached) No Biological Assessment: Yes (response letter attached; see below) No X

Species (scientific and common names)	USFWS conclusion ¹

¹ Choose from "no effect"; "not likely to adversely affect;" or "likely to adversely affect;". If "likely to adversely affect" is chosen, indicate "no jeopardy to species and no adverse modification to habitat" or "jeopardy to species, or adverse modification to habitat" based on FWS concurrence letter

Project: Henry Co SR-54 from Smith Rd to Near Howard Rd

PE No. 40003-0200-14

PIN: 101886.02

List Natural Areas, management areas, refuges, or similar sites within or adjacent to project (attach 7.5 minute topographic map with pertinent boundaries of area marked)

Area Name	Type of Area	Pertinent Notes
West Sandy Wildlife Management Area	Wildlife Management Area	Approximately 6 miles south of Study Area
Tennessee National Wildlife Refuge	National Wildlife Refuge	Approximately 10 miles south of Study Area

List locations that contain potential Indiana bat habitat (Provide an aerial that indicates areas checked)

Location (description; lat/long or station number)	Tree Species	Photograph #
There is potential for Indiana bat and Northern long-eared bat habitat to occur in any of the forested areas throughout the R-O-W		



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Tennessee ES Office
446 Neal Street
Cookeville, Tennessee 38501



September 16, 2020

Ms. Rita Thompson
Tennessee Department of Transportation
Environmental Division
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

Subject: FWS# 20-I-1860. Proposed State Route 54 widening from near Smith Road in Paris to near Howard Road; Henry County, Tennessee.

Dear Ms. Thompson:

Thank you for your correspondence dated August 28, 2020, regarding the proposed widening of State Route 54 from near Smith Road in Paris to near Howard Road in Henry County, Tennessee. The Tennessee Department of Transportation requests a list of any federally threatened or endangered species that may be present in the vicinity of the project. Personnel of the U.S. Fish and Wildlife Service have reviewed the subject proposal and offer the following comments.

A review of our database does not indicate that any federally listed or proposed species would be impacted by the project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Our National Wetlands Inventory maps indicate that wetland features are present along the proposed alignment. If wetland impacts would occur, the U.S. Army Corps of Engineers, Memphis District, Regulatory Branch can be reached at 901-544-3682.

If you have any questions regarding our comments, please contact John Griffith at 931/525-4995 or by email at john_griffith@fws.gov.

Sincerely,

Virgil Lee Andrews, Jr.
Field Supervisor

xc: Casey Parker, TWRA, Jackson, TN



STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas
Natural Heritage Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, Tennessee 37243
Phone 615/532-0431 Fax 615/532-0046

October 28, 2020

Rita Thompson
Tennessee Department of Transportation
505 Deaderick Street
Nashville, TN 37243

Subject: SR-54 Expansion Project
TDOT PIN 101886.02
Northern SR-54 Terminus: (36.50057, -88.32609)
Southern SR-54 Terminus: (36.33990, -88.32862)
Henry County, TN
Rare Species Database Review

Dear Ms. Thompson:

Thank you for your correspondence of 1 September 2020 requesting a rare species database review for the proposed widening of SR-54 from the Kentucky state line south to Paris, Henry County, Tennessee. The project spans approximately 11 miles of SR-54 north of Paris and will include road widening along several segments and bridge widening over Rowe Creek and the North Fork Obion River.

We have reviewed the state's natural heritage database with regard to the project boundaries, and we find that the following rare species have been observed previously within one mile of the project area:

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	<i>Juncus brachyphyllus</i>	Shortleaf Rush	G5	S1	--	S	Wet Sandy Areas
Vascular Plant	<i>Myriophyllum pinnatum</i>	Cutleaf Water-milfoil	G5	S1	--	E	Acidic Wetland and Ponds
Vascular Plant	<i>Polygonum arifolium</i>	Halberd-leaf Tearthumb	G5	S1	--	T	Wetlands and Marshes
Vascular Plant	<i>Salvia azurea</i> var. <i>grandiflora</i>	Blue Sage	G4G5T4?	S3	--	S	Barrens
Vascular Plant	<i>Silphium laciniatum</i>	Compass Plant	G5	S2	--	T	Barrens

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vertebrate Animal	<i>Etheostoma pyrrhogaster</i>	Firebelly Darter	G2G3	S2	--	D	Sand- and gravel-bottomed pools of headwaters, creeks, and small rivers; upper Coastal Plain in Obion River watershed; west Tennessee.

Within four miles of the project area the following additional rare species have been reported:

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	<i>Didiplis diandra</i>	Water-purslane	G5	S1	--	T	Swamps
Invertebrate Animal	<i>Faxonius burri</i>	Blood River Crayfish	G2	S1	--	E	In woody debris or leaf piles, small-medium sized streams with sand-gravel substrates; Blood River drainage (TN River), Henry County.
Invertebrate Animal	<i>Faxonius taylori</i>	Crescent crayfish	G2	S2	--	T	Found among woody debris & tree roots; small-med size tribs of N Fk Obion River with slow-mod current; Henry County.

The Division of Natural Areas - Natural Heritage Program has reviewed the location of the proposed project workspace with respect to rare plant species. Based on the habitat within the project area and the type of project, we note a few locations for potential impacts to occurrences of rare, threatened, or endangered plant species from this project.

First, if work is planned between SR-54 and the railroad tracks to its west immediately north and south of the Crossland Rd intersection (approximately 36.48339, -88.3295 and 36.47513, -88.33049, respectively), it would be appropriate to survey for *Myriophyllum pinnatum* (E) and *Juncus brachyphyllus* (S), assuming suitable habitat is still present, as we have documented occurrences of these species at these locations.

Second, we have recent records of *Polygonum arifolium* (T) documented in the immediate vicinity of the bridge crossings of the North Fork Obion River and Rowe Creek. Bridge construction or maintenance are likely not detrimental to the habitat for this species, but surveys would be appropriate to quantify the population should vegetation removal or disturbance be required at these locations.

We ask that you coordinate this project with the Tennessee Wildlife Resources Agency (Rob Todd, rob.todd@tn.gov, 615-781-6577) to ensure that legal requirements for protection of state listed rare animals are addressed. Additionally, we ask that you contact the U.S. Fish and Wildlife Service Field Office, Cookeville, Tennessee (931-525-4970) for comments regarding federally listed species. Please ensure that best management practices to address erosion and sediment are implemented and maintained during construction activities. Note that the [General Aquatic Resource Alteration Permit](#) states that “use of monofilament-type erosion control netting or blanket is prohibited in the stream channel, stream banks, or any disturbed riparian areas within 30 feet of top of bank.” Where necessary and feasible, we encourage use of biodegradable netting under the CGP (Construction General Stormwater Permit) as well.

Thank you for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact me at 615-532-4799 or dillon.blankenship@tn.gov.

Sincerely,

Dillon

Dillon Blankenship | Environmental Review Coordinator
Tennessee Natural Heritage Program

From: [Todd Crabtree](#)
To: [Rita M. Thompson](#)
Subject: Re: Henry County; SR-54; 101886.02
Date: Monday, September 13, 2021 11:25:26 AM
Attachments: [image003.png](#)

Rita,

Avoiding impacts to those wetlands where the 2 species occur would be the best option. If they also occur in the same area but outside the impact zone for the project, then a relocation could be attempted. If the species don't occur nearby and outside the project impact area and the appropriate habitat is present a move might still be successful.

We would want to get those records in our database as well. I will be in the field for most of the week but when I have some location data I can look at aerial photos and gis data to try to identify appropriate habitat if relocation is the only option.

Todd Crabtree
State Botanist
TN Natural Heritage Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, TN 37243
(615)-306-6292 cell (615) 532-1378, (615) 532-3019 fax
todd.crabtree@tn.gov

From: Rita M. Thompson <Rita.M.Thompson@tn.gov>
Sent: Monday, September 13, 2021 11:06 AM
To: Todd Crabtree <Todd.Crabtree@tn.gov>
Subject: FW: Henry County; SR-54; 101886.02

Todd,

Have you had a chance to take a look at this? Let me know what my next steps need to be to address these species.

Thanks,

Rita

From: Rita M. Thompson
Sent: Thursday, September 2, 2021 3:40 PM
To: Todd Crabtree <Todd.Crabtree@tn.gov>

Subject: FW: Henry County; SR-54; 101886.02

Todd,

As you can see from my previous correspondence with Dillon, we have encountered a couple of rare plants on our project. I have lots of location info, etc, but I wasn't sure what you might want to see. Also, I am wondering what measures we might take to minimize impacts to these species. Right now, TDOT does not have specific plans for the project, so we won't know the precise impacts at this time.

Please let me know if there is additional information you need for consideration. I have attached the memo from the EBR report to get the conversation started, specific to you would be bullet point 5.

I'll be out of the office tomorrow, but I'll be back in on Tuesday .

Thanks,

Rita

From: Dillon Blankenship <Dillon.Blankenship@tn.gov>

Sent: Friday, August 20, 2021 3:33 PM

To: Rita M. Thompson <Rita.M.Thompson@tn.gov>

Cc: Todd Crabtree <Todd.Crabtree@tn.gov>

Subject: RE: Henry County; SR-54; 101886.02

Oh my gosh, Rita! I am so sorry I missed this! Yes – please reach out to Todd Crabtree regarding this project. If he wants Caitlin's insight, he will bring her into the conversation. I have cc'd him here, but anticipate this might be one worth discussing together over the phone. I'll let you two coordinate. If you wouldn't mind, please attach any reviews we provided for this site as an attachment to this email thread for him to reference and also keep me in the loop as a CC.

Dillon



Dillon Blankenship | Data Manager
Division of Natural Areas | Natural Heritage Program
William R. Snodgrass Tennessee Tower, 2nd Floor
312 Rosa L. Parks Avenue
Nashville, TN 37243

p. 615-532-4799
dillon.blankenship@tn.gov
www.tn.gov/environment/natural-areas

We value your feedback! Please complete our [customer satisfaction survey](#).

From: Rita M. Thompson <Rita.M.Thompson@tn.gov>
Sent: Friday, August 20, 2021 2:58 PM
To: Dillon Blankenship <Dillon.Blankenship@tn.gov>
Subject: RE: Henry County; SR-54; 101886.02

Hey Dillon,

I hate to keep bugging you, but can you give me an idea of who I need to discuss these plant issues with? It's probably Todd, but I wasn't sure.

Thanks,

Rita

From: Rita M. Thompson
Sent: Friday, August 13, 2021 2:47 PM
To: Dillon Blankenship <Dillon.Blankenship@tn.gov>
Subject: Henry County; SR-54; 101886.02

Dillon,

I wanted to follow up with you on this species response. While completing our Environmental Boundaries report on the SR-54 corridor, we encountered Halberd-leaf Tearthumb in three of the wetlands we located. We also located Water Purslane in three other wetlands on the project. I have tons of additional information about the wetland, locations, etc, but I wanted to get the conversation started before I sent you a lot of data. I wasn't sure if I needed to get with Todd or Caitlin, or if someone else was the expert on these. Any guidance you could offer would be greatly appreciated.

Thanks,

Rita



Rita M. Thompson | TDOT Environmental Supervisor
Environmental Division

James K. Polk, 9th Floor
505 Deaderick Street
Nashville, TN 37243
p. 615-253-2459
rita.m.thompson@tn.gov

From: [Casey Parker](#)
To: [Rita M. Thompson](#); [TDOT.Env Ecology](#)
Cc: [Rob Todd](#)
Subject: RE: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02
Date: Tuesday, September 29, 2020 3:50:10 PM
Attachments: [image002.png](#)
[image003.png](#)

Subject: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02

Ms. Rita Thompson,

I have reviewed the information that you provided regarding the proposed widening of SR-54 from Paris, Puryear and to the state line in Kentucky. Instream work is expected, therefore I am requiring fish and crayfish sweeps to the streams along the project, immediately prior to instream construction to relocate the State Threatened Crescent crayfish - *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter - *Etheostoma pyrrhogaster* (1994) upstream of a barrier to allow for instream work. Thank you for the opportunity to review and comment, please contact me if you need further assistance.

Casey Parker - Wildlife Biologist
Liaison to TDOT & Federal Highway Administration
Tennessee Wildlife Resources Agency
Environmental Services Division
Email: casey.parker@tn.gov



From: Rita M. Thompson <Rita.M.Thompson@tn.gov>
Sent: Friday, August 28, 2020 2:53 PM
To: Casey Parker <Casey.Parker@tn.gov>
Cc: Rob Todd <Rob.Todd@tn.gov>
Subject: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02

Good Afternoon Casey,

TDOT is requesting your review and comment on the above referenced project. TDOT proposes to widen SR-54 from just north of Paris to the KY state line. Please find species information and a kmz attached. Plans are still being developed, but I do have some aerial maps with proposed ROW and preliminary slope details; let me know if that information would be helpful in your review and I can extract and forward to you.

Let me know if you have questions or need additional information.

Thanks,

Rita



Rita M. Thompson | TDOT Environmental Supervisor

Environmental Division

James K. Polk, 9th Floor

505 Deaderick Street

Nashville, TN 37243

p. 615-253-2459

rita.m.thompson@tn.gov

From: [Casey Parker](#)
To: [Rita M. Thompson](#)
Cc: [Vincent Pontello](#)
Subject: RE: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02
Date: Wednesday, November 10, 2021 9:29:48 PM
Attachments: [image001.png](#)
[image002.png](#)

Ms. Rita,

I have reviewed the proposal and agree with your evaluation of not sampling intermittent streams or streams within the Upper Clark drainage. We look forward to assisting TDOT on the proposed sweep's for the listed species (Crescent Crayfish and the Firebelly Darter) on the perennial streams located within the North Fork Obion Drainages.

Casey Parker - Wildlife Biologist
Liaison to TDOT & Federal Highway Administration
Tennessee Wildlife Resources Agency
Environmental Services Division
Email: casey.parker@tn.gov



From: Rita M. Thompson <Rita.M.Thompson@tn.gov>
Sent: Wednesday, October 13, 2021 1:28 PM
To: Casey Parker <Casey.Parker@tn.gov>
Cc: Vincent Pontello <Vincent.Pontello@tn.gov>
Subject: RE: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02

Casey,

Thank you for your comment on the above referenced project indicating TWRA's concerns for the State Threatened Crescent crayfish - *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter - *Etheostoma pyrrhogaster* (1994). An EBR has since been completed, so I have additional information on the water features along the project corridor.

A literature review indicates that the Crescent Crayfish is confined to the North Fork Obion Drainages (Schuster 2008) and the Firebelly Darter is confined to the Obion and Forked Deer Systems (Etnier & Starnes, 1993). The majority of our project is within the North Fork Obion Drainage, but there is a portion in the Upper Clark River Drainage. TDOT proposes to sweep the perennial streams located within the North Fork Obion Drainages for both the Crescent Crayfish and the Firebelly Darter immediately prior to any in-stream work. Any collected species would be

relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.

This proposal does not include sweeps on the intermittent streams due to lack of suitable habitat or the streams within the Upper Clark Drainage due to those streams being outside the known range of the species. This would result in sweeps on 13 streams along the project corridor if instream work is needed. I have included photographs of the intermittent streams (STR-3, STR-4, STR-5, STR-10, and STR-15) that we do not propose sweeps on. Because of the page numbering, STR-2 is included in the photos that I am forwarding, however, we do propose to sweep this stream.

Please let me know if you have comments or concerns with this proposal.

Thanks,



Rita M. Thompson | TDOT Environmental Supervisor
Environmental Division
James K. Polk, 9th Floor
505 Deaderick Street
Nashville, TN 37243
p. 615-253-2459
rita.m.thompson@tn.gov

From: Casey Parker <Casey.Parker@tn.gov>
Sent: Tuesday, September 29, 2020 3:50 PM
To: Rita M. Thompson <Rita.M.Thompson@tn.gov>; TDOT.Env Ecology <TDOT.Env.Ecology@tn.gov>
Cc: Rob Todd <Rob.Todd@tn.gov>
Subject: RE: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02

Subject: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02

Ms. Rita Thompson,

I have reviewed the information that you provided regarding the proposed widening of SR-54 from Paris, Puryear and to the state line in Kentucky. Instream work is expected, therefore I am requiring fish and crayfish sweeps to the streams along the project, immediately prior to instream construction to relocate the State Threatened Crescent crayfish - *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter - *Etheostoma pyrrhogaster* (1994) upstream of a barrier to allow for instream work. Thank you for the opportunity to review and comment, please contact me if you need further assistance.

Casey Parker - Wildlife Biologist
Liaison to TDOT & Federal Highway Administration
Tennessee Wildlife Resources Agency

Environmental Services Division

Email: casey.parker@tn.gov



From: Rita M. Thompson <Rita.M.Thompson@tn.gov>

Sent: Friday, August 28, 2020 2:53 PM

To: Casey Parker <Casey.Parker@tn.gov>

Cc: Rob Todd <Rob.Todd@tn.gov>

Subject: Henry County; SR-54 from near Smith Road in Paris to near Howard Road; PIN 101886.02

Good Afternoon Casey,

TDOT is requesting your review and comment on the above referenced project. TDOT proposes to widen SR-54 from just north of Paris to the KY state line. Please find species information and a kmz attached. Plans are still being developed, but I do have some aerial maps with proposed ROW and preliminary slope details; let me know if that information would be helpful in your review and I can extract and forward to you.

Let me know if you have questions or need additional information.

Thanks,

Rita



Rita M. Thompson | TDOT Environmental Supervisor

Environmental Division

James K. Polk, 9th Floor

505 Deaderick Street

Nashville, TN 37243

p. 615-253-2459

rita.m.thompson@tn.gov

From: [Rita M. Thompson](#)
To: [Weaver, Hope](#)
Cc: [Krebs, Meridith](#); [Samuel T. Patterson](#); [Sharon Sanders](#)
Subject: RE: SR-54, Henry Co. PIN 101886.02 - Ecology Commitments
Date: Wednesday, April 6, 2022 9:42:19 AM

Hope,

The first two commitments are no longer valid and can be vacated:

1. *Vegetation clearing for the project will be limited to the minimum area required for construction of the project and disturbed areas will be revegetated with native species. Fill slopes will be constructed and stabilized during the growing season with the establishment of non-invasive vegetation.*
2. *Disturbed areas will be revegetated in a timely manner to hold soil movement to a minimum.*

The other three commitments are still valid and apply to this PIN:

3. *TDOT has committed to sweep the perennial streams located within the North Fork Obion Drainages for both the State Threatened Crescent crayfish – *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter – *Etheostoma pyrrhogaster* (1994) immediately prior to any instream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.*
4. *TDOT has committed to minimize impacts on WTL-9, WTL-10, and WTL-11 due to the presence of the state listed threatened Halberd-Leaf Tearthumb (*Polygonum arifolium*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternative areas of appropriate habitat.*
5. *TDOT has committed to minimize impacts to WTL-36, WTL-41, and WTL-42 due to the presence of the state listed threatened water purslane (*Didiplis diandra*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plans will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.*

Let me know if you need anything else,

Rita

From: Weaver, Hope <Hope.Weaver@kimley-horn.com>
Sent: Tuesday, April 5, 2022 5:42 PM
To: Rita M. Thompson <Rita.M.Thompson@tn.gov>
Cc: Krebs, Meridith <Meridith.Krebs@kimley-horn.com>; Samuel T. Patterson

<Samuel.T.Patterson@tn.gov>; Sharon Sanders <Sharon.Sanders@tn.gov>

Subject: [EXTERNAL] SR-54, Henry Co. PIN 101886.02 - Ecology Commitments

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Good Evening Rita,

We are assisting the TDOT Environmental Division with the environmental document for SR-54 (PIN 101886.02) in Henry County. Upon review of the ecology commitments for the subject project we noticed that the following two commitments were included in the original 2010 EA for the larger SR-54 project (PIN 101886.00), which includes the subject SR-54 (PIN 101886.02) project, but were inadvertently not included in the ESR which you provided on 11/17/2021 (attached) for the subject SR-54 (101886.02) project:

1. *Vegetation clearing for the project will be limited to the minimum area required for construction of the project and disturbed areas will be revegetated with native species. Fill slopes will be constructed and stabilized during the growing season with the establishment of non-invasive vegetation.*
2. *Disturbed areas will be revegetated in a timely manner to hold soil movement to a minimum.*

Additionally, the following three commitments were included on the 11/17/2021 ESR for the subject SR-54 (101886.02) project:

3. *TDOT has committed to sweep the perennial streams located within the North Fork Obion Drainages for both the State Threatened Crescent crayfish – *Orconectes taylori* (2007) and the State-Deemed-in-need of Management species Firebelly Darter – *Etheostoma pyrrhogaster* (1994) immediately prior to any instream work. Any collected species would be relocated upstream of the work area and the instream diversion would be installed immediately after the sweep.*
4. *TDOT has committed to minimize impacts on WTL-9, WTL-10, and WTL-11 due to the presence of the state listed threatened Halberd-Leaf Tearthumb (*Polygonum arifolium*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plants will be impacted by construction activities, they will be relocated to alternative areas of appropriate habitat.*
5. *TDOT has committed to minimize impacts to WTL-36, WTL-41, and WTL-42 due to the presence of the state listed threatened water purslane (*Didiplis diandra*). High visibility fencing must be placed around the perimeter of the area with rare plant species. If individual plans will be impacted by construction activities, they will be relocated to alternate areas of appropriate habitat.*

Would you be able to confirm whether or not the two commitments from the 2010 EA for the larger SR-54 project (PIN 101886.00), which are numbered 1 and 2 in this email, remain valid for the subject SR-54 (PIN 101886.02) project or if they should be vacated from? Additionally, would you be able to confirm that commitments 3 through 5 remain valid for the subject SR-54 project (PIN 101886.02)?

I have included a blank ESR form in the event that any of the above commitments should be added/removed based on this email.

Thanks!

Hope Weaver, ENV SP

Kimley-Horn | 10 Lea Avenue, Suite 400, Nashville, TN 37210

Direct: 629-255-0594 | Main: 615-564-2701

Connect with us: [Twitter](#) | [LinkedIn](#) | [Facebook](#) | [Instagram](#) | [Kimley-Horn.com](#)

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Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix I
PIN 101886.02
Floodplains

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the **Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations** tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was State Plane Tennessee FIPS 4100. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent maps may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov>, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the State of Tennessee. This information was photogrammetrically compiled at scales of 1"=100' and 1"=400' from aerial photography.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the **Flood Profiles and Floodway Data** tables in the *Flood Insurance Study report* (which contains *authoritative hydraulic data*) may reflect stream channel distances that differ from what is shown on this map.

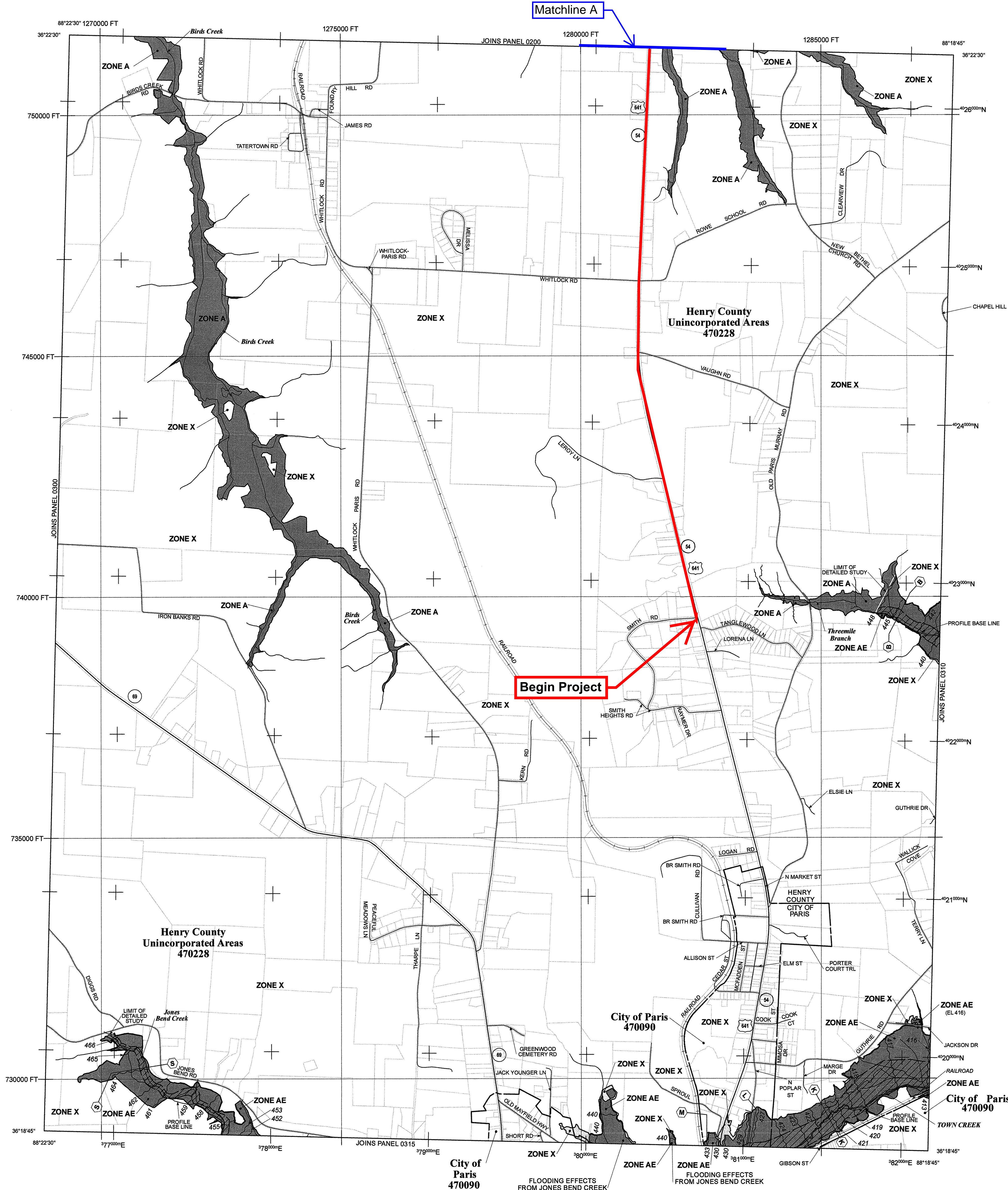
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a *Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/firp/>.

**State Route 54 (U.S. 641), From Near
Smith Road in Paris to Near Howard
Road (North of Puryear)
Henry, Tennessee
PIN 101886.02**



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevation determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently dismantled. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 (EL 987)

Base Flood Elevation line and value; elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Cross section line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator grid ticks, zone 16

5000-foot grid values; Tennessee State Plane coordinate system (FIPSZONE = 4100), Lambert projection

Bench mark (see explanation in Notes to Users section of this FIRM panel)

DX5510

M1.5

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

JUNE 6, 2001

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

SEPTEMBER 28, 2007 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to add and update roads and road names, to incorporate previously issued Letters of Map Revision, to incorporate previously issued Letters of Map Amendment, to reflect updated topographic information, to add floodway, to change floodway

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

600 0 600 1,000 1,500 2,000 FEET

300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0305E

FIRM

FLOOD INSURANCE RATE MAP
HENRY COUNTY,
TENNESSEE
AND INCORPORATED AREAS

PANEL 305 OF 550
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENRY COUNTY	470228	0305	E
UNINCORPORATED AREAS	470090	0305	E

PARIS, CITY OF

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
47079C0305E

MAP REVISED
SEPTEMBER 28, 2007

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was State Plane Tennessee FIPS 4100. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/>, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NIMS-512
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the State of Tennessee. This information was photogrammetrically compiled at scales of 1"=100' and 1"=400' from aerial photography.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

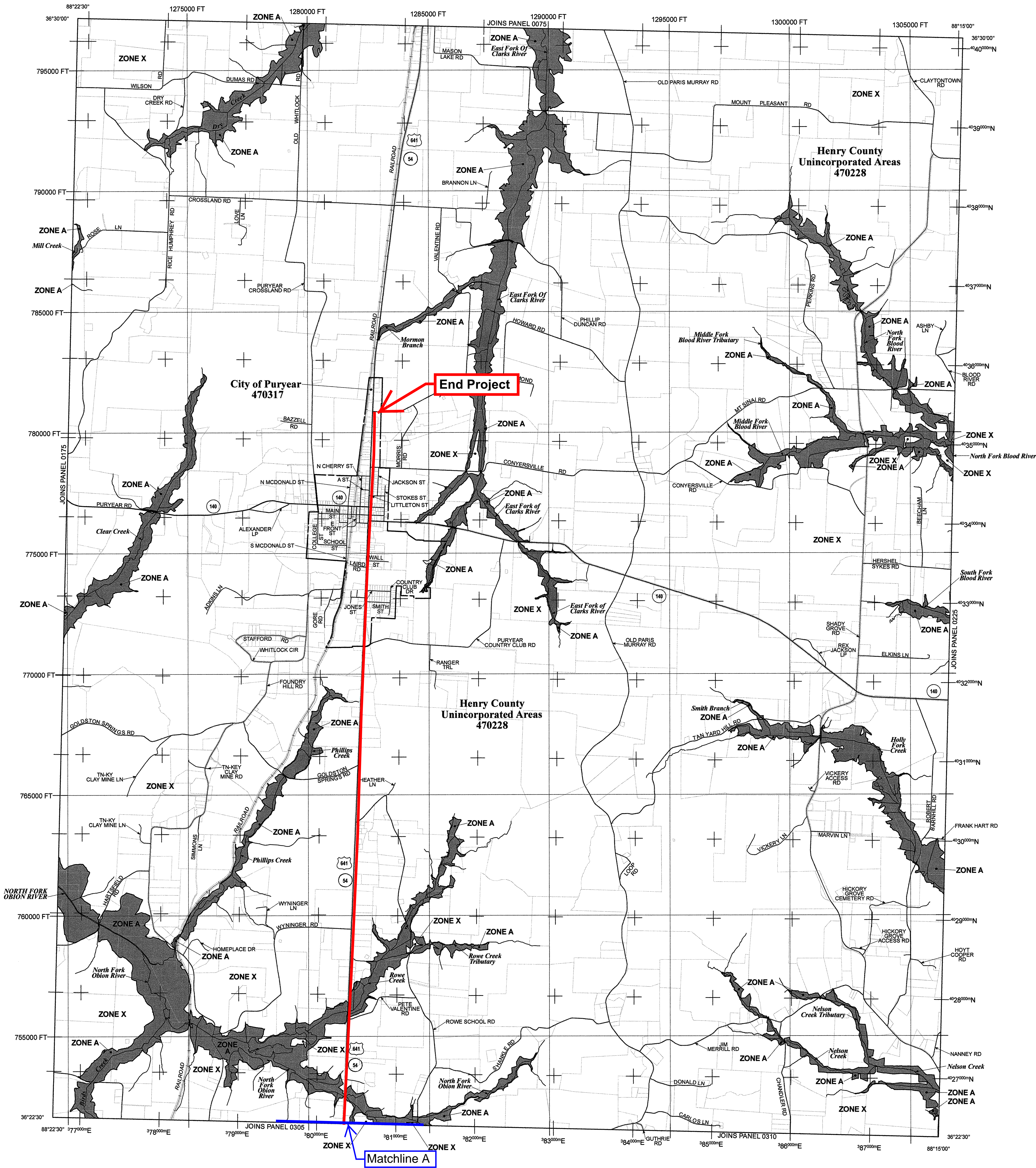
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip/>.

State Route 54 (U.S. 641), From Near Smith Road in Paris to Near Howard Road (North of Puryear)
Henry, Tennessee
PIN 101886.02



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevation determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet
Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
1000-meter Universal Transverse Mercator grid ticks, zone 16
5000-foot grid values: Tennessee State Plane coordinate system (FIPSZONE = 4100), Lambert projection
Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile
MAP REPOSITORIES
Refer to Map Repositories list on Map Index
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
JUNE 6, 2001
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 28, 2007 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to add and update roads and road names, to incorporate previously issued Letters of Map Revision, to incorporate previously issued Letters of Map Amendment, to reflect updated topographic information, to add floodway, to change floodway
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-436-6620.

MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
600 0 600 1,200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0200E

FIRM

FLOOD INSURANCE RATE MAP

HENRY COUNTY, TENNESSEE

AND INCORPORATED AREAS

PANEL 200 OF 550

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENRY COUNTY, UNINCORPORATED AREAS	470228	0200	E
PURYEAR, TOWN OF	470317	0200	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 47079C0200E

MAP REVISED SEPTEMBER 28, 2007

Federal Emergency Management Agency

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix J
PIN 101886.02
Air Quality and Noise

Environmental Studies

Air and Noise

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Technical Section

Section: Air and Noise

Study Results

AIR QUALITY

TDOT conducted an air quality evaluation for the larger SR-54 project from State Route 69 (Wood Street) in Paris to Crossland Road/Brannon Lane (North of Puryear), Henry County in the Environmental Assessment (EA) that was approved on October 21, 2010. TDOT is now conducting a reevaluation for the section of the project Near Smith Road to Near Howard Road (North of Puryear) in Henry County. The air quality statements in the EA were reviewed to determine if they remain valid for the current plans. The results for transportation conformity and Mobile Source Air Toxics (MSATs) are summarized below.

Transportation Conformity

Henry County remains in attainment for all regulated criteria pollutants. Therefore, the project is not subject to transportation conformity.

Mobile Source Air Toxics (MSATs)

The MSATs evaluation was updated per FHWA's "Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents" dated October 2016 and is attached. The project remains a "Project with Low Potential Mobile Source Air Toxic (MSAT) Effects" and is not predicted to create adverse MSAT effects.

Greenhouse Gas Emissions (Climate Change)

The potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those impacts would not have been meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. The project is not predicted to have adverse climate change effects.

Construction Activity

Construction activities will generate intermittent and temporary construction-related pollutant emissions and dust. TDOT's construction specifications (TDOT, 2021) apply to this project, construction procedures will be governed by the Standard Specifications for Road and Bridge Construction as issued by TDOT and as amended by the most recent applicable supplements. All construction equipment shall be maintained, repaired, and adjusted to keep it in full satisfactory condition.

Indirect and Cumulative Effects

The forecasted traffic volumes for most projects typically account for any redistribution of traffic that would occur as a result of the project. Therefore, the air quality analysis addresses any indirect traffic-related air quality effects that might occur. Additionally, the forecast traffic volumes include expected traffic growth and other planned and programmed projects in the area. As a result, the air quality analysis addresses the traffic-related cumulative air quality effects of the project.

NOISE

The State Route 54 (SR-54) project from near Smith Road to Near Howard Road (north of Puryear) is a Type I project in accordance with the Federal Highway Administration (FHWA) noise regulation, Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772. The project requires a noise study to identify noise impacts and to evaluate noise abatement for those impacts. The noise study was conducted in accordance with the Tennessee Department of Transportation’s Policy on Highway Traffic Noise Abatement (TDOT’s noise policy) and Section 5.3.4 (Noise) of the Tennessee Environmental Procedures Manual.

Noise Impacts

The study determined that the project would create traffic noise impacts. The impacted land uses include 23 residences and a daycare center playground. Noise abatement was evaluated to mitigate the predicted noise impacts in accordance with TDOT’s noise policy. For noise barriers to be included in a project, they must be determined to be both feasible and reasonable. SR-54 is not a limited access facility. The impacted residences and daycare playground will have direct access to SR-54 via a private driveway or local road intersection. Noise barriers are not feasible to mitigate impacts at these properties because a noise barrier would limit access from the impacted properties and adjacent properties.

Statement of Likelihood

Abatement is not proposed for this project.

Construction Activities

Construction activities may generate intermittent and temporary noise above existing noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by TDOT’s noise policy. The procedures in TDOT’s Standard Specifications for Road and Bridge Construction will help minimize construction noise effects.

Information for Local Officials

Some tracts of undeveloped land exist in the project area. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers, to practice noise compatibility planning to avoid future noise impacts. The “Information for Local Officials” section of this report provides additional information on noise levels for undeveloped lands, noise compatibility planning.

Commitments

Did the study of this project result in any environmental commitments? No

Additional Information

Is there any additional information or material included with this study? Yes

Type: Air Quality Technial Report

Type: Noise Technical Report

Location: Email Attachment

Certification

Responder: Chasity L. Stinson

Title: TESS Advanced, TDOT Environmental Division

Signature: Chasity L. Stinson

Digitally signed by
Chasity L. Stinson
Date: 2022.04.08
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SR-54 FROM NEAR SMITH ROAD TO NEAR HOWARD ROAD (NORTH OF PURYEAR) (IA)
HENRY COUNTY
REGION 4
PIN # 101886.02; PROJECT # 40003-0224-04
DECEMBER 2020

MOBILE SOURCE AIR TOXICS

On February 3, 2006, the FHWA released “*Interim Guidance on Air Toxic Analysis in NEPA Documents.*” This guidance was superseded on September 30, 2009, December 6, 2012 and most recently on October 18, 2016 by FHWA’s “*Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents.*” (FHWA 2016) The purpose of FHWA’s guidance is to advise on when and how to analyze Mobile Source Air Toxics (MSAT) in the NEPA process for highways. This guidance is interim, because MSAT science is still evolving. As the science progresses, FHWA will continue to revise and update the guidance.

The qualitative analysis presented below provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The assessment is derived in part from a study conducted by the FHWA entitled “*A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*” (Claggett, 2006). Attachment A provides additional information regarding MSAT.

FHWA’s Interim Guidance groups projects into the following categories:

- Exempt Projects and Projects with no Meaningful Potential MSAT Effects;
- Projects with Low Potential MSAT Effects; and
- Projects with Higher Potential MSAT Effects.

FHWA’s Updated Interim Guidance provides examples of “Projects with Low Potential MSAT Effects.” These projects include minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street, or where design year traffic projections are less than 140,000 to 150,000 average annual daily traffic (AADT).

The Selected Alternative includes the widening of State Route 54 (SR-54). The projected design year 2043 AADT on SR-54 is 6,760 vehicles per day and substantially lower than the FHWA criterion. Therefore, the project meets the criteria for a “Project with Low Potential MSAT Effects.”

For both the No-Build and Selected Alternatives, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The estimated VMT for the Selected Alternative is essentially the same as the VMT for the No-Build Alternative. Therefore, it is expected that there would be no appreciable difference in overall MSAT emissions between the No-Build and Selected Alternatives.

The project may reduce emissions by increasing speeds; according to EPA’s MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. Travel speeds for the Selected Alternative are expected to be higher than for the No-Build Alternative.

Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA’s national control programs that are projected to reduce

annual MSAT emissions by over 90 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated for the Selected Alternative will have the effect of moving some traffic closer to nearby sensitive land uses; therefore, under the Selected Alternative there may be localized areas where ambient concentrations of MSAT could be higher than under the No-Build Alternative.

Finally, the magnitude and the duration of any potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.

In sum, when a highway is widened, the localized level of MSAT emissions for the Selected Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Substantial construction-related MSAT emissions are not anticipated for this project as construction is not planned to occur over an extended building period. However, construction activity may generate temporary increases in MSAT emissions in the project area.

Claggett, M., et. al., "*A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*," Federal Highway Administration Resource Center, May 4, 2006.

Federal Highway Administration (FHWA), *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, October 18, 2016.

Attachment A

MOBILE SOURCE AIR TOXICS (MSATs)

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS).¹ In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA).² These are *1,3-butadiene*, *acetaldehyde*, *acrolein*, *benzene*, *diesel particulate matter (diesel PM)*, *ethylbenzene*, *formaldehyde*, *naphthalene*, and *polycyclic organic matter*. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide,³ EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, as shown in Figure 1, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

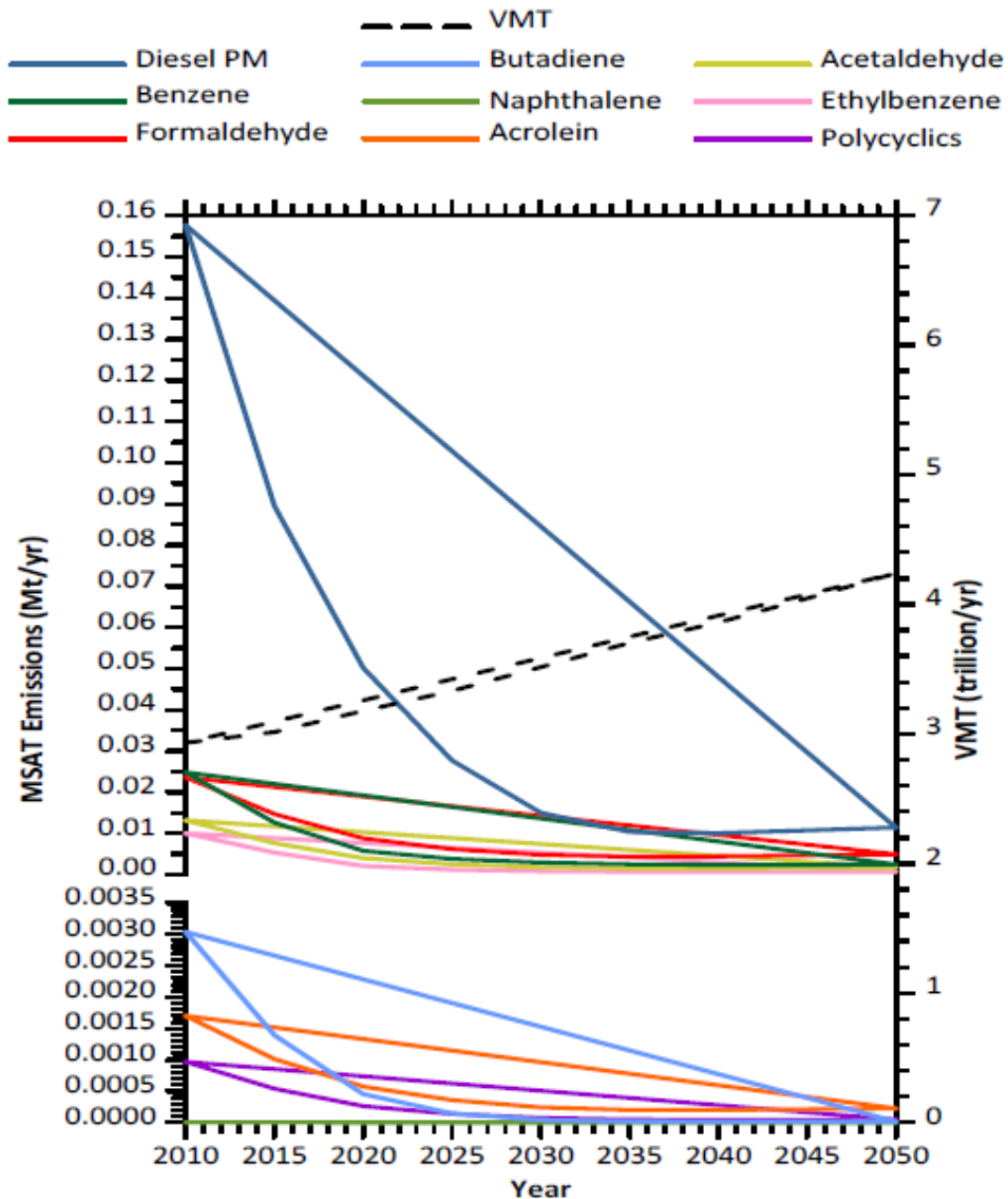
Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

¹ <https://www.epa.gov/iris>

² <https://www.epa.gov/national-air-toxics-assessment>

³ <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100NNR0.txt>

Figure 1
FHWA PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 - 2050
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA's MOVES2014a MODEL



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: EPA MOVES2014a model runs conducted by FHWA, September 2016.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to arise on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect FHWA to address MSAT impacts in its environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

NEPA Context

The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals, and that Federal agencies use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment (42 U.S.C. 4332). In addition to evaluating the potential environmental effects, FHWA must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest (23 U.S.C. 109(h)). The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in mobile source air toxic (MSAT) emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <https://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report

16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-criticalreview-literature-exposure-and-health-effects>). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (<https://www.epa.gov/iris>).”

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable ([https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/\\$file/07-1053-1120274.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf)).

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Due to the limitations cited, a discussion such as the example provided in this Appendix (reflecting any local and project-specific circumstances), should be included regarding incomplete or unavailable information in accordance with Council on Environmental Quality (CEQ) regulations [40 CFR 1502.22(b)]. The FHWA Headquarters and Resource Center staff, Victoria Martinez (787) 771-2524, James Gavin (202) 366-1473, and Michael Claggett (505) 820-2047, are available to provide guidance and technical assistance and support.

Noise Technical Report

**State Route 54 From Near Smith Road to Near Howard Road
(North of Puryear) (IA)**

Henry County

**PIN: 101886.02
Project Number: 40003-0224-04**

Submitted to:



Prepared by:

Bowlby & Associates, Inc. 

December 2020

Functional Plans
Filename: Henry County S.R. 54 Technical Report
- Signed.pdf
Approval Date: 04/02/2020

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EXECUTIVE SUMMARY

The State Route 54 (SR-54) project from near Smith Road to Near Howard Road (north of Puryear) is a Type I project in accordance with the Federal Highway Administration (FHWA) noise regulation, *Procedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772. The project requires a noise study to identify noise impacts and to evaluate noise abatement for those impacts. The noise study was conducted in accordance with the Tennessee Department of Transportation's *Policy on Highway Traffic Noise Abatement* (TDOT's noise policy) and Section 5.3.4 (Noise) of the *Tennessee Environmental Procedures Manual*.

The study determined that the project will create traffic noise impacts. The impacted land uses include 23 residences and a daycare center playground.

Noise abatement was evaluated to mitigate the predicted noise impacts in accordance with TDOT's noise policy. For noise barriers to be included in a project, they must be determined to be both feasible and reasonable. SR-54 is not a limited access facility. The impacted residences and daycare playground will have direct access to SR-54 via a private driveway or local road intersection. Noise barriers are not feasible to mitigate impacts at these properties because a noise barrier would limit access from the impacted properties and adjacent properties.

Therefore, noise abatement is not proposed for this project.

Construction activities may generate intermittent and temporary noise above existing noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by TDOT's noise policy. The procedures in TDOT's *Standard Specifications for Road and Bridge Construction* will help minimize construction noise effects.

Some tracts of undeveloped land exist in the project area. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers, to practice noise compatibility planning to avoid future noise impacts. The "Information for Local Officials" section of this report provides additional information on noise levels for undeveloped lands, noise compatibility planning.

1.0 INTRODUCTION

The SR-54 project from Near Smith Road to Near Howard Road (north of Puryear) is “Type I” in accordance with the Federal Highway Administration (FHWA) noise regulation, *Procedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772 (FHWA, 2010) due to the addition of through travel lanes. Therefore, a noise study is required. This report documents the results of the noise analysis. The project area is shown on Figure 1. The project length is approximately 8.22 miles. Functional project plans and the proposed typical cross-sections are included in Appendix A.

2.0 NOISE EVALUATION

This study has been prepared in accordance with the FHWA noise regulation, the Tennessee Department of Transportation’s (TDOT) *Policy on Highway Traffic Noise Abatement* (TDOT, 2011) (TDOT’s noise policy), and Section 5.3.4 (Noise) of the *Tennessee Environmental Procedures Manual* (TDOT, 2011) and includes the following tasks:

- *Identification of noise-sensitive land uses:* Identification of existing land uses in the project area that are sensitive to highway traffic noise
- *Determination of existing noise levels:* Prediction of existing noise levels at sensitive land uses to characterize the existing noise environment in the project area
- *Determination of future noise levels:* Prediction of future, design year, worst-hour noise levels for the No-Build and Build Alternatives
- *Determination of traffic noise impacts:* Determination of noise impacts based on the increase in existing noise levels and design year noise levels
- *Noise abatement evaluation:* Evaluation of noise abatement for areas determined to be impacted by the project
- *Discussion of construction noise*
- *Information for local officials*

Each of these analysis steps is discussed below following a discussion of TDOT’s criteria for determining noise impacts.

2.1 Criteria for Determining Impacts

2.1.1 Traffic Noise Terminology

Traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). A sound level represents the level of the rapid air pressure fluctuations caused by sources (such as traffic) that are heard as noise. A decibel is a unit that relates the sound pressure of a noise to the faintest sound the young human ear can hear.

The A-weighting refers to the amplification or attenuation of the different frequencies of the sound (subjectively, the pitch) to correspond to the way the human ear “hears” these frequencies. Generally, when the sound level exceeds the mid-60 dBA range, outdoor conversation in normal tones at a distance of three feet becomes difficult. Common indoor and outdoor sound levels are shown on Figure 2.

A 9-10 dB increase in sound level is typically judged by the listener to be twice as loud as the original sound while a 9-10 dB reduction is judged to be half as loud. Doubling the number of sources (i.e. vehicles) will increase the hourly equivalent sound level by approximately 3 dB, which is usually the smallest change in hourly equivalent A-weighted traffic noise levels that people can detect without specifically listening for the change.

Because most environmental noise fluctuates from moment to moment, it is standard practice to condense data into a single level called the equivalent sound level (L_{eq}). The L_{eq} is a steady sound level that would contain the same amount of sound energy as the actual time-varying sound evaluated over the same time-period. The L_{eq} averages the louder and quieter moments, but gives much more weight to the louder moments in the averaging. For traffic noise assessment purposes, L_{eq} is typically evaluated over the worst one-hour period and is defined as $L_{eq}(1h)$.

The term insertion loss is generally used to describe the reduction in $L_{eq}(1h)$ at a location after a noise barrier is constructed. For example, if the $L_{eq}(1h)$ at a residence before a barrier is constructed is 75 dBA and the $L_{eq}(1h)$ after a barrier constructed is 65 dBA, then the insertion loss would be 10 dB.

2.1.2 Noise Abatement Criteria (NAC)

Noise impact is determined by comparing future project noise levels to a set of Noise Abatement Criteria (NAC) for a land use category, and to existing noise levels. The FHWA noise regulation and TDOT's noise policy state that traffic noise impacts require consideration of abatement when worst-hour noise levels approach or exceed the NAC listed in Table 1. TDOT's noise policy defines "approach" as one decibel below the NAC, or 66 dBA for Category B and C land uses. The FHWA noise regulation and TDOT's noise policy also define impacts to occur if the project causes a substantial increase in existing noise levels. TDOT's criteria to define a substantial noise increase are shown in Table 2.

2.2 Noise-Sensitive Land Uses

Review of available electronic mapping revealed Activity Category B residential uses including single-family homes, a duplex, and mobile homes might be affected by the project. Activity Category C land uses that might be affected include playgrounds at the Lakeside Christian Fellowship church, the Kids Karral Daycare, and the Harrelson School.

The NAC for Activity Category B and C will apply to the apply to the residences and playgrounds. Noise impacts will be identified and noise abatement will be considered if design year noise levels are 66 dBA or higher or if the project causes a substantial increase in existing noise levels.

The Lighthouse Ministries Church, Restored Church of Jesus Christ, and the Puryear Baptist Church have no exterior uses. Therefore, these are Activity Category D land uses that must be evaluated for interior noise impacts. Noise impacts will be identified and noise abatement will be considered if interior design year sound levels are 51 dBA or higher, or if the project causes a substantial increase in existing noise levels.

There are also some Category F properties within the project limits, including commercial, industrial, and agricultural uses. As indicated in Table 1, these land uses are not noise-sensitive and do not have an NAC. Therefore, they have not been included in the noise study.

Finally, there are tracts of Activity Category G undeveloped lands along the project. These undeveloped lands are not noise-sensitive and have not been included in the noise analysis. However, noise impacts could occur in the future if noise-sensitive land uses are constructed near SR-54. A discussion of future noise levels and the need for noise-compatible land use planning is provided later in this report.

2.3 Existing Noise Levels

Noise modeling of the project area was completed using the FHWA Traffic Noise Model (TNM 2.5) computer program in accordance with *TDOT Guidelines for Noise Modeling Using FHWA's Traffic Noise Model* (TDOT, April 2011). TNM calculated existing worst hour noise levels for the noise-sensitive land uses in the project area.

The models include traffic volumes that TDOT developed for the project. These volumes include 10% total trucks on SR-54 as shown in Appendix B. The posted speed limits on SR-54 were modeled as follows:

- 45 mph from the beginning of the project to south of Paris Bypass
- 45 mph from Little Richland Creek to east of Henry Mize Road
- 55 mph from south of Paris Bypass to north of Country Club Road
- 40 mph from north of Country Club Road to north of Howard Road
- 55 mph from North of Howard Road to the end of the project

MicroStation design files of the functional project plans provided by TDOT and LIDAR point clouds provided by the Tennessee Department of Finance and Administration were used to develop the TNM runs. When developing the TNM files, the points of TNM objects (including roadways, receivers, barriers, terrain lines, and building rows) were first digitized into MicroStation. MicroStation's coordinate export features were then used to write these points to comma separated variable text files. The points from the text files were pasted into TNM. Elevations were determined from the LIDAR point clouds

The predicted existing noise levels at several representative modeled locations are shown on Figure 3. A summary of the predicted existing noise levels for the modeled receivers is shown in Table 3. The TNM quality control checklist and plan views showing all modeled TNM objects and the location of the modeled roadways and receivers are included in Appendix C. Predicted noise levels at each modeled receiver are included in Appendix D.

As shown, existing noise levels range from 46 to 68 dBA. Noise levels vary based on distance to SR-54 and intervening topography. The receptors with the highest noise levels are very close to SR-54 in an at-grade condition. The receptors with the lowest noise levels are further away from SR-54.

2.4 Future Noise Levels

TDOT developed traffic projections for the project for the design year 2043. Projected traffic volumes for the “design hour” represents the theoretical worst traffic condition. Design hour traffic projections were used for the noise analysis since they represent the highest number of vehicles expected to travel on SR-54 in a given hour and would, therefore, represent the worst noise hour. Design year traffic projections are included in Appendix B.

2.4.1 No-Build Alternative

Noise levels for the No-Build Alternative can be reasonably estimated by evaluating existing and future traffic volumes on SR-54. As noted previously, doubling the traffic on a roadway would result in a 3 dB increase in the noise level at a given location assuming all other conditions remain the same. Design year 2043 traffic volumes are predicted to be approximately 20% higher than current traffic volumes. This increase in traffic would increase noise levels by approximately 1 dB. As a result, existing noise levels were increased by 1 dB to arrive at design year 2043 noise levels for the No-Build Alternative shown on Figure 3.

2.4.2 Build Alternative

Noise modeling of the Build Alternative was completed using the TNM in accordance with TDOT’s guidelines. The TNM calculated design hour noise levels in year 2043 for the noise-sensitive land uses in the project area.

A summary of the predicted design year noise levels for the modeled receivers is shown in Table 3 and discussed in the following section. The predicted future noise levels at several representative modeled locations are shown on Figure 3. The TNM quality control checklist and plan views showing all modeled TNM objects and the location of the modeled roadways and receivers are included in Appendix C. Predicted noise levels at each modeled receiver are included in Appendix D.

2.5 Noise Impacts

A noise-sensitive land use is impacted if the predicted worst hour noise level approaches or exceeds the NAC or if the project substantially increases existing noise levels. Design year noise levels for the Build Alternative are predicted to be 2 dB lower to 8 dB higher than existing noise levels. Noise level decreases are the result of travel lanes moving away from land uses. The larger noise level increases are due to travel lanes moving closer to land uses and the removal of the cut that shields these land uses. The noise level increases are not substantial in accordance with TDOT’s noise policy. Therefore, none of the land uses are predicted to be impacted by a substantial increase in noise level.

Although design year noise levels at many land uses are predicted to be below the NAC, 23 residences are predicted to be impacted by the project with design year noise levels of 66 dBA or greater (Table 1). The Kids Karral Daycare playground is also predicted to be impacted with a design year noise level of 66 dBA. The playgrounds at the Lakeside Christian Fellowship church and the Harrelson School are not predicted to be impacted.

Lakeside Christian Fellowship church and the Harrelson School are not predicted to be impacted.

The Lighthouse Ministries Church, Restored Church of Jesus Christ, and the Puryear Baptist Church are air-conditioned and would be expected to operate under a “closed windows” condition. Application of a typical 25 dB reduction for building attenuation results in predicted interior sound levels well below the NAC of 52 dBA for Activity Category D land uses. As a result, these land uses are not predicted to be impacted.

In summary, a total of 23 residences and the Kids Karral Daycare playground are predicted to be impacted.

2.6 Noise Abatement Evaluation

Abatement is evaluated when impacts are predicted to occur. Noise barriers were evaluated to reduce noise levels for impacted land residences and playground. For noise barriers to be included in a project, they must be determined to be both feasible and reasonable in accordance with TDOT’s noise policy as discussed below.

2.6.1 Noise Barrier Feasibility

Feasibility means that the construction of a barrier would not be anticipated to pose any major design, construction, maintenance, or safety problems, and the noise barriers will provide a noise reduction (insertion loss) of 5 dB in design year highway traffic noise levels for the majority of the impacted first-row receptors.

SR-54 is not a limited access facility. The impacted residences and the Kids Karral Daycare playground have direct access to SR-54 via a private driveway or local road intersection. Noise barriers are not feasible because they would limit access from the impacted properties and adjacent properties.

2.6.2 Statement of Likelihood

Noise abatement is not proposed for this project.

2.7 Construction Noise

Construction activities will generate intermittent and temporary noise above existing ambient noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by the FHWA noise regulation and TDOT’s noise policy.

TDOT’s construction specifications will apply to this project. Construction procedures will be governed by the *Standard Specifications for Road and Bridge Construction* (TDOT, 2015), and as amended by the most recent applicable supplements. All construction equipment shall be maintained, repaired and adjusted to keep it in full satisfactory condition.

2.8 Information for Local Officials

Undeveloped tracts of land are adjacent to SR-54. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers of these lands, to practice noise compatibility planning to avoid future noise impacts. The following language is included in TDOT's noise policy:

"Highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized."

FHWA developed two guidance documents on noise compatible land use planning: *The Audible Landscape: A Manual for Highway Noise and Land Use* (FHWA, 1974) and *Entering the Quiet Zone: Noise Compatibility Land Use Planning* (FHWA, 2002).

Design year noise levels for areas along SR-54 where vacant and possibly developable lands exist are listed in Table 4. Noise predictions were made at distances between 50 and 300 feet from the centerline of the near lane for the design year 2043. As indicated, noise levels within approximately 50 feet of the centerline of the near lane of SR-54 will approach or exceed the NAC of 66 dBA. Noise-sensitive land uses should generally not be constructed in these areas unless noise mitigation measures are provided.

The values in Table 4 do not represent predicted levels at every location at a particular distance back from the roadway. Noise levels will vary with changes in terrain and will be affected by the shielding of objects such as buildings. This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels.

Finally, TDOT has constructed Type II or "retrofit" noise barriers along existing highways. To be eligible for a Type II noise barrier, an area must meet the following criteria:

- The neighborhood must be located along a limited-access roadway.
- The neighborhood must be primarily residential.
- The majority (more than 50%) of residences in the neighborhood near the highway predated the initial highway construction.
- A noise barrier for the neighborhood must not have been previously determined to be not reasonable or not feasible as part of a new highway construction or through-lane widening study (Type I project).
- Existing noise levels measured in the neighborhood must be above 66 dBA.
- A barrier must be feasible to construct and will provide substantial noise reduction.
- A barrier must be reasonable (barrier area per benefited residence) in accordance with TDOT's noise policy. A residence is considered "benefited" if the noise barrier will reduce the traffic noise by at least 5 dB.

2.9 Meteorological (Weather) Effects on Noise Levels

Noise levels from highways or other sources are louder or quieter during certain times of the day or year. Changes in weather conditions are often the cause of these higher or lower noise levels. The effects on a community depend on the distance to highways and the frequency and duration of certain weather conditions.

Higher noise levels will be more common in areas where the wind typically blows from a highway toward a community (downwind) than in locations where the wind blows from the community toward the highway (upwind). Downwind conditions cause sound waves to bend back toward the earth and increase noise levels.

When the air above the ground is warmer than the air near the ground, a *temperature inversion* occurs that causes sound waves to bend back toward the earth and increase noise levels. Temperature inversions often occur at night when the weather is clear and winds are calm.

Changes in weather conditions also affect how well a noise barrier performs. Temperature inversions and downwind conditions can increase noise levels in neighborhoods protected by a noise barrier, while temperature lapses and upwind conditions can further reduce noise levels in neighborhoods protected by a noise barrier.

3.0 CONCLUSIONS

The noise evaluation identified noise-sensitive land uses within the project limits including Activity Category B residences, Activity Category C playgrounds, and Activity Category D churches.

Existing predicted noise levels range from 46 to 68 dBA. Predicted noise levels for the Build Alternative range from 47 to 69 dBA. Changes in noise levels due to the project range from a 2 dB reduction to an 8 dB increase, with no land uses impacted by a substantial increase in noise levels. Twenty-three residences and the Kids Karal Daycare playground are predicted to be impacted by the project with design year noise levels of 66 dBA or higher.

SR-54 is not a limited access facility. The impacted residences and daycare center have direct access to SR-54 via a private driveway or local road intersection. Noise barriers are not because a noise barrier would limit access from the impacted properties and adjacent properties. Noise abatement is not proposed for this project.

4.0 REFERENCES

Federal Highway Administration, November 1974, *The Audible Landscape: A Manual for Highway Noise and Land Use*.

Federal Highway Administration, May 2002, *Entering the Quiet Zone: Noise Compatibility Land Use Planning*.

Federal Highway Administration, July 2010, *Procedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772.

Tennessee Department of Transportation, April 2010, *TDOT Guidelines for Noise Modeling Using FHWA's Traffic Noise Model*.

Tennessee Department of Transportation, July 13, 2011, *Policy on Highway Traffic Noise Abatement*.

Tennessee Department of Transportation, 2011, *Tennessee Environmental Procedures Manual*.

Tennessee Department of Transportation, January 1, 2015, *Standard Specifications for Road and Bridge Construction*.

TABLES

Table 1
FHWA Noise Abatement Criteria

Activity Category	L_{Aeq}(1h) dBA	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ⁽¹⁾	67	Exterior	Residential.
C ⁽¹⁾	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, and television studios.
E ⁽¹⁾	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
F	---	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	---	---	Undeveloped lands that are not permitted.

(1) Includes undeveloped lands permitted for this activity category.

Table 2
Substantial Noise Level Increase

Existing Noise Level (dBA) ⁽¹⁾	Predicted Design Year Noise Level Increase (dB) ⁽²⁾
42 or less	15 or more
43	14 or more
44	13 or more
45	12 or more
46	11 or more
47 or more	10 or more

(1) Worst-hour noise level from the combination of natural and mechanical sources and human activity.

(2) Predicted design year noise level minus existing noise level.

Table 3
Noise Impact Summary
Design Year 2043, Build Alternative

Existing Year Noise Levels (dBA)	Design Year Noise Levels (dBA)	Increase in Noise Levels (dB)	Substantial Increase Impacts	Approach/ Exceed NAC Impacts	Number of Impacts
46 – 68	47 – 69	-2 – 8	0	24 ⁽¹⁾	24

(1) Includes 23 residences and a Kid's Karal Daycare playground.

Table 4
Design Year 2043 Noise Levels for Undeveloped Lands

Distance from SR-54 ⁽¹⁾	L_{eq} (1h) (dBA) ⁽²⁾
50	65
100	62
200	57
300	53

(1) Perpendicular distance to the center of near lane.

(2) At-grade situation.

FIGURES

Figure 1
Project Area



Figure 2
Common Sound Levels

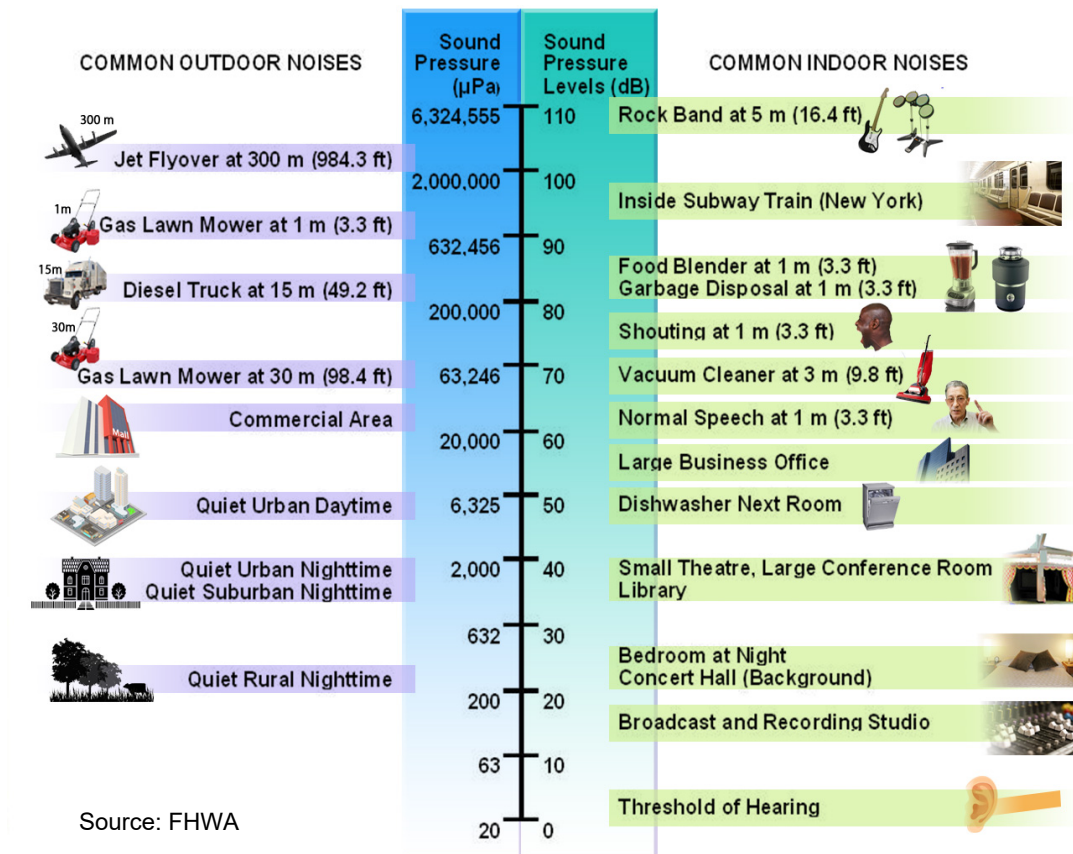
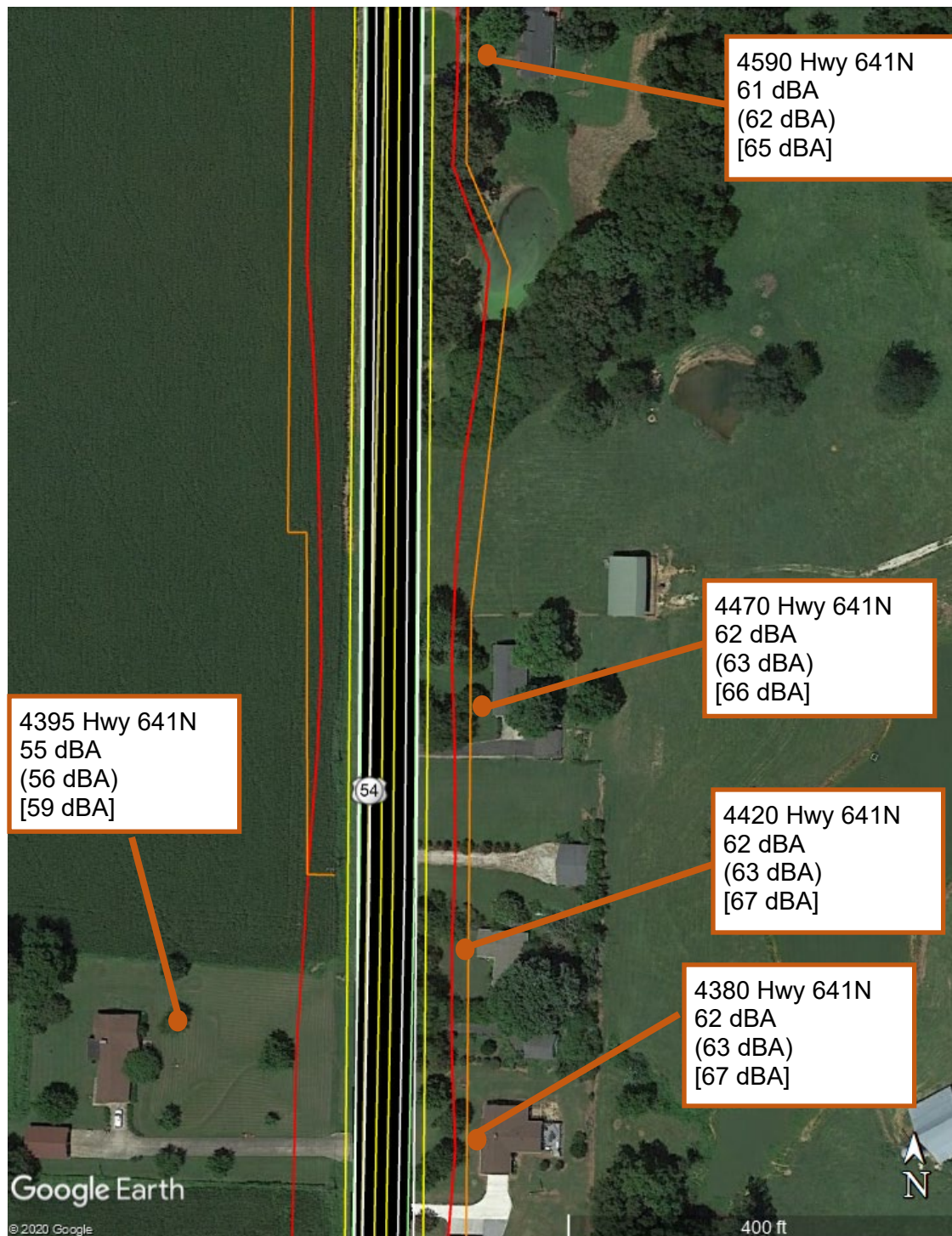
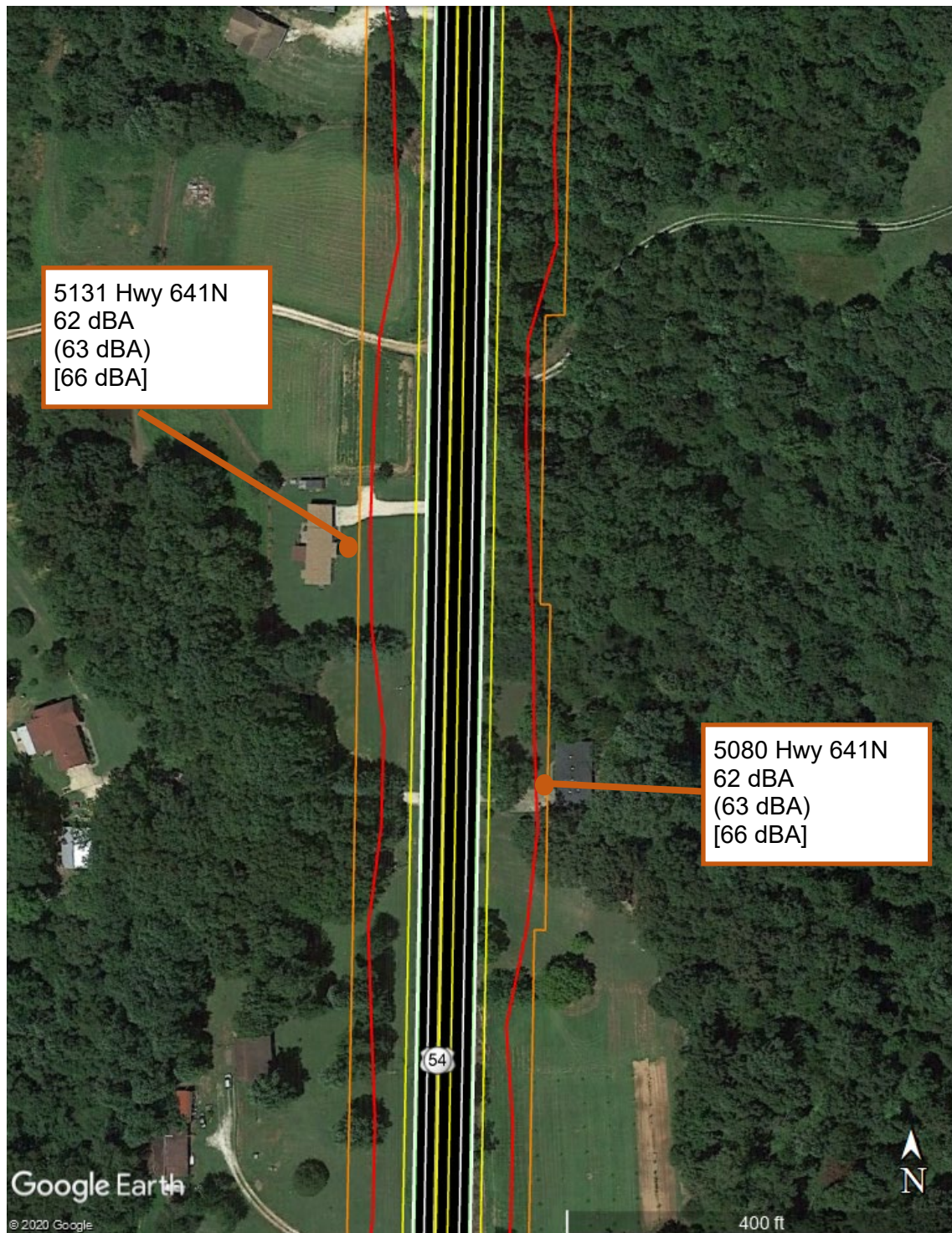


Figure 3
Existing and Design Year 2043 Noise Levels



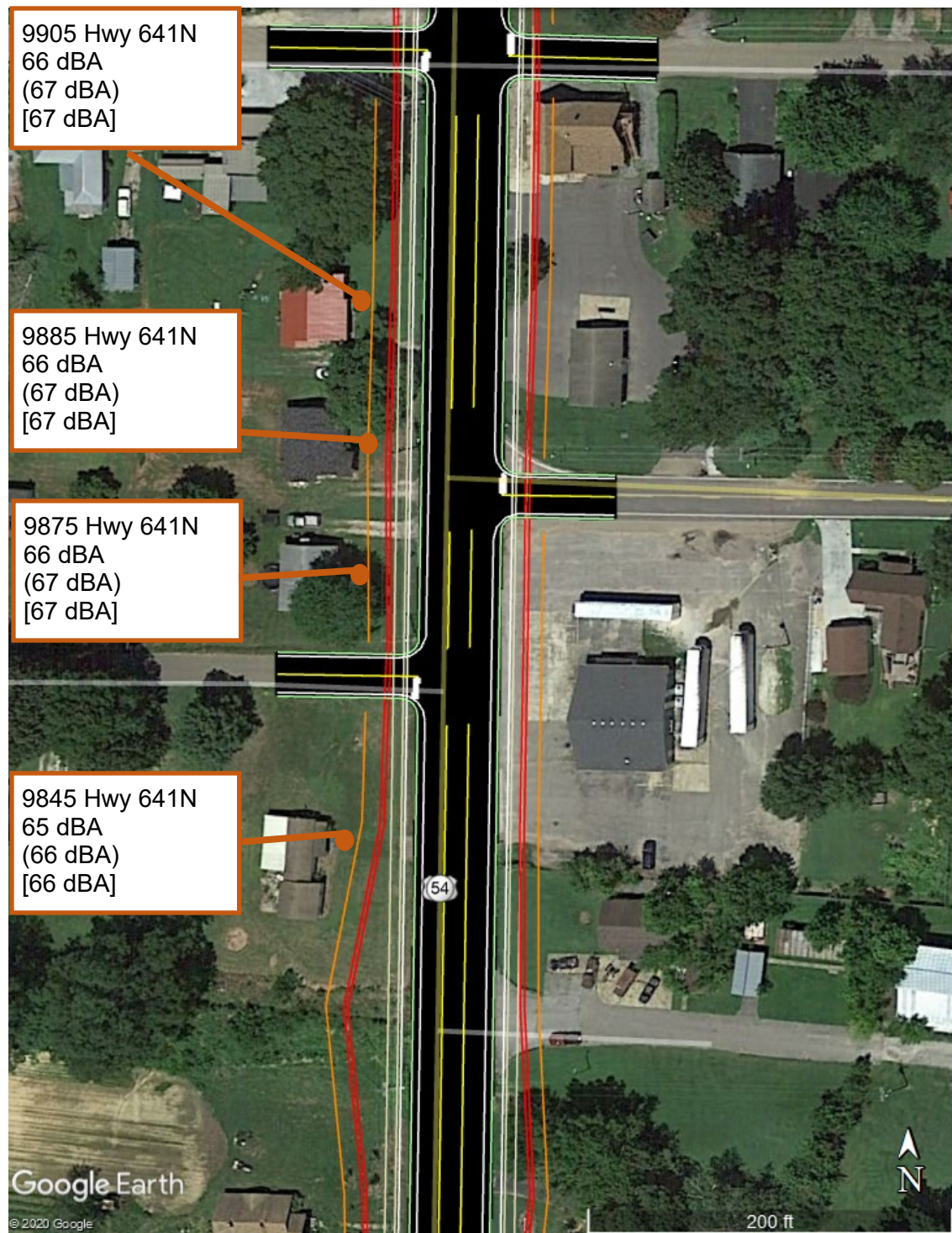
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-- dBA	Existing
(-- dBA)	Design Year, No-Build Alternative
[-- dBA]	Design Year, Build Alternative

Figure 3b
Existing and Design Year 2043 Noise Levels



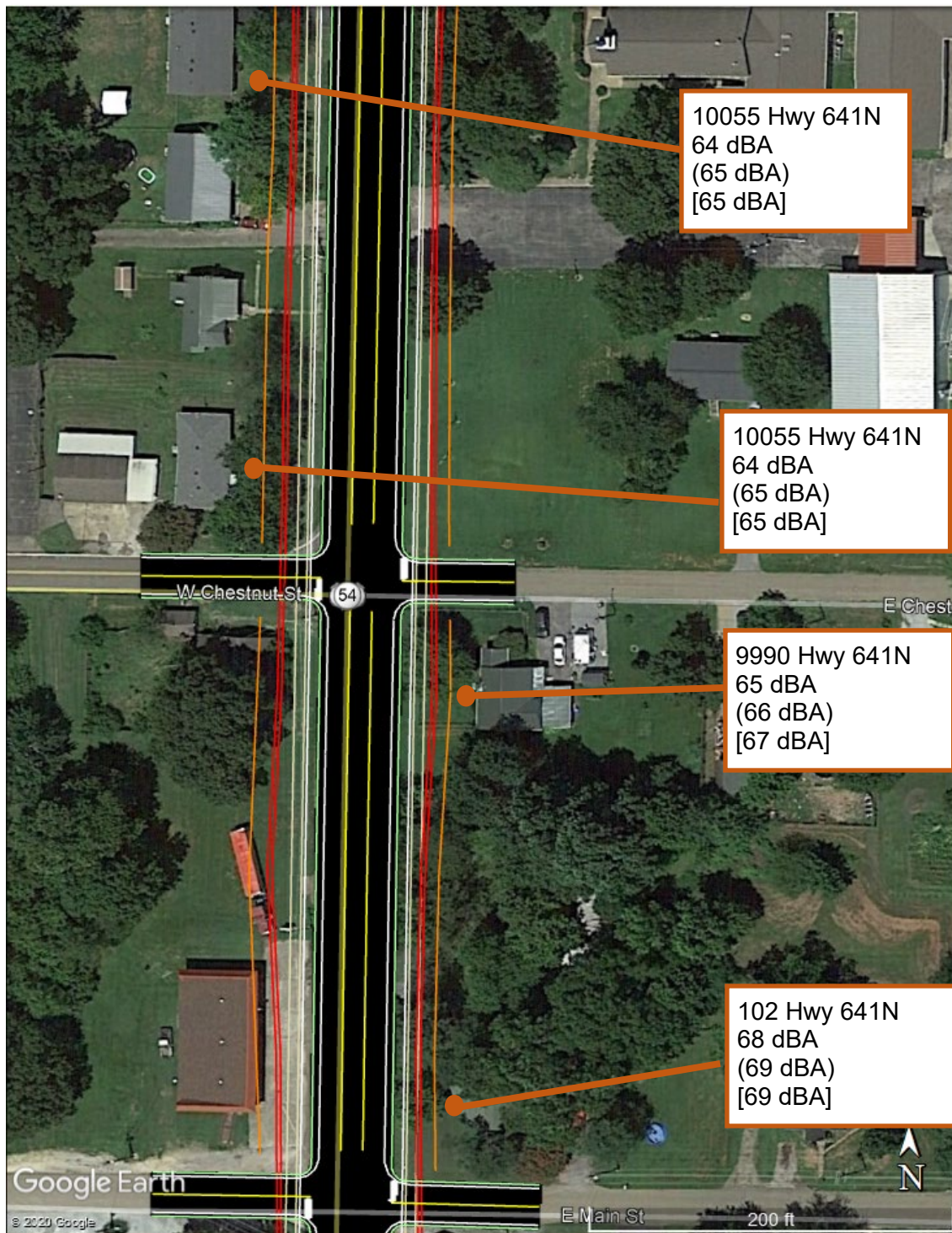
LEGEND	
-- dBA	Existing
(-- dBA)	Design Year, No-Build Alternative
[-- dBA]	Design Year, Build Alternative

Figure 3c
Existing and Design Year 2043 Noise Levels



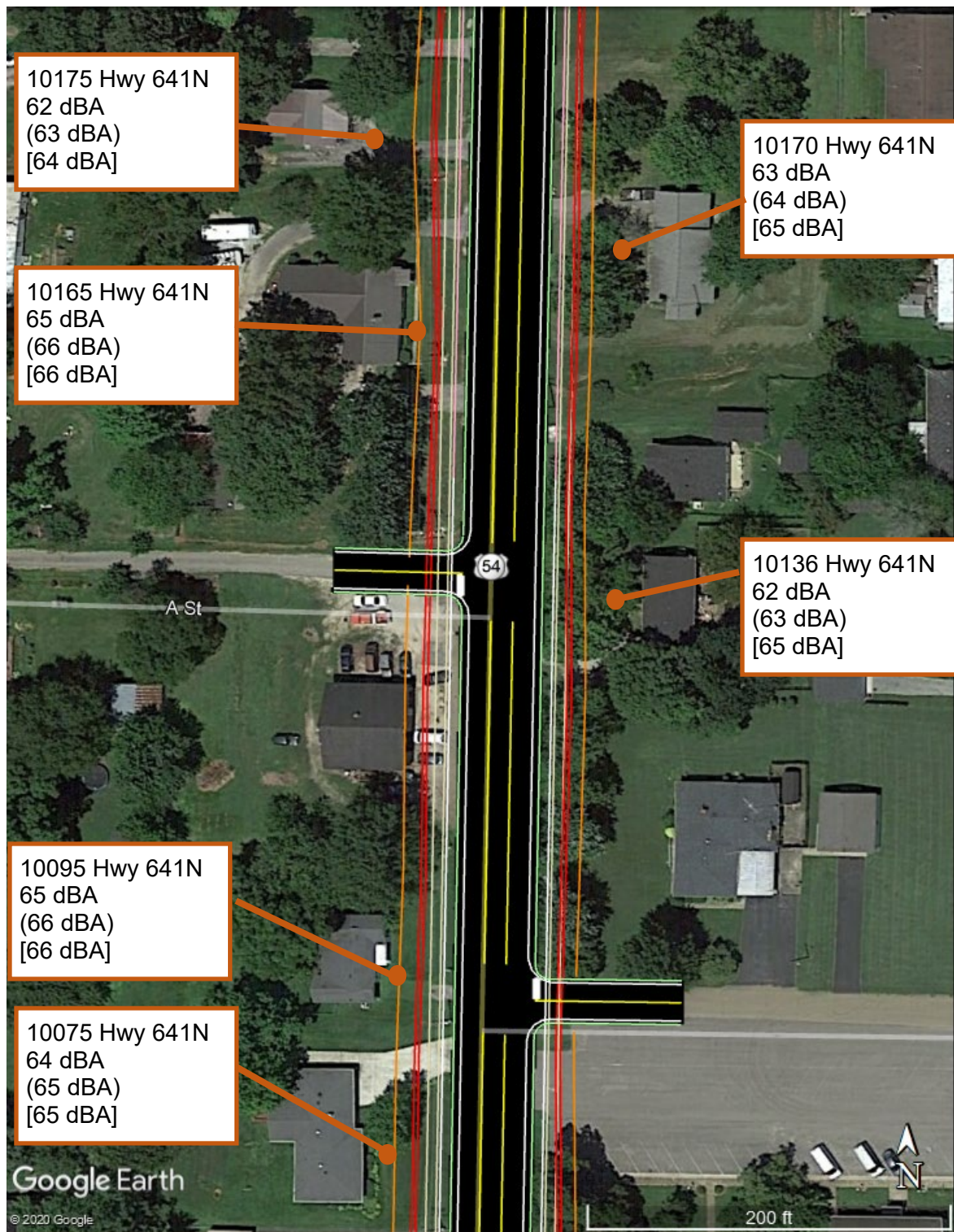
LEGEND	
-- dBA	Existing
(-- dBA)	Design Year, No-Build Alternative
[-- dBA]	Design Year, Build Alternative

Figure 3d
Existing and Design Year 2043 Noise Levels



LEGEND	
-- dBA	Existing
(-- dBA)	Design Year, No-Build Alternative
[-- dBA]	Design Year, Build Alternative

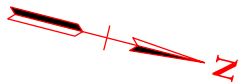
Figure 3e
Existing and Design Year 2043 Noise Levels



LEGEND	
-- dBA	Existing
(-- dBA)	Design Year, No-Build Alternative
[-- dBA]	Design Year, Build Alternative

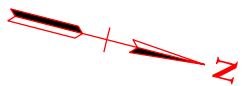
Appendix A

Functional Project Plans and Typical Cross Sections



TECHNICAL REPORT

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L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

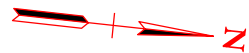


TECHNICAL REPORT

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HENRY COUNTY



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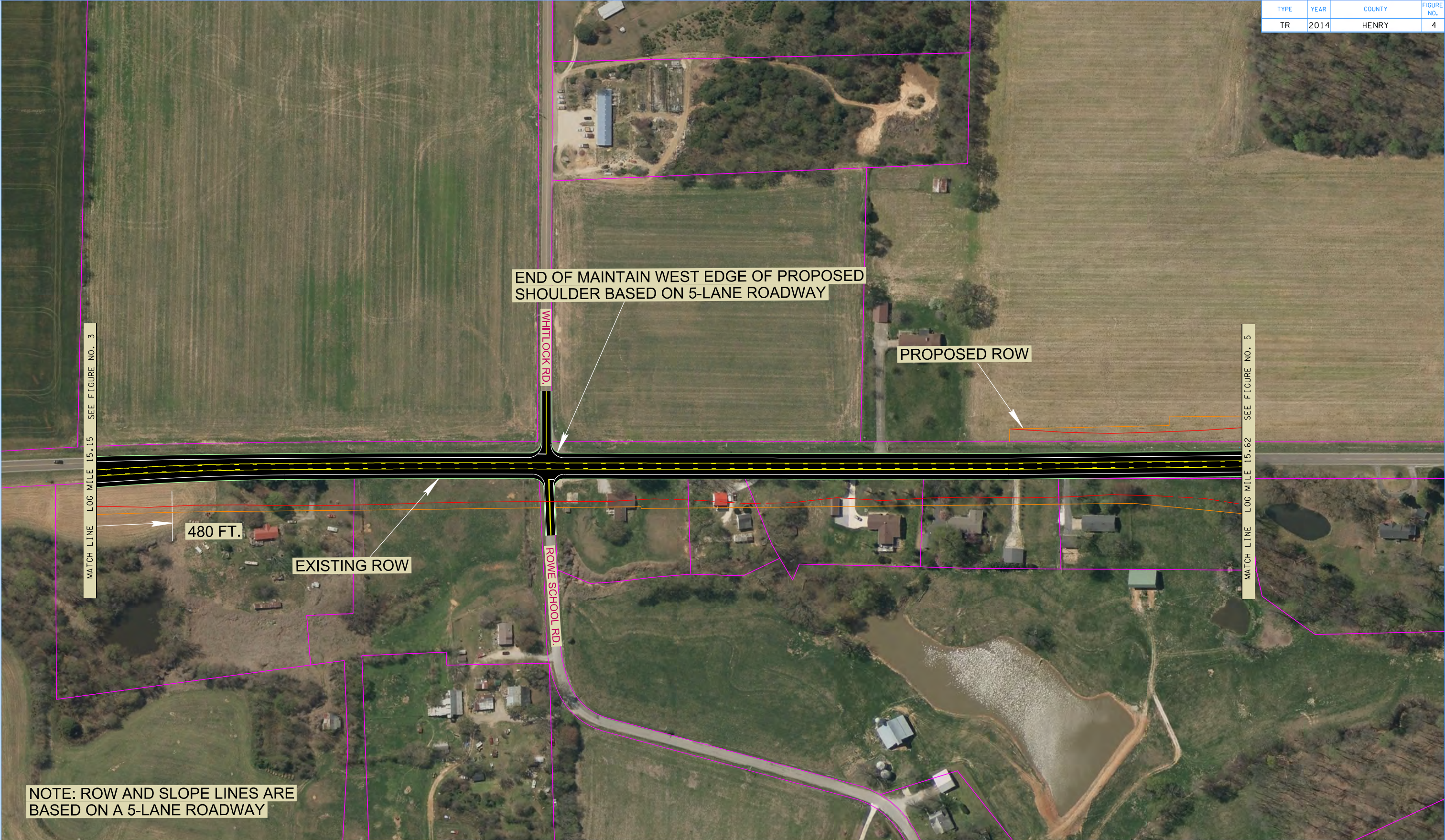


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 3
S.R. 54
L.M. 14.72 to
L.M. 15.15



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 4
S.R. 54
L.M. 15.15 to
L.M. 15.62



MATCH LINE LOG MILE 15.62 SEE FIGURE NO. 4

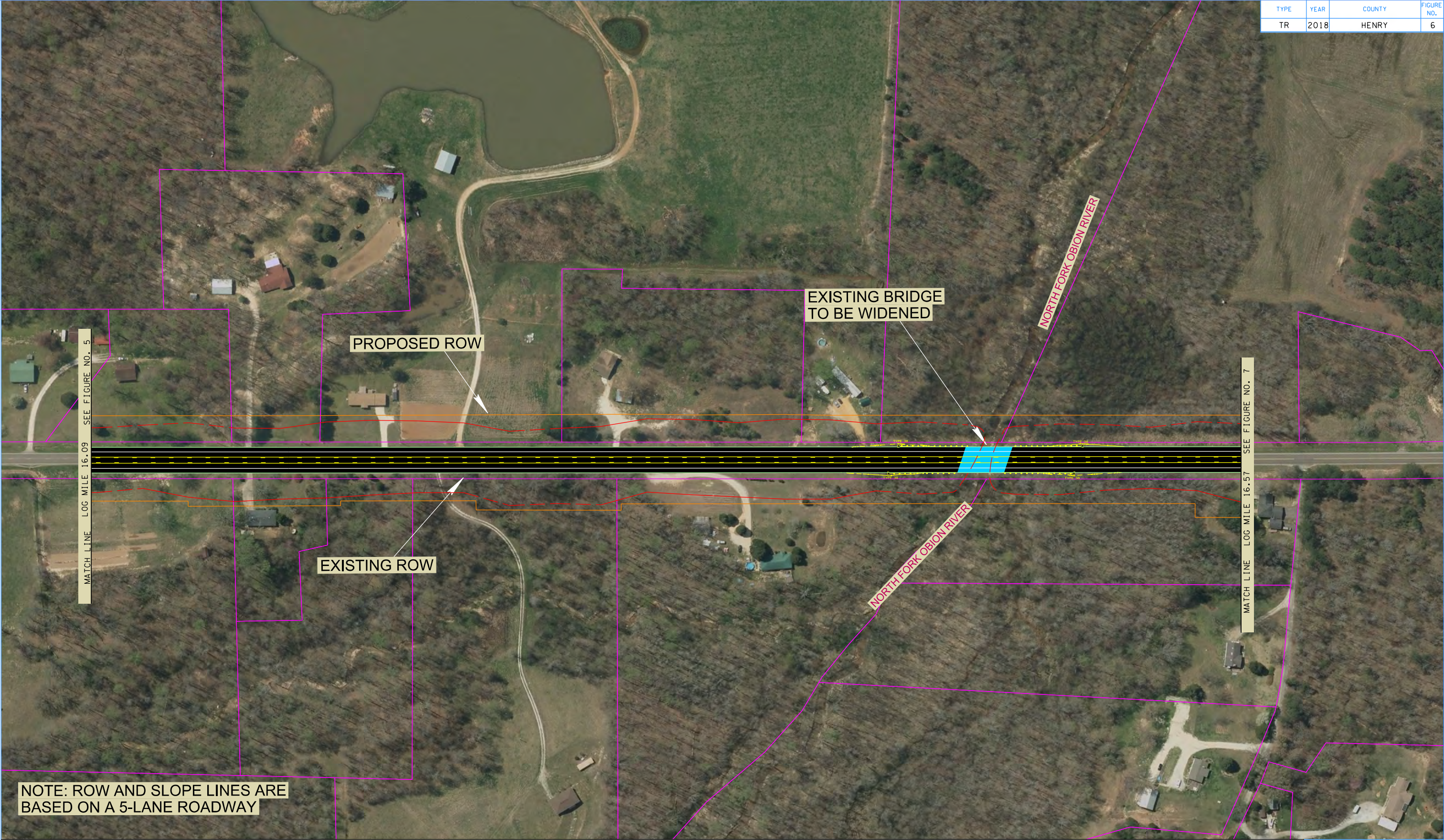
MATCH LINE LOG MILE 16.09 SEE FIGURE NO. 6

NOTE: ROW AND SLOPE LINES ARE
BASED ON A 5-LANE ROADWAY



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

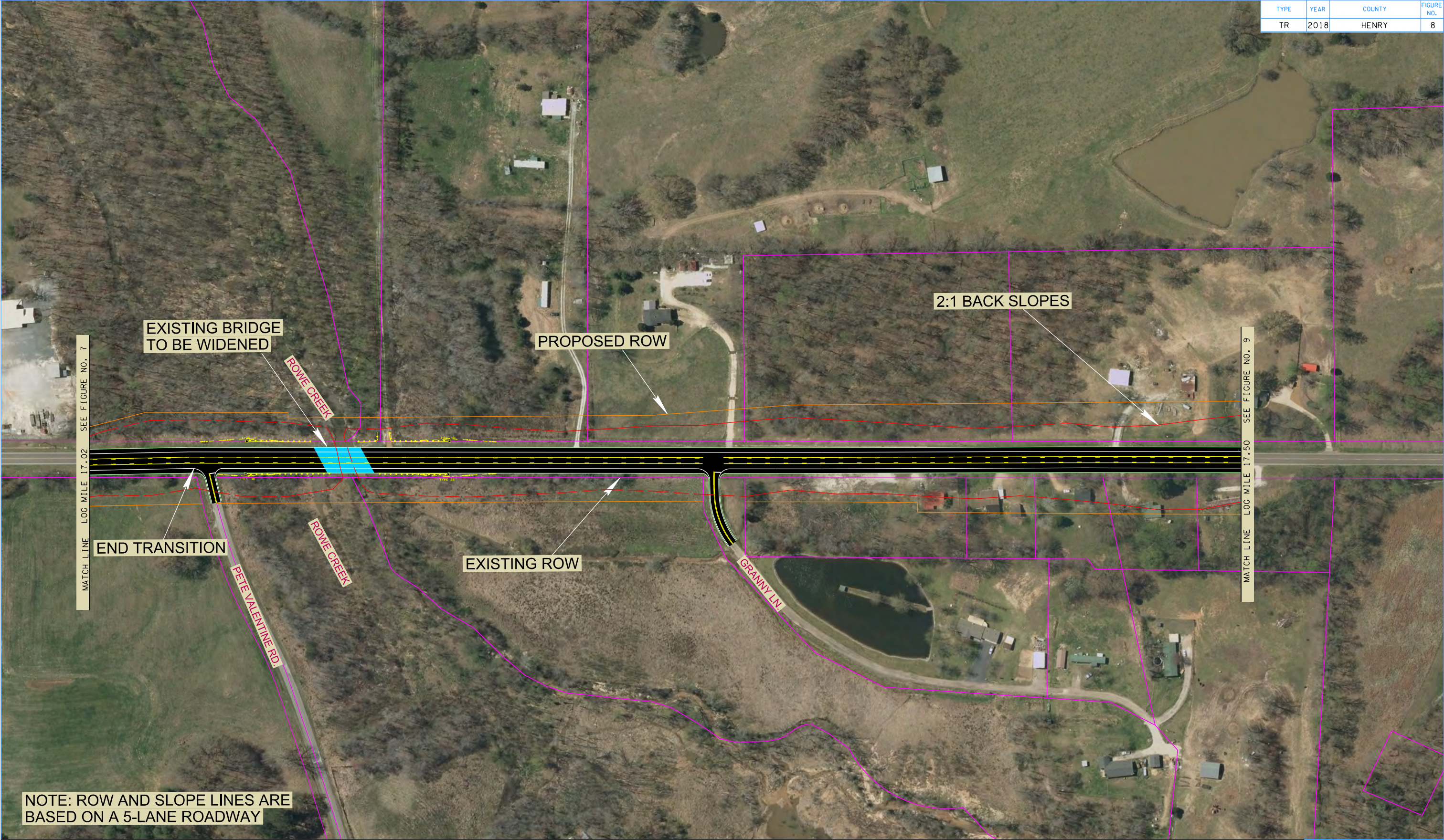
FIGURE 6
S.R. 54
L.M. 16.09 to
L.M. 16.57

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TECHNICAL REPORT

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L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



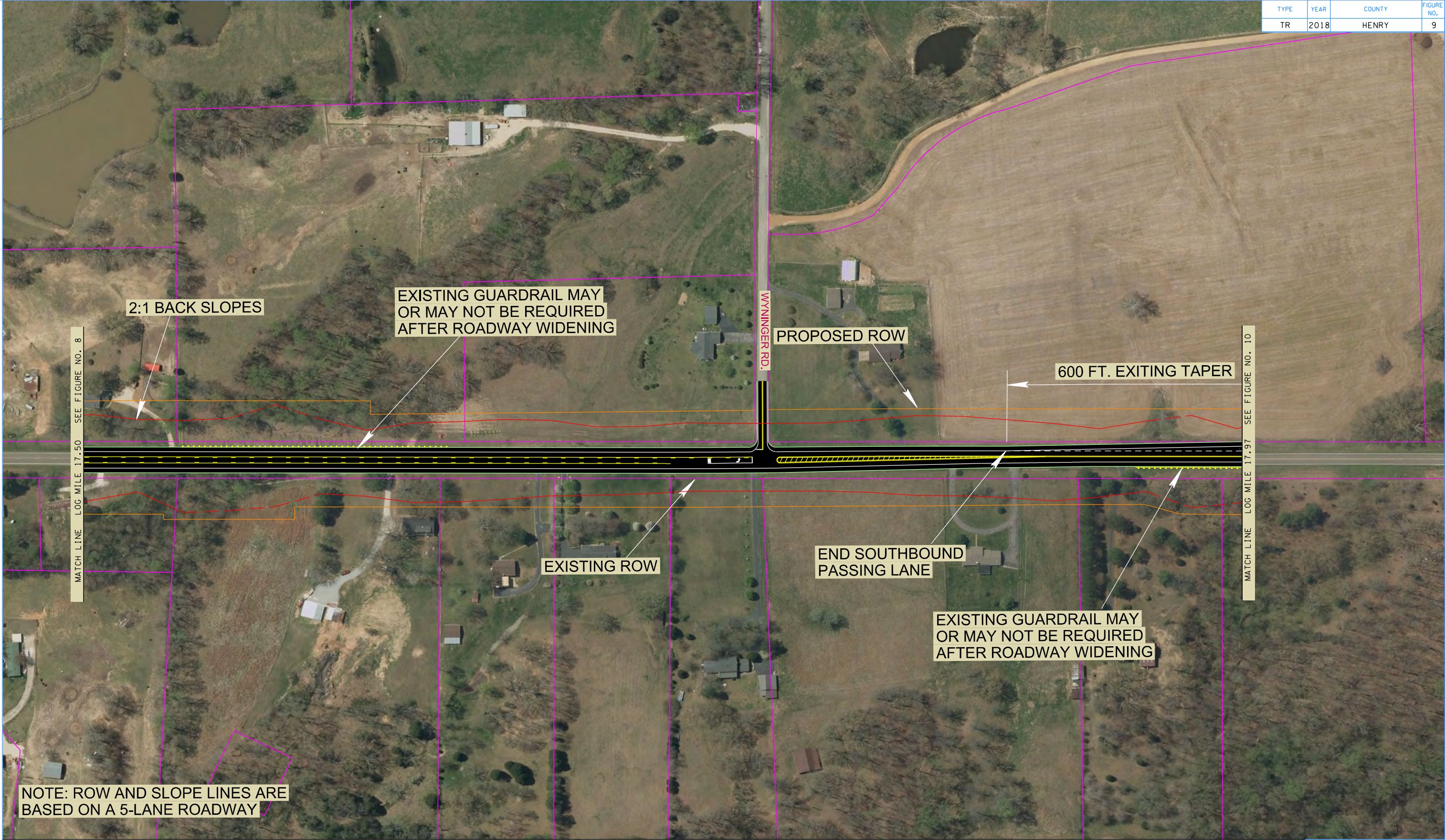
TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
S.R. 54
L.M. 17.02 to
L.M. 17.50

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STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 9
S.R. 54
L.M. 17.50 to
L.M. 17.97



TECHNICAL REPORT

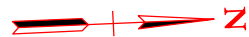
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 10
S.R. 54
L.M. 17.97 to
L.M. 18.45



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STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 11
S.R. 54
L.M. 18.45 to
L.M. 18.92



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

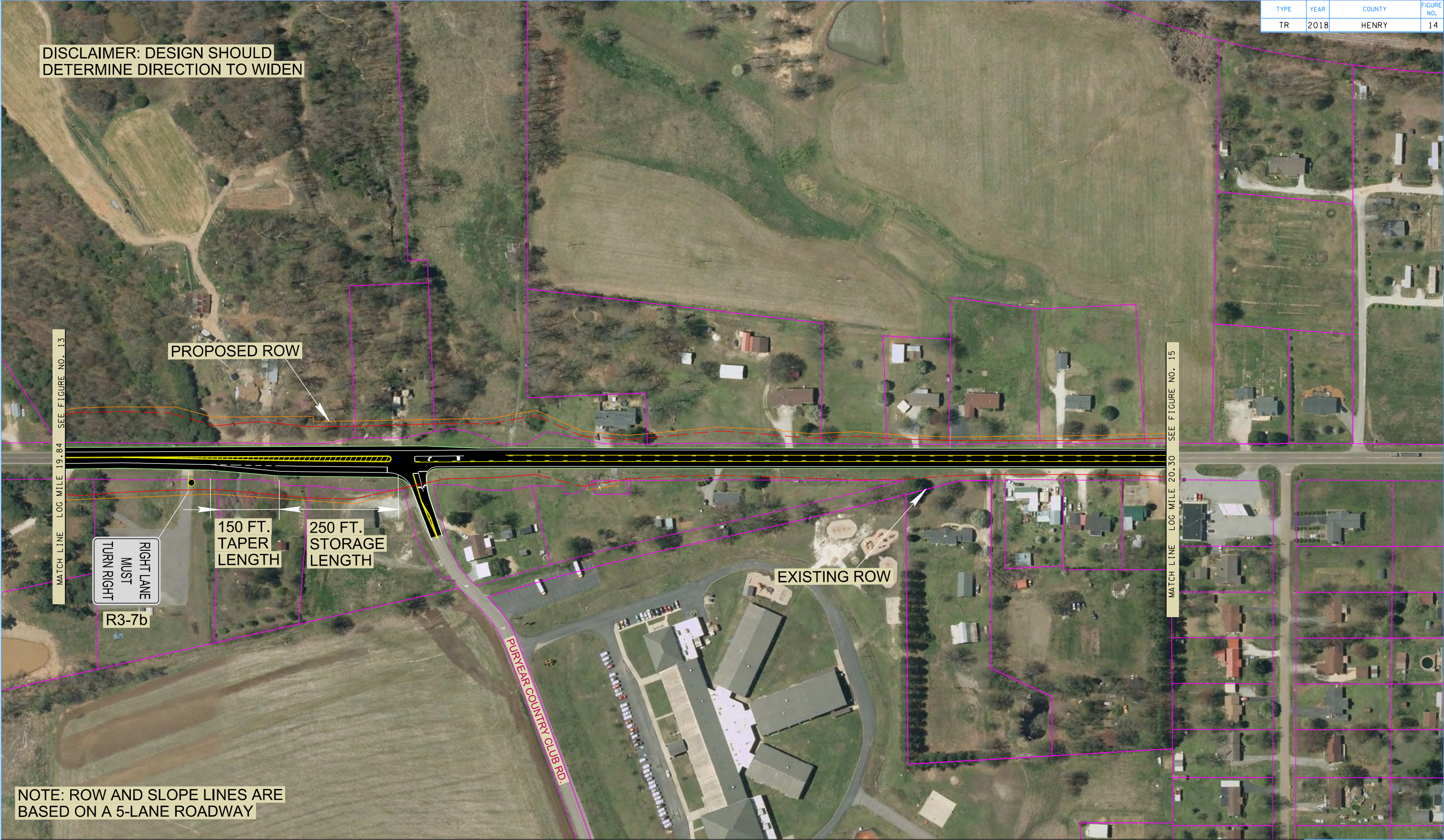
FIGURE 12
S.R. 54
L.M. 18.92 to
L.M. 19.39

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TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY



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TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 14
S.R. 54
L.M. 19.84 to
L.M. 20.30

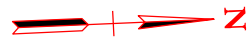
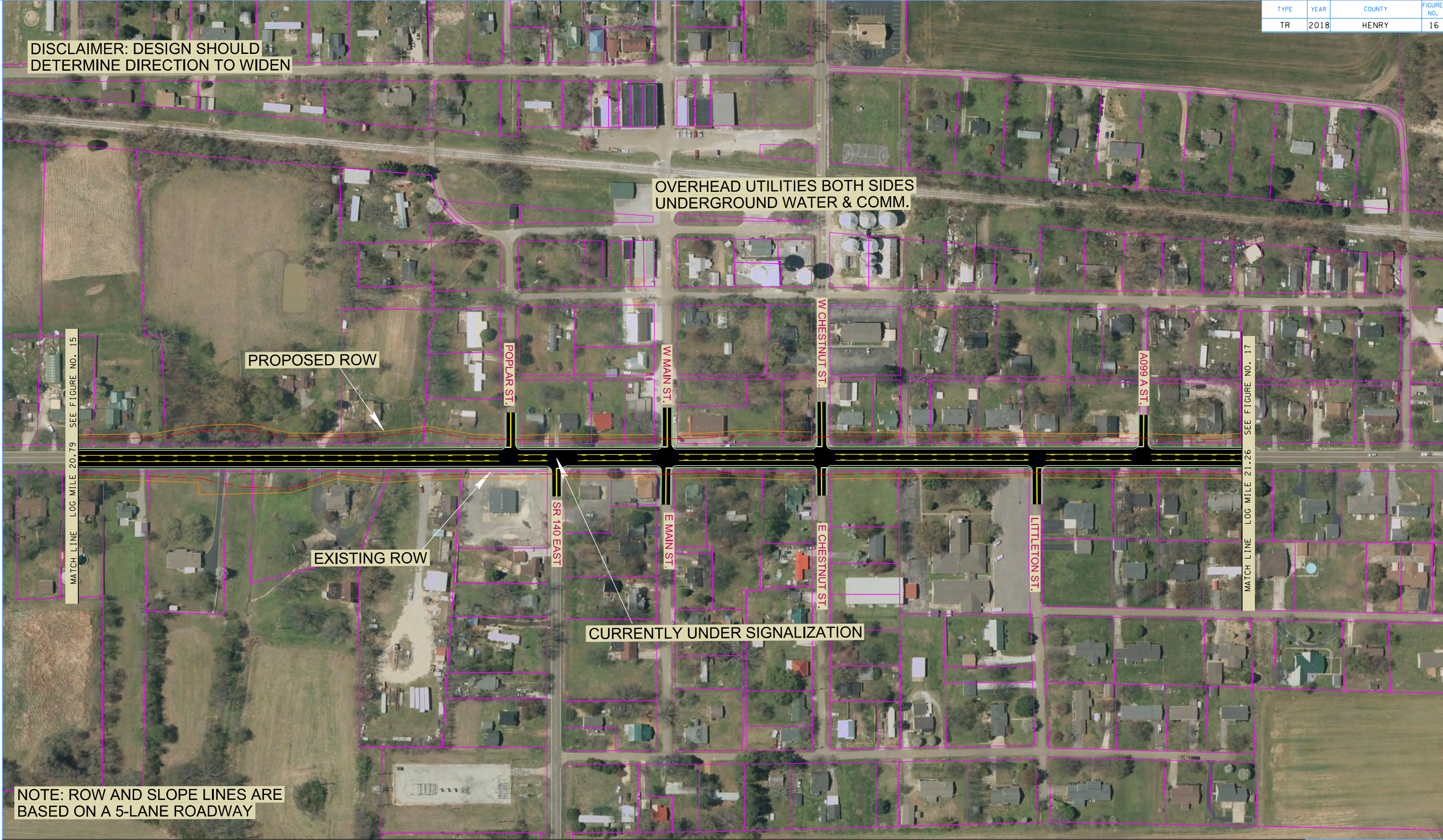


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 15
S.R. 54
L.M. 20.30 to
L.M. 20.79



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 16
S.R. 54
L.M. 20.79 to
L.M. 21.26



TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

DISCLAIMER: DESIGN SHOULD DETERMINE DIRECTION TO WIDEN

MATCH LINE LOG MILE 21.76 SEE FIGURE NO. 17

MATCH LINE LOG MILE 22.19 SEE FIGURE NO. 19

PROPOSED ROW

EXISTING ROW

NOTE: ROW AND SLOPE LINES ARE BASED ON A 5-LANE ROADWAY

HOWARD RD.

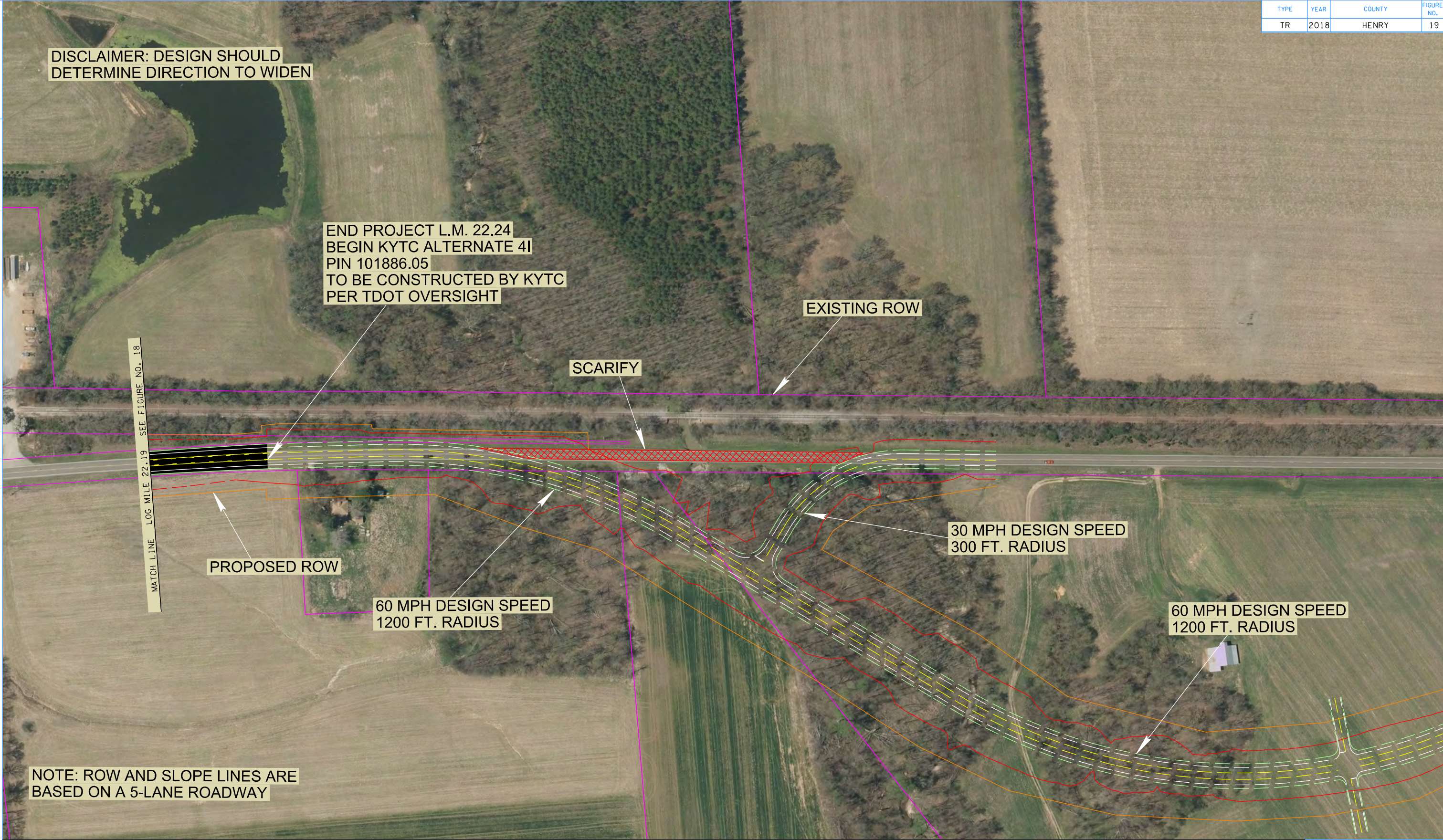


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 18
S.R. 54
L.M. 21.76 to
L.M. 22.19



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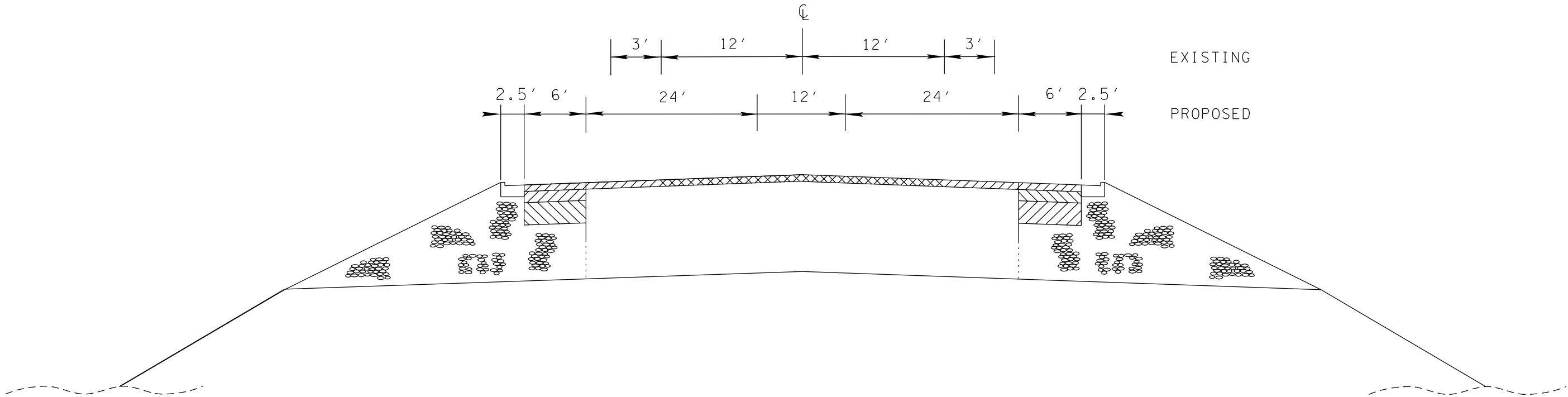


TECHNICAL REPORT

STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 19
S.R. 54
L.M. 22.19 to
L.M. 22.24



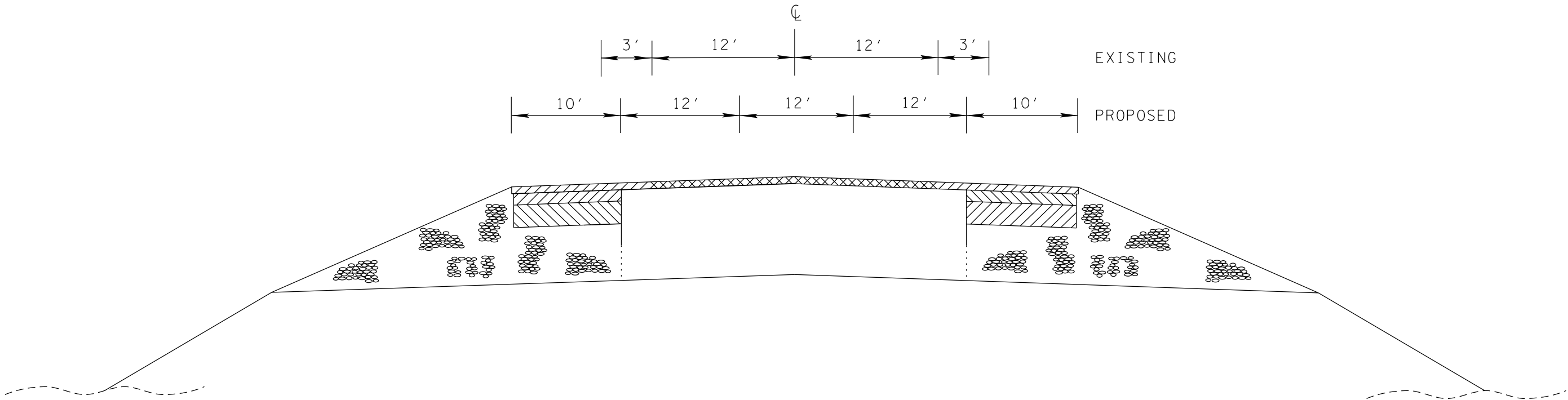
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L.M. 14.02 TO L.M. 14.87

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FIGURE 20
TYPICAL SECTION

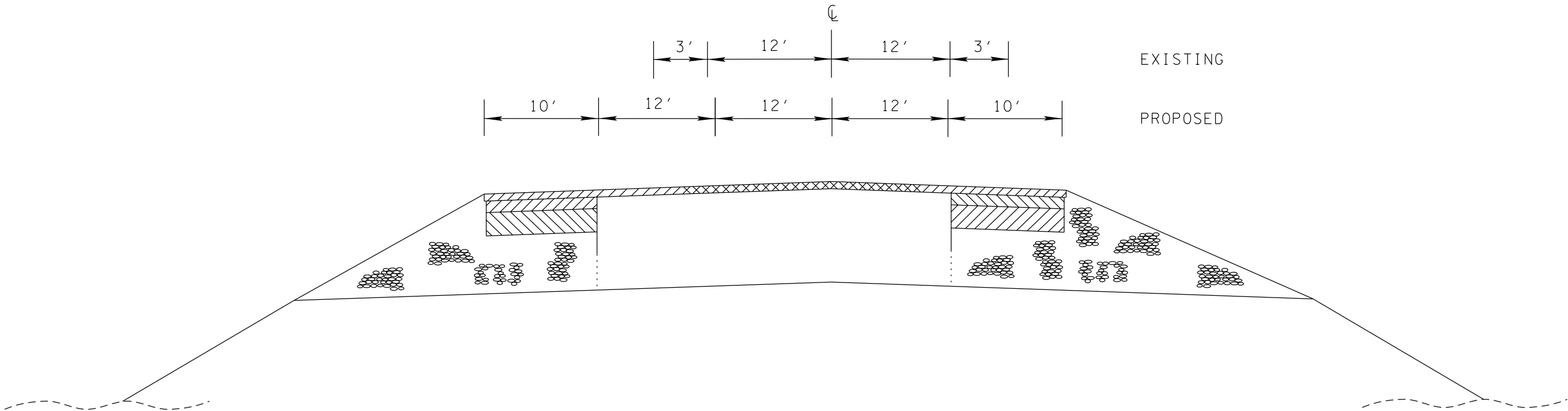


TECHNICAL REPORT

STATE ROUTE 54

L.M. 14.02 TO L.M. 22.24

HENRY COUNTY



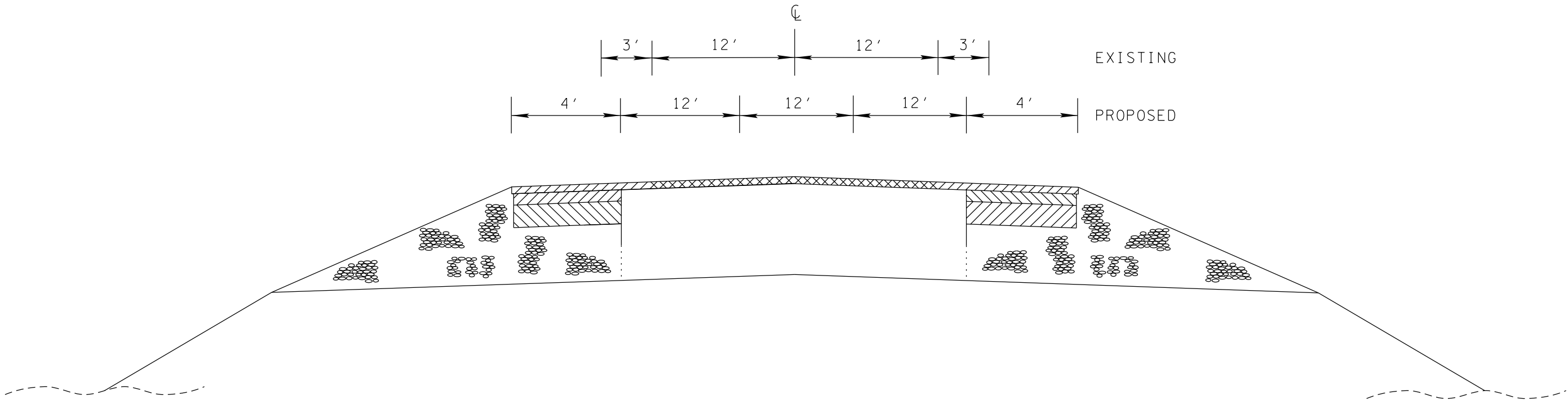
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SOUTHBOUND PASSING LANE L.M. 17.87 TO L.M. 18.84
NORTHBOUND PASSING LANE L.M. 18.93 TO L.M. 19.83

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FIGURE 22
TYPICAL SECTION



STATE ROUTE 54
L.M. 20.00 TO L.M. 22.24

*NOT TO SCALE

TECHNICAL REPORT
STATE ROUTE 54
L.M. 14.02 TO L.M. 22.24
HENRY COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

FIGURE 23
TYPICAL SECTION

Appendix B

Existing and Design Year Traffic Data

**TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**

PROJECT NO.: 43003-0221-04 ROUTE: S.R. 54
COUNTY: HENRY CITY: PARIS
PROJECT PIN NUMBER: 101886.02
PROJECT DESCRIPTION: FROM SMITH ROAD TO CROSSLAND ROAD & BRANNON LANE.

DIVISION REQUESTING:

MAINTENANCE <input type="checkbox"/>	PAVEMENT DESIGN <input type="checkbox"/>
S.T.I.D. <input type="checkbox"/>	STRUCTURES <input type="checkbox"/>
PROG. DEVELOPMENT & ADM. <input type="checkbox"/>	SURVEY & ROADWAY DESIGN <input type="checkbox"/>
PUBLIC TRANS. & AERO. <input type="checkbox"/>	TRAFFIC SIGNAL DESIGN <input type="checkbox"/>
	OTHER <u>ENVIRONMENTAL</u> <input type="checkbox"/>

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: 2023
PROJECTED LETTING DATE: 2023

TRAFFIC ASSIGNMENT:

BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
5,630	2023	6,760	676	10	2043	60-40	7	10	374	598

REQUESTED BY: NAME CHASITY STINSON DATE 7/31/20
DIVISION ENVIRONMENTAL
ADDRESS 900 J. K. POLK BUILDING
NASHVILLE TN 37243

REVIEWED BY: DEBBI HOWARD Debbi Howard DATE 8/3/2020
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: TONY ARMSTRONG Tony Armstrong DATE 8/3/2020
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

FURNISH THE 2023-2043 TRAFFIC DATA AND ADL's FOR PAVEMENT DESIGN.

THIS TRAFFIC WAS TAKEN FROM A PREVIOUS PROJECT PREPARED FOR S.T.I.D.
DATED 7/20/2018 WITH THE ADDITION OF ADL's FOR PAVEMENT DESIGN.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND
PERCENTAGE OF TRUCKS OF 7% OR LESS.

SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS.

(REV. 4/1/18)

**TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**

PROJECT NO.: 40003-0221-04 ROUTE NO.: S.R. 54
 COUNTY: HENRY CITY: PARIS
 PROJECT DESCRIPTION: FROM SMITH ROAD TO CROSSLAND ROAD & BRANNON LANE.

FAP Rural

Pavement Structural Design

Calculation of Equivalent Daily 18 Kip Single Axle Loads

Type Vehicle		ADT (No. Counted)	Flexible		Rigid	
			18-kip Factor	ADL	18-kip Factor	ADL
Pass. cars and motorcycles (1-2)		3,960	0.001	4	0.001	4
Pick-up, Panel, Van (3)		1,615	0.005	8	0.004	6
Sing. Unit	Buses (4)	6	0.300	2	0.300	2
	2-axle, 6-tire (5)	70	0.240	17	0.310	22
	3-axle or more (6-7)	29	1.700	49	2.300	67
	4-axle (8)	54	1.110	60	1.500	81
Comb.	5-axle or more (9-13)	461	1.320	609	2.200	1,014
Totals (2033 AADT)		6,195		748		1,196

Suggested Percentages of Trucks in Design Lane

5,000 or less ADT	95%
5,000 - 10,000 ADT	90%
10,000 - 15,000 ADT	85%
15,000 - 20,000 ADT	80%
20,000 - 30,000 ADT	75%
30,000 - 40,000 ADT	70%
40,000 Plus	60%

No. of Lanes: 3

% Trucks in Design Lane: 100%

ADL in Design Lane:

FLEX:	0.5	X	1.00	X	748.4	=	374
RIGID:	0.5	X	1.00	X	1195.8	=	598

ADL Calculations By: RANDY BOGUSKIE Date: 8/3/2020
 Reviewed By: *Debbi Howard* Date: 8/3/2020
 [REV. 7/1/14]

Appendix C

TNM Checklist and Plan Views

Existing

TNM Modeling Checklist

All modeling must be done in accordance with TDOT's Noise Procedures and TNM Modeling Guidelines

Project	SR-54
County	Henry
PIN	101886.02
Project Number	40003-0224-04
Project Plans Description and Date	Functional Plans (2018)
Traffic Data Source and Date	TDOT (8/2/2020)
TNM Modeler	G Pratt
Date Checklist Completed	12/2/2020
TNM Reviewer	R Williamson
Date Checklist Completed	12/3/2020

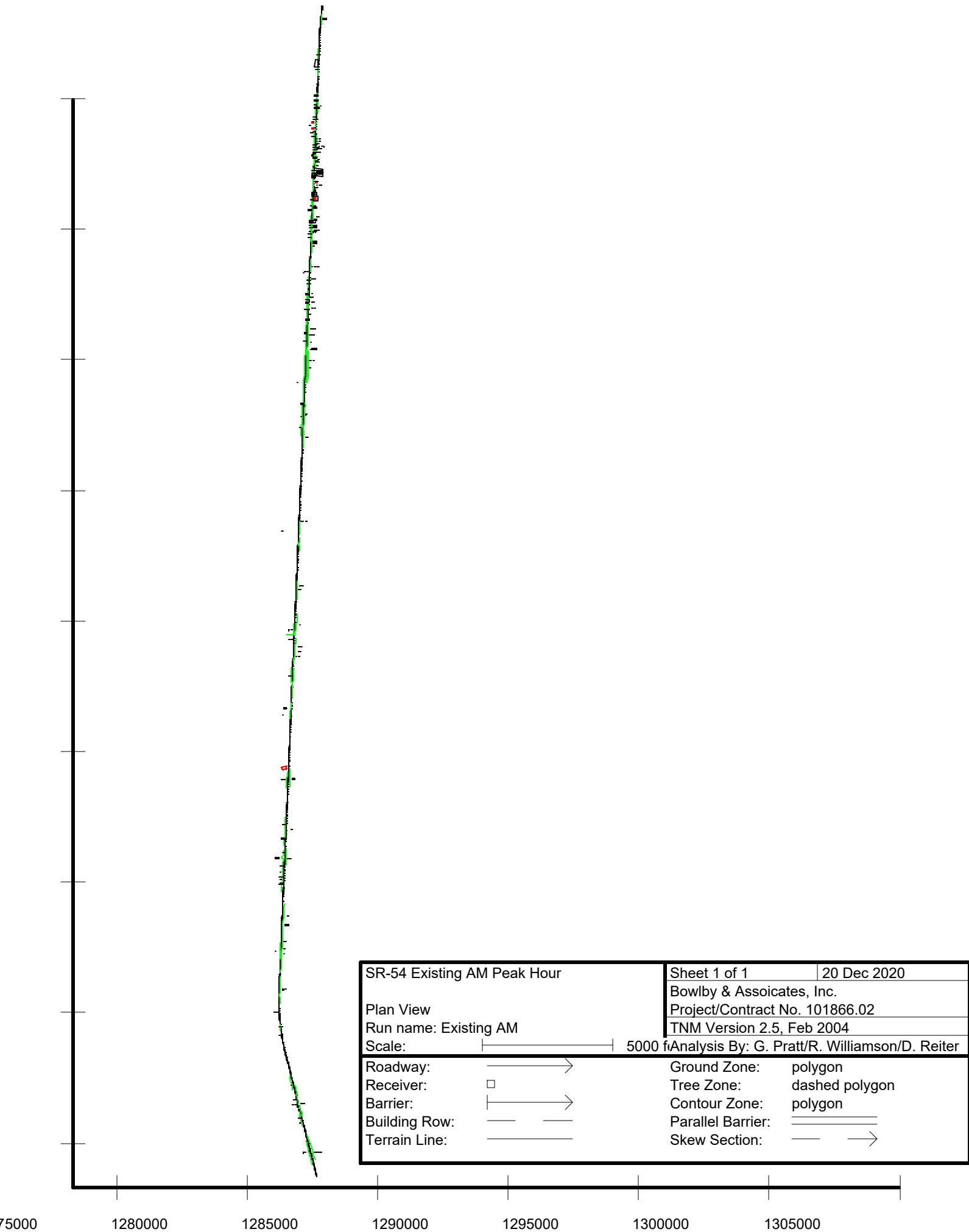
TNM Run	Existing AM		Modeling Year
Input	Task	Complete?	Notes
Setup	Run Information	<input checked="" type="checkbox"/>	
	General	<input checked="" type="checkbox"/>	
Roadways	Roadway names assigned	<input checked="" type="checkbox"/>	
	Traffic and Speeds on all Roadways	<input checked="" type="checkbox"/>	
	Widths of All Roadways per Guidance	<input checked="" type="checkbox"/>	
	Lengths of all roadways are adequate to accurately represent roadway contributions	<input checked="" type="checkbox"/>	
	Points tied to stationing if available	<input checked="" type="checkbox"/>	slight shift in alignment to the east near STA141-144 {Fixed}
	Elevations appear to be correct	<input checked="" type="checkbox"/>	
	Traffic Flow Control Devices Modeled <ul style="list-style-type: none"> • Traffic Signals • Stop Signs • On-Ramps 	<input type="checkbox"/>	model signal at STA480 {Done}
	Roadways modeled on structure as appropriate	<input checked="" type="checkbox"/>	n/a

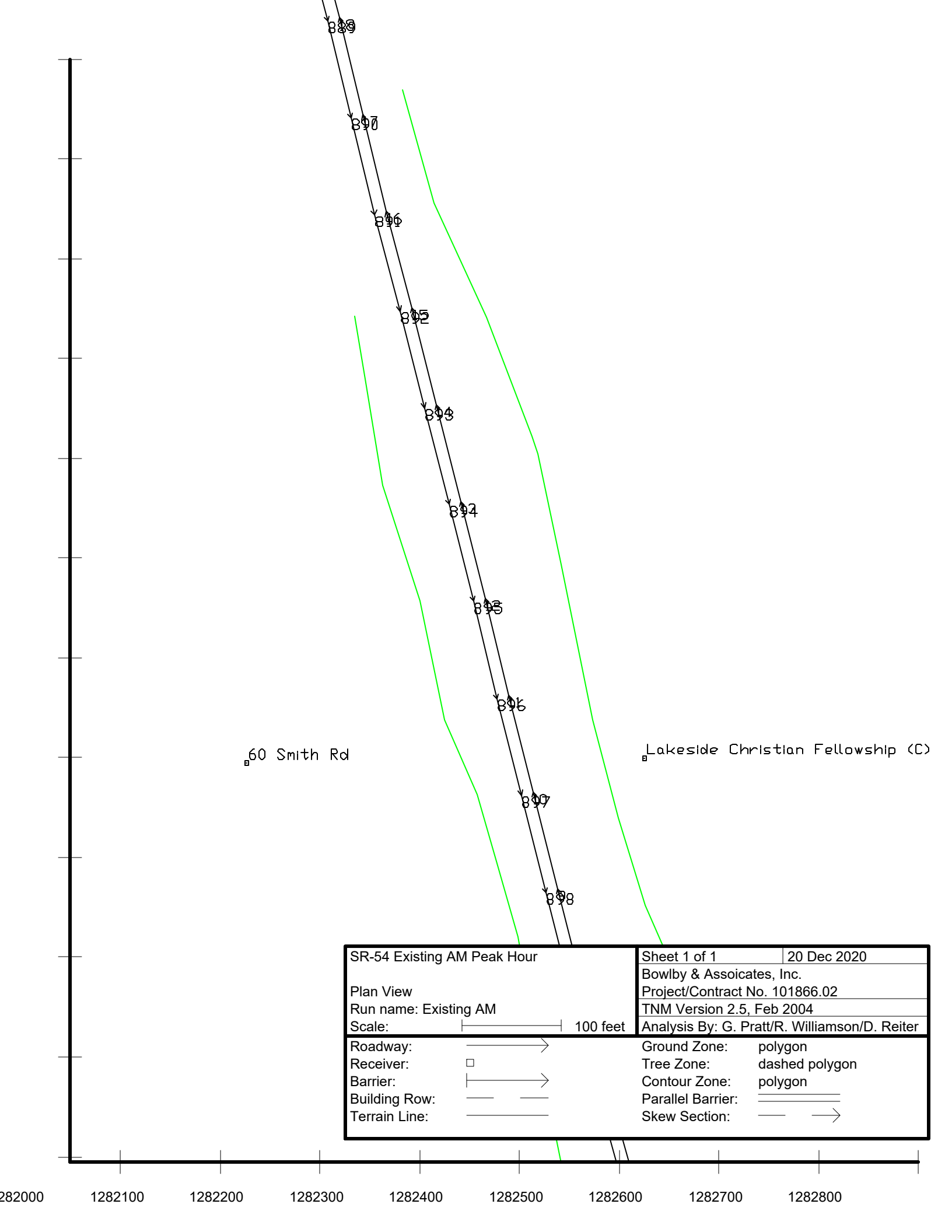
TNM Modeling Checklist

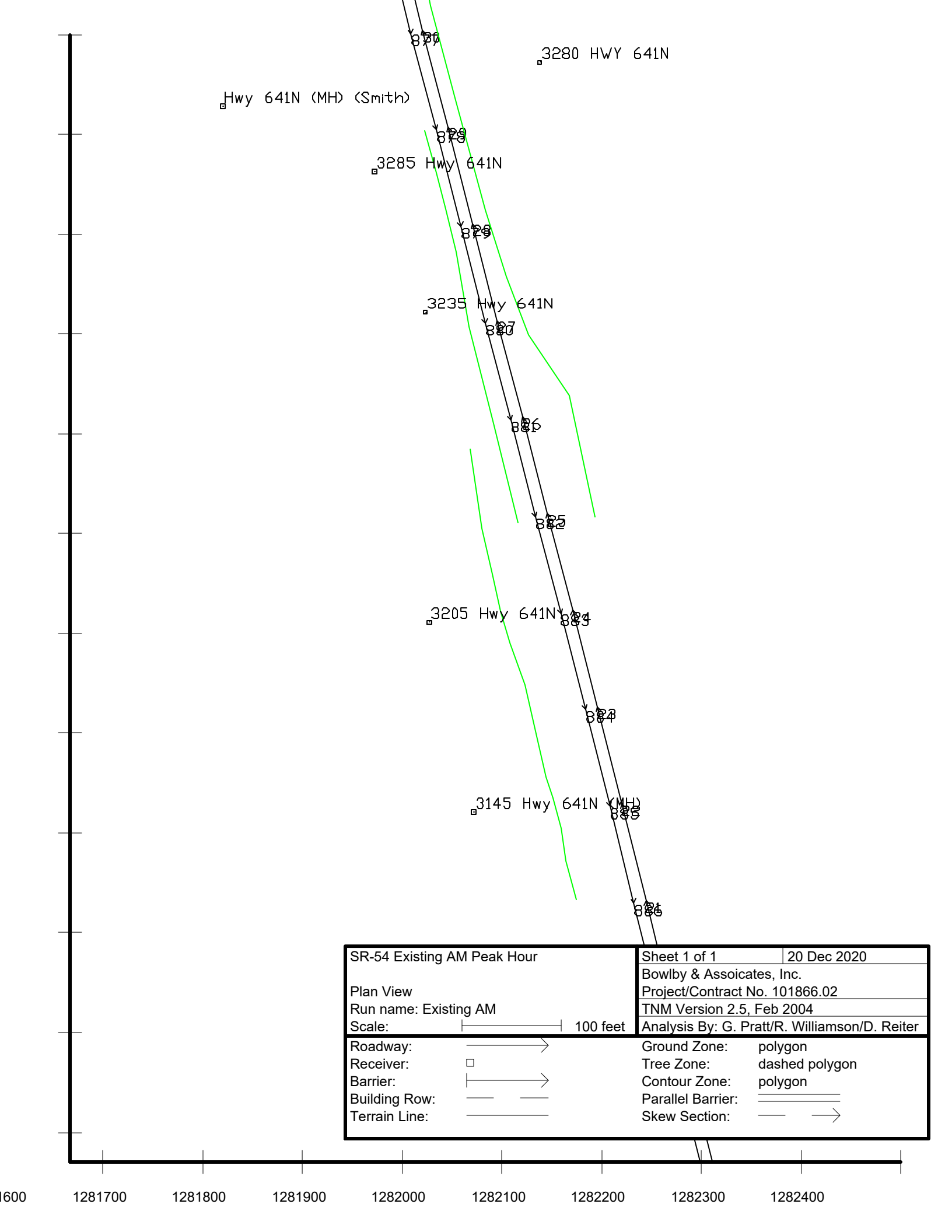
TNM Run	Existing AM		Modeling Year	
Input	Task	Complete?	Notes	
Receivers	Receivers named by address or stationing	<input checked="" type="checkbox"/>		
	Number of dwelling units set for each receiver (if applicable)	<input type="checkbox"/>	- "10230 Hwy 641N (Duplex)" should be 2; - "7621 Hwy 641N" does not seem to be freq human use area; - There are churches, playgrounds, and a field that should be 0 {Done}	
	Receivers in order of adjacent traffic flow	<input checked="" type="checkbox"/>		
	Elevations appear to be correct	<input checked="" type="checkbox"/>		
	Elevations at second-story locations at appropriate heights (if applicable)	<input checked="" type="checkbox"/>	n/a	
	Enough receivers modeled (for impacts and benefits)	<input checked="" type="checkbox"/>		
	NAC set per State's Policy for each receiver/ land use	<input checked="" type="checkbox"/>	n/a (externally)	
	Noise Reduction set per State's Policy	<input checked="" type="checkbox"/>	n/a (externally)	
	Substantial Increase set per State's Policy	<input checked="" type="checkbox"/>	n/a (externally)	
Barriers	Significant buildings modeled	<input checked="" type="checkbox"/>	(maybe add some buildings north of receiver "5655 Hwy 641") {Done}	
	Parapets, etc. modeled	<input checked="" type="checkbox"/>	n/a	
	Perturbable barriers modeled as applicable	<input checked="" type="checkbox"/>	n/a	
	Barrier names assigned	<input checked="" type="checkbox"/>		
	Barrier points named by stationing or length	<input checked="" type="checkbox"/>		
	Barrier heights assigned	<input checked="" type="checkbox"/>		
	Elevations appear to be correct	<input checked="" type="checkbox"/>		
	Increment and #up/down assigned	<input checked="" type="checkbox"/>	n/a	
	Barriers modeled on structure as appropriate and shielded lists are correct	<input checked="" type="checkbox"/>	n/a	









TNM Modeling Checklist

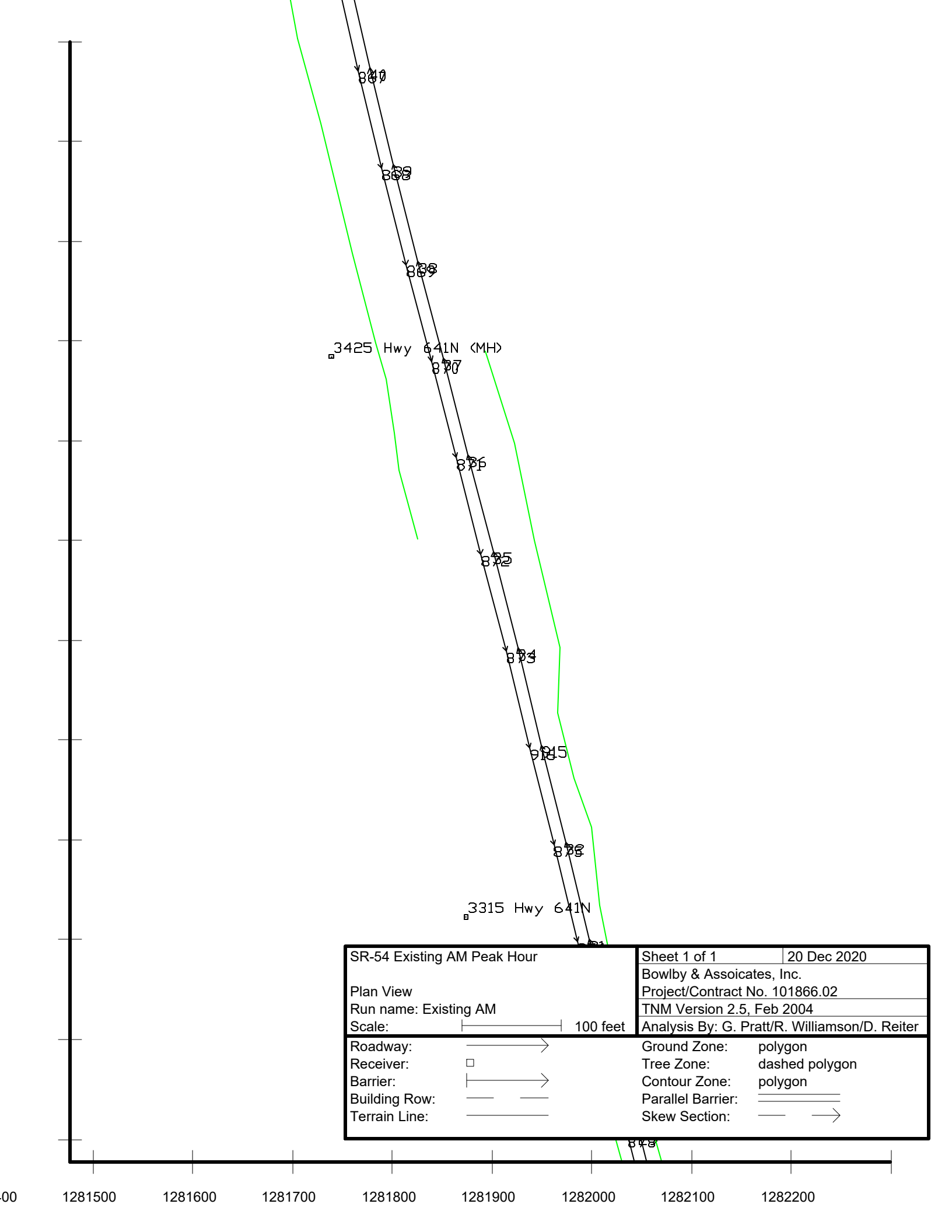
TNM Run	Existing AM		Modeling Year	
Input	Task	Complete?	Notes	
Building Rows	Building rows modeled per FHWA Guidance	<input checked="" type="checkbox"/>	n/a	
	Elevations appear to be correct	<input checked="" type="checkbox"/>	n/a	
	Height and percentage assigned	<input checked="" type="checkbox"/>	n/a	
Terrain Lines	Significant terrain features modeled	<input checked="" type="checkbox"/>		
	Terrain line names assigned	<input checked="" type="checkbox"/>	(not crucial) some generic	
	Elevations appear to be correct	<input checked="" type="checkbox"/>		
Ground Zones	Ground Zones modeled per FHWA Guidance	<input checked="" type="checkbox"/>		
	Ground zone names assigned	<input checked="" type="checkbox"/>		
	Ground zone types assigned	<input checked="" type="checkbox"/>		
Tree Zones	Tree zones modeled per FHWA Guidance	<input checked="" type="checkbox"/>	n/a	
	Tree zone names assigned	<input checked="" type="checkbox"/>	n/a	
	Elevations appear to be correct	<input checked="" type="checkbox"/>	n/a	
Perspective Views	Perspective views checked for accuracy	<input checked="" type="checkbox"/>		
Skew Views	Numerous skew views cut and checked for accuracy	<input checked="" type="checkbox"/>		
Input Check	Input Check completed and errors fixed/documented	<input checked="" type="checkbox"/>		











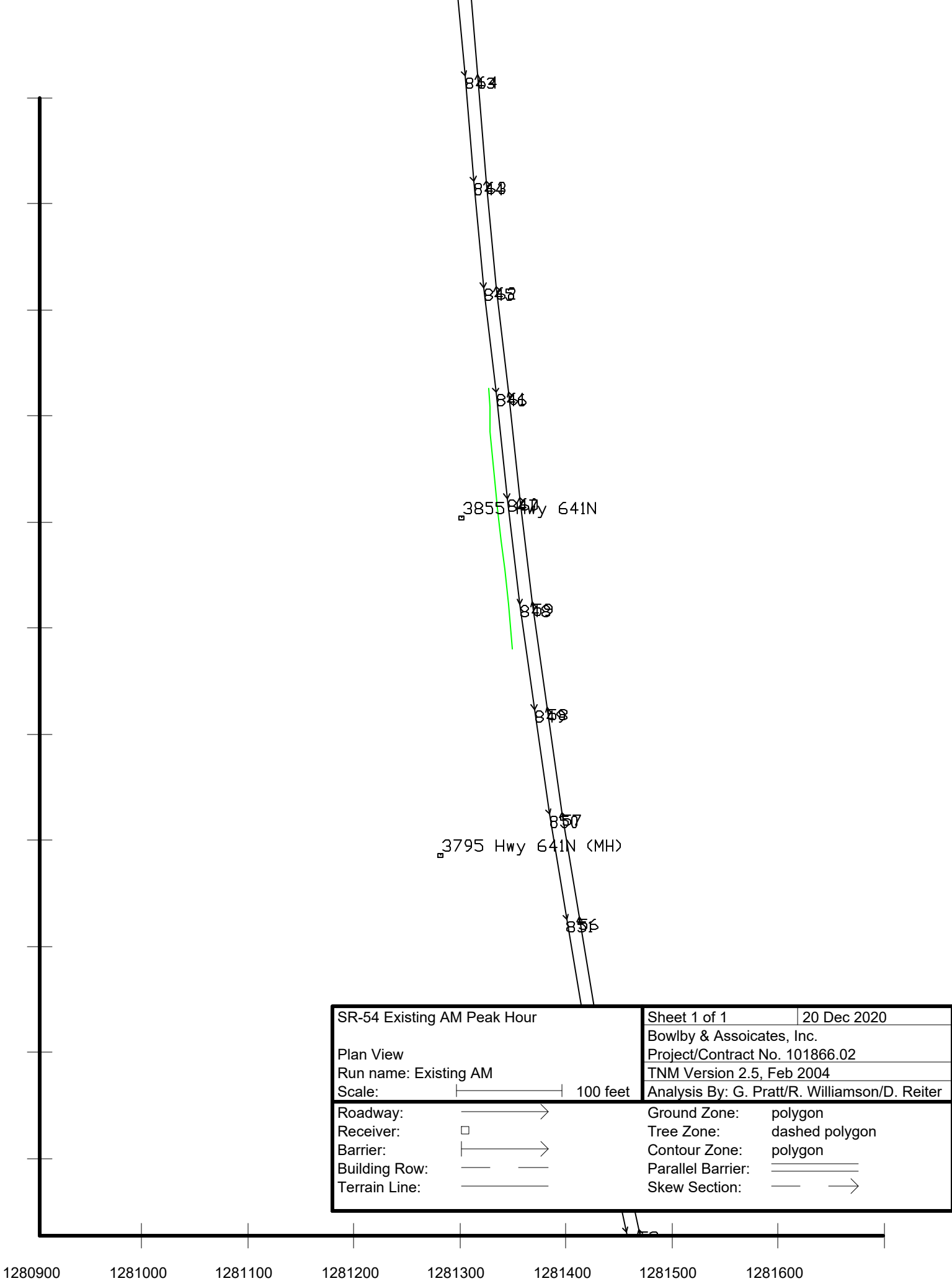


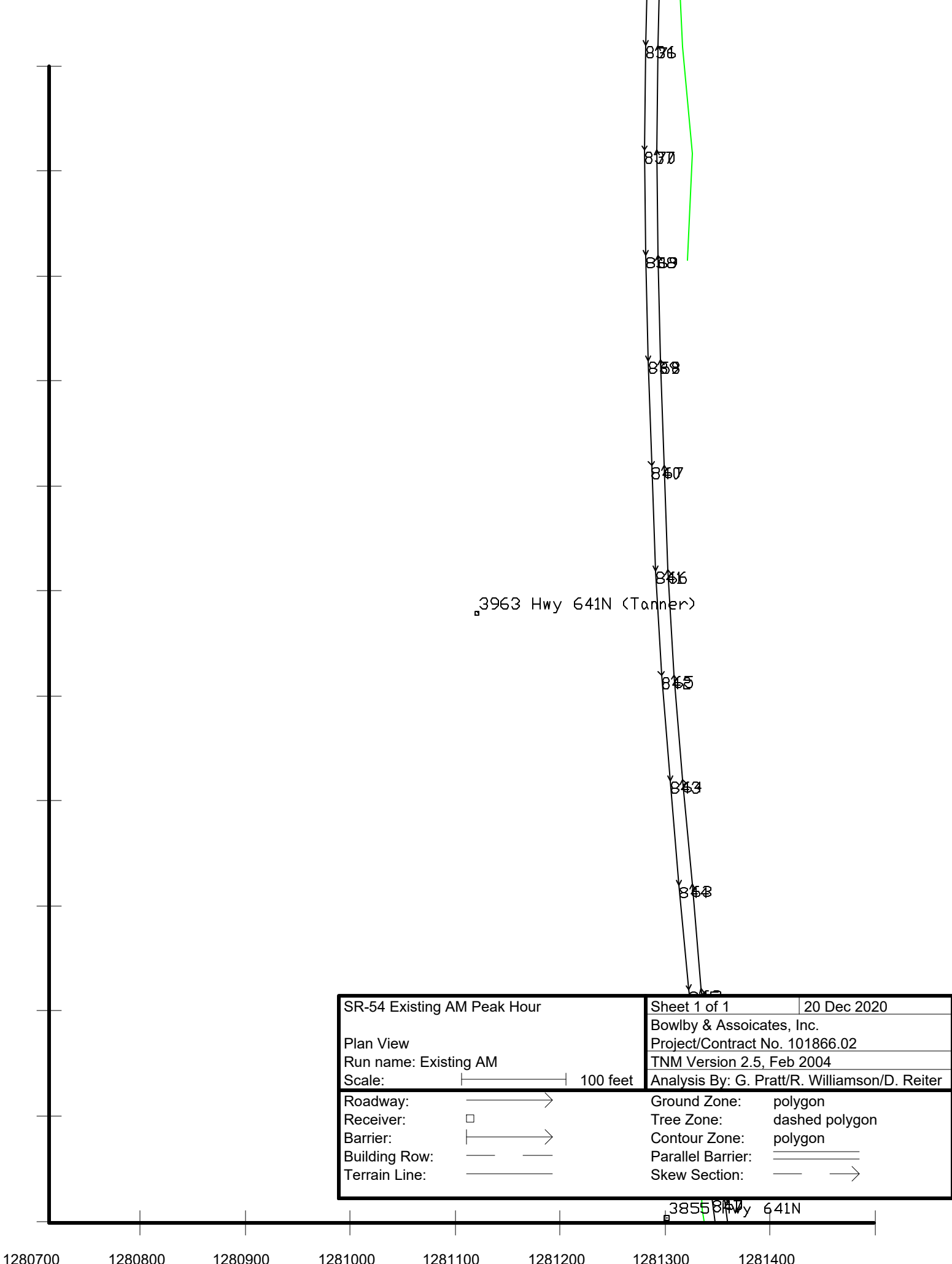


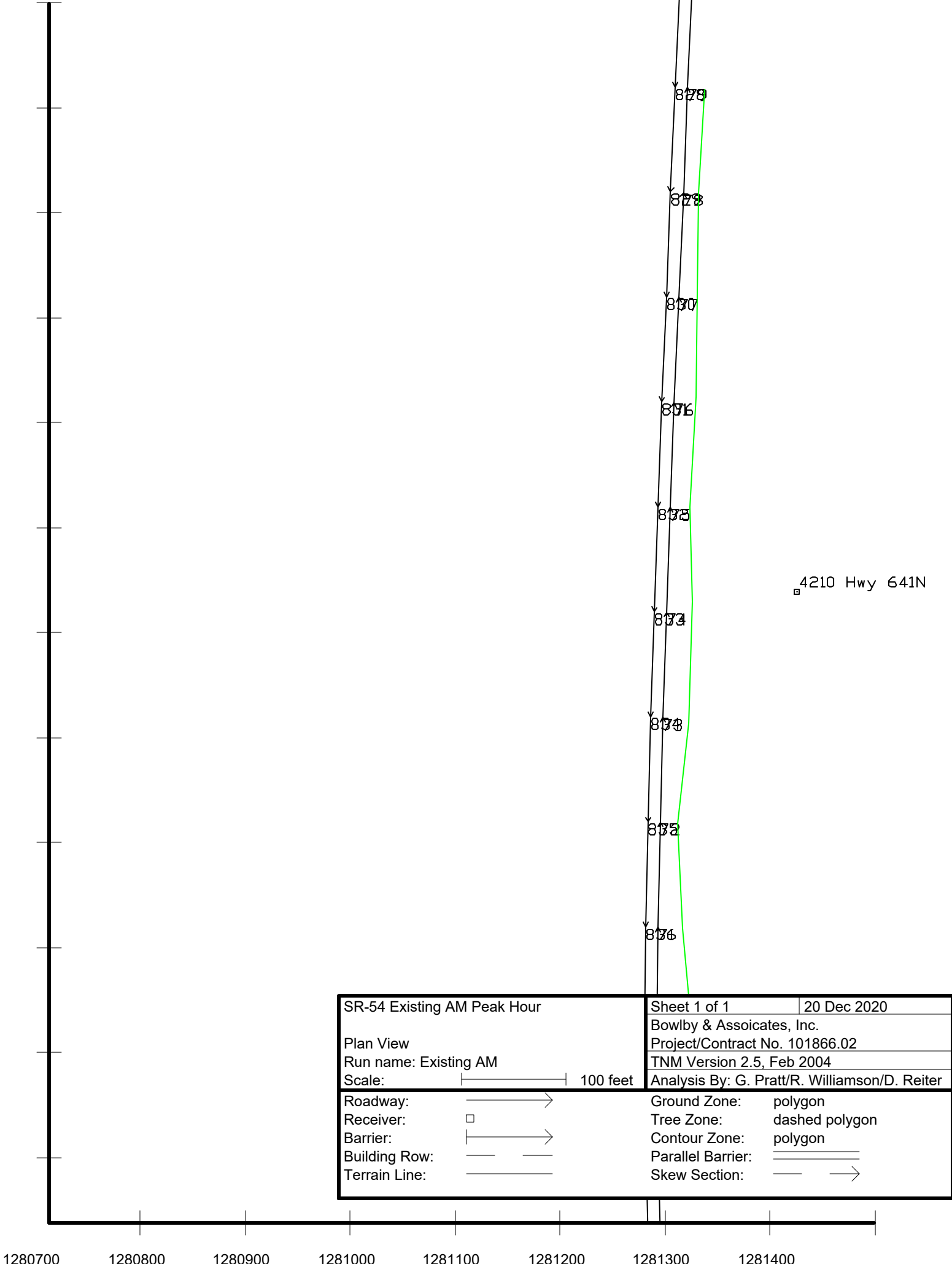
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Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	











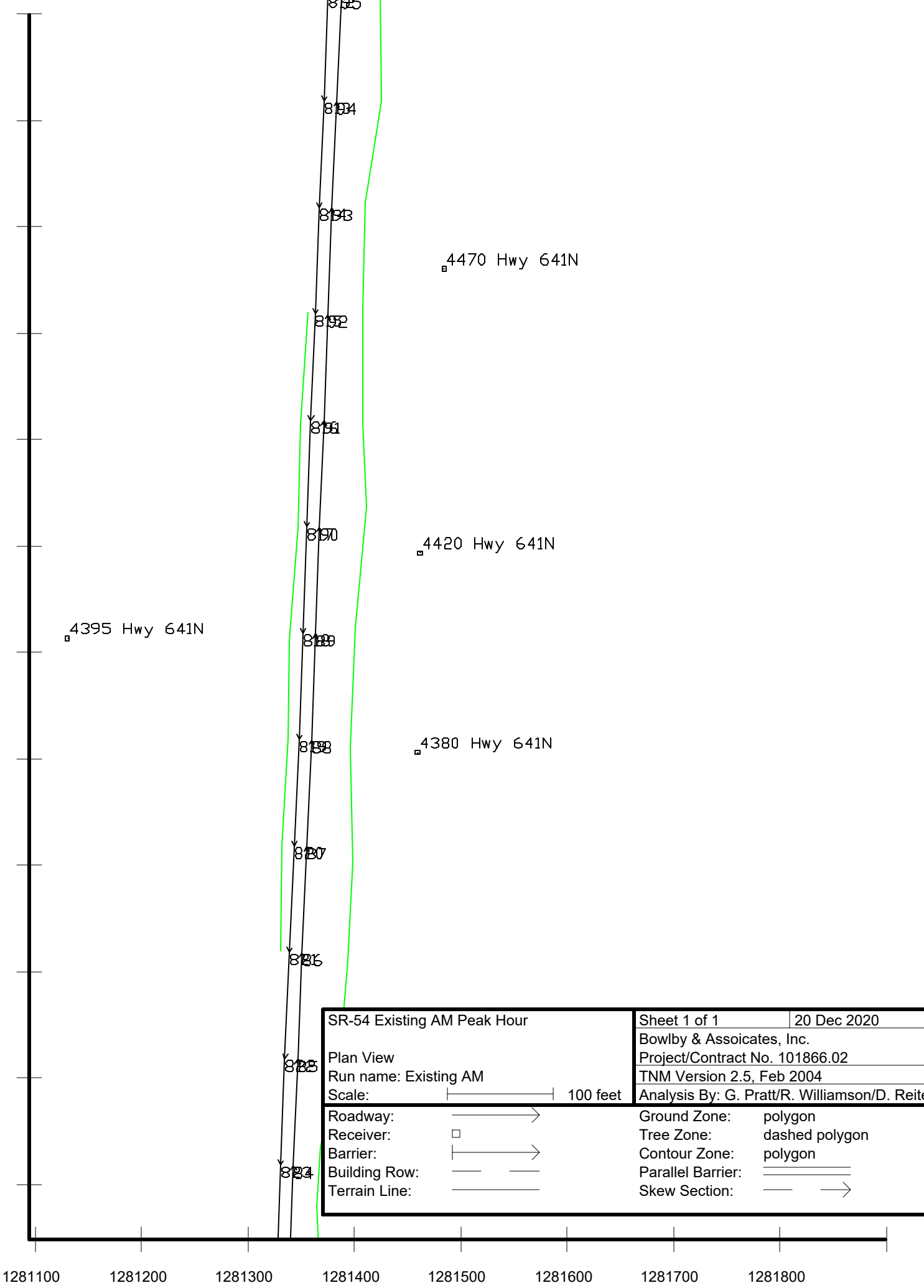
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Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		











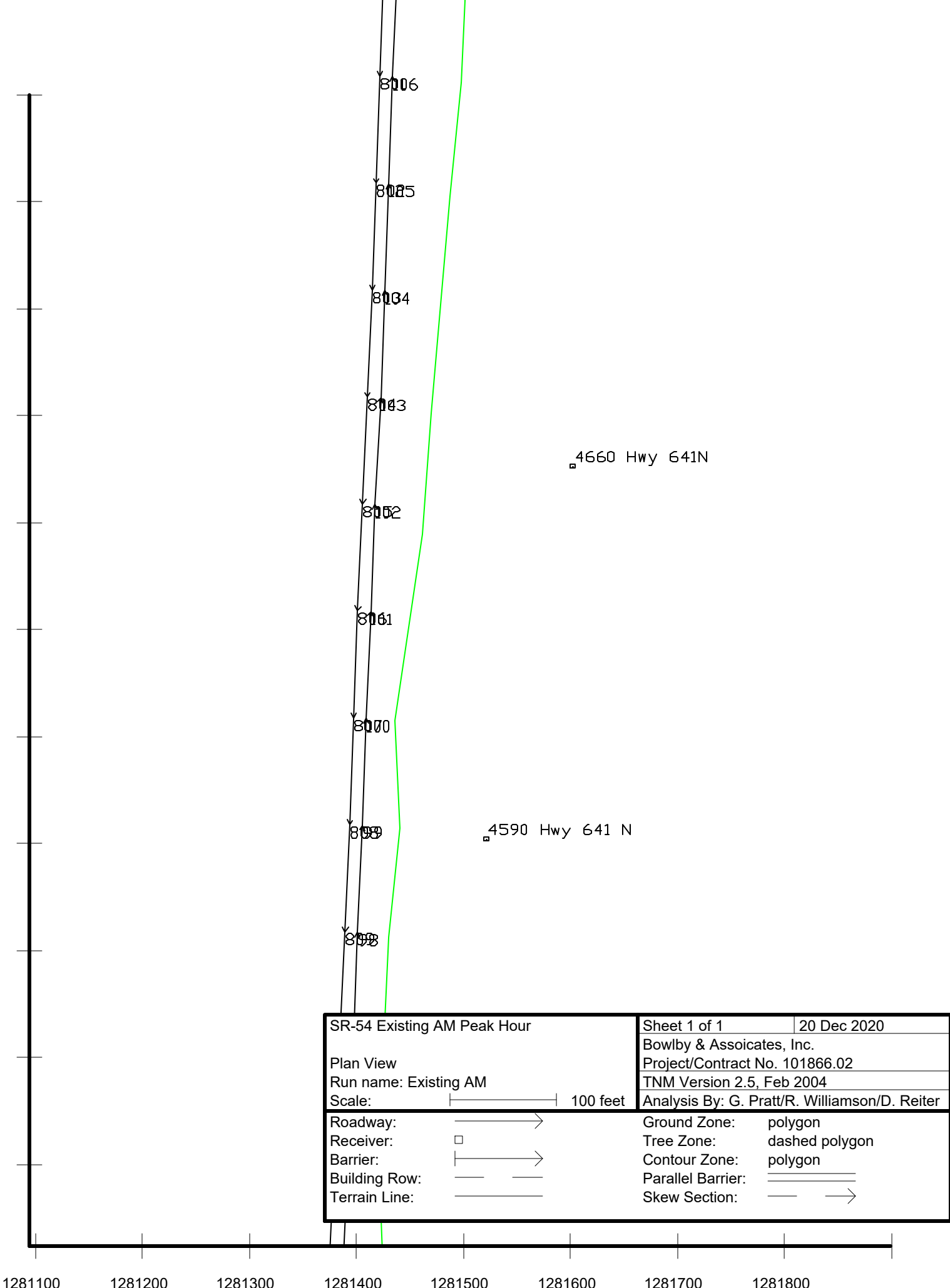












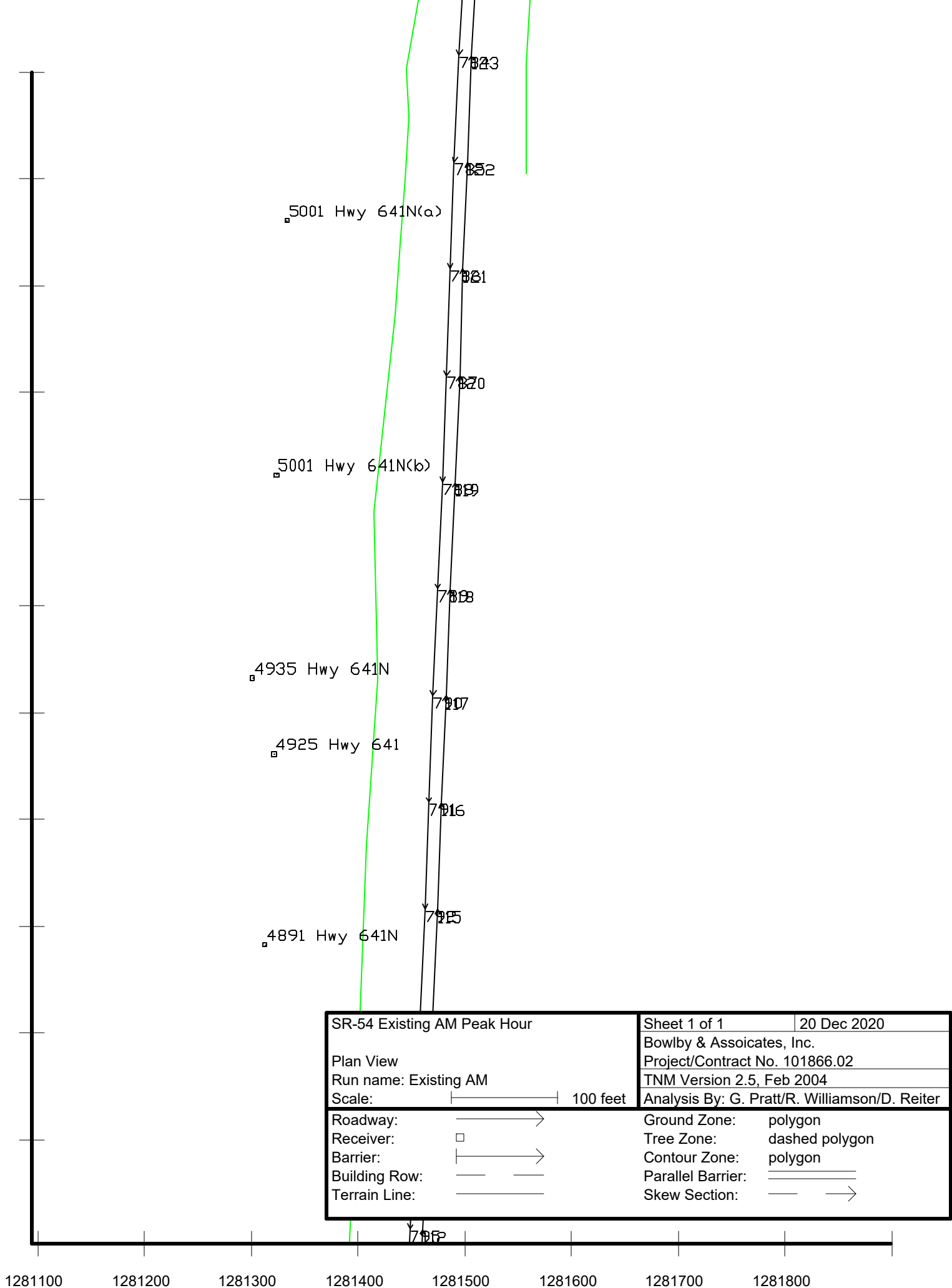
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Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

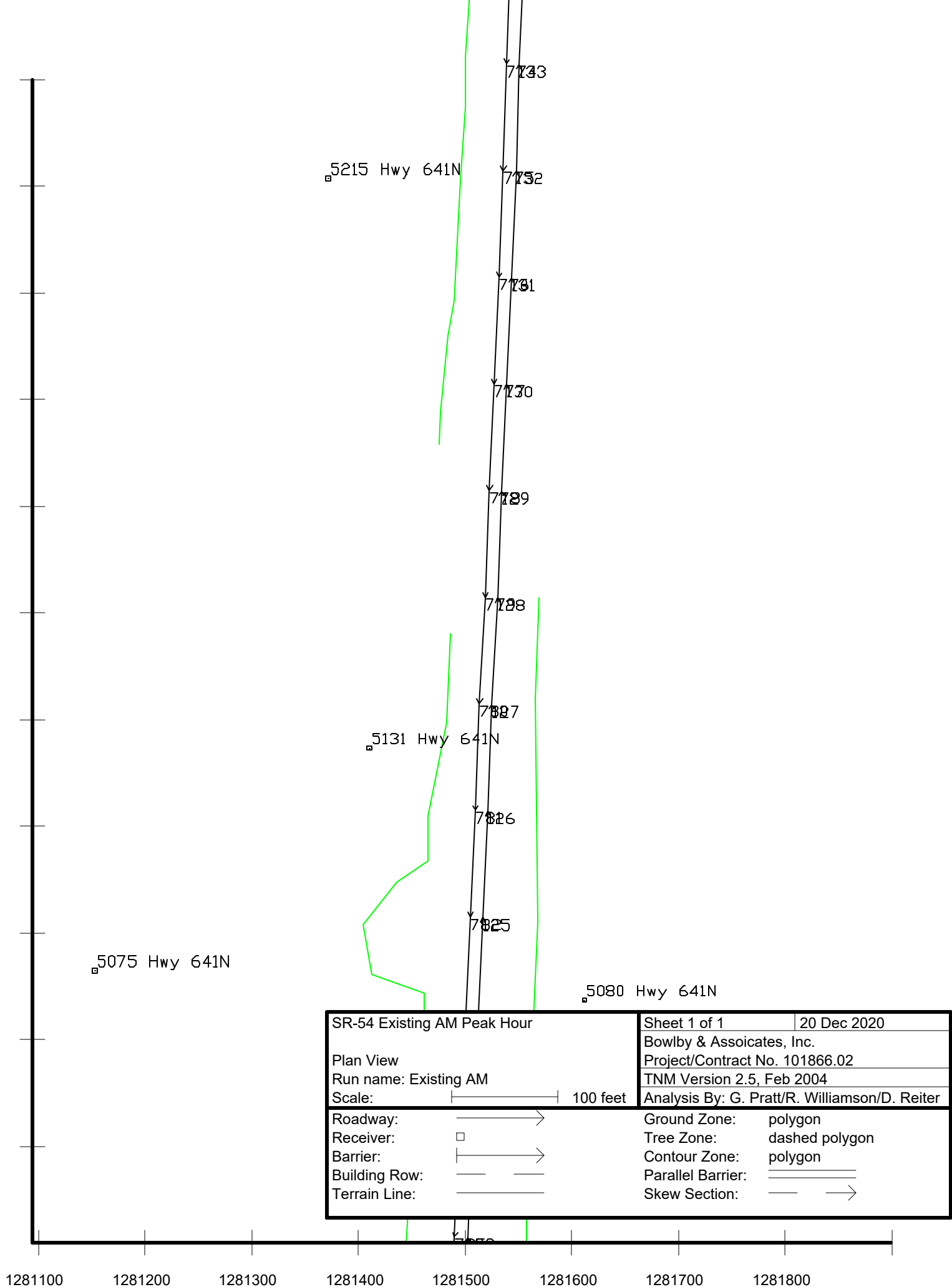


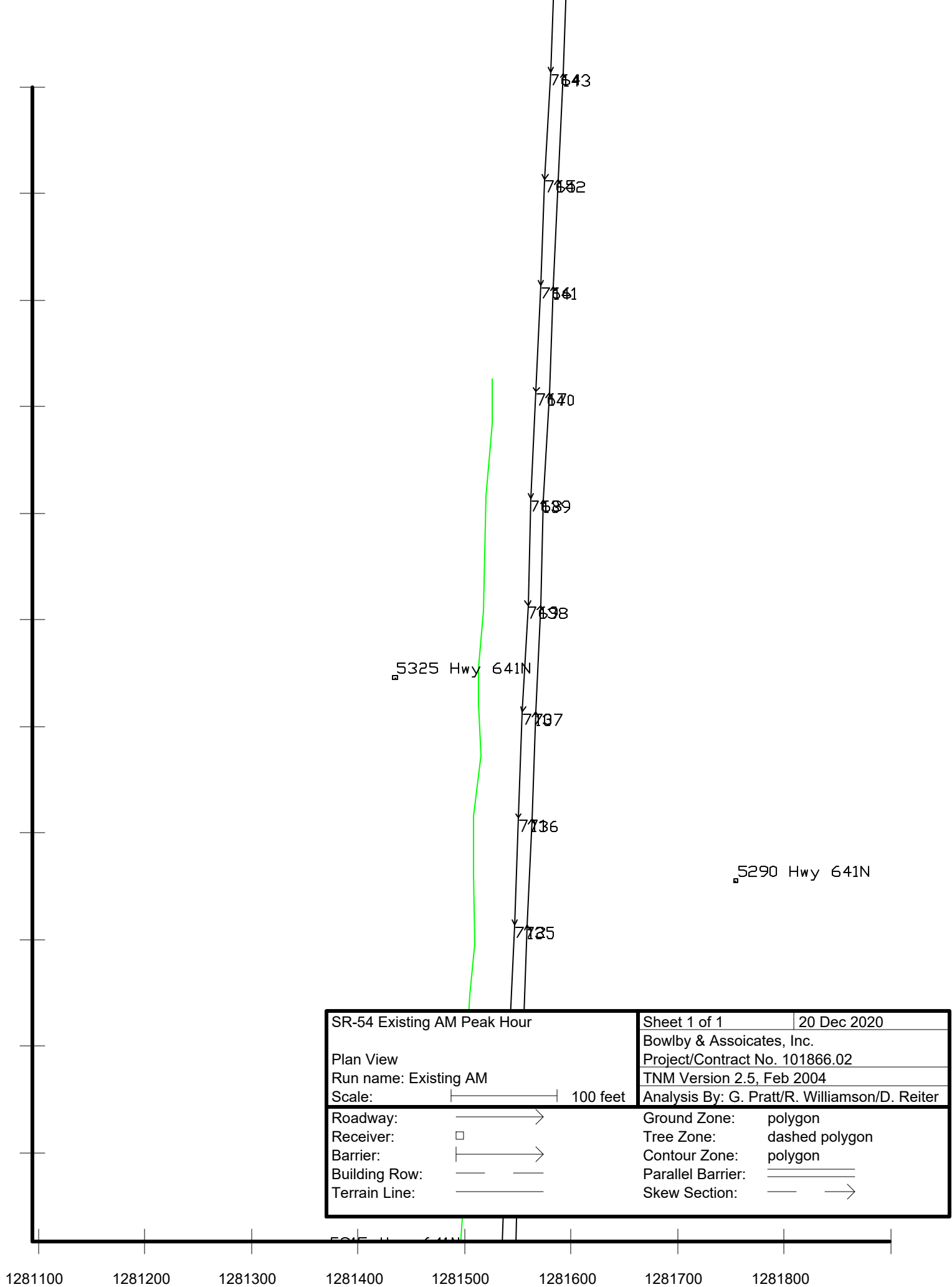
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Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

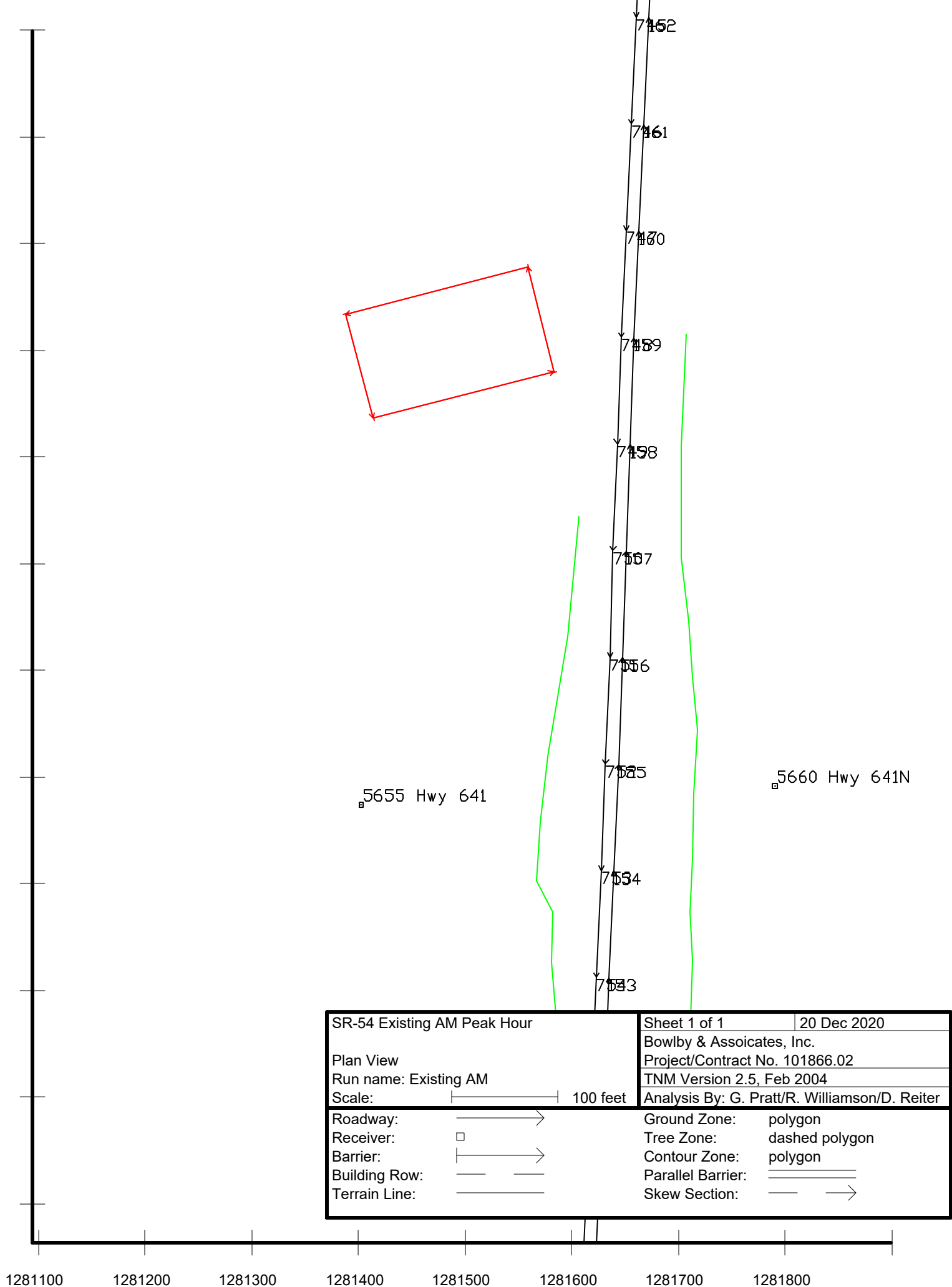


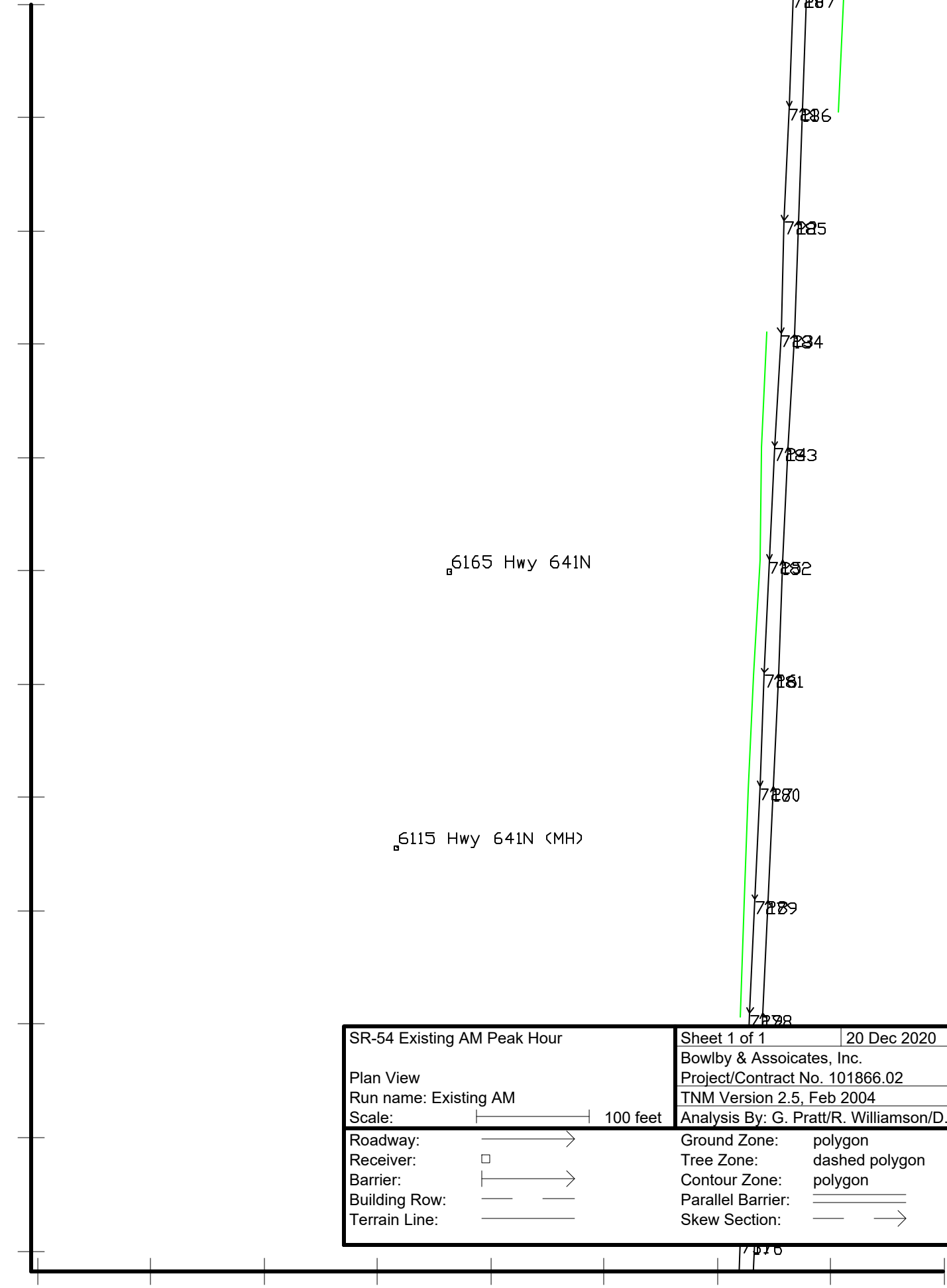
SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 		Ground Zone: polygon	
Receiver: 		Tree Zone: dashed polygon	
Barrier: 		Contour Zone: polygon	
Building Row: 		Parallel Barrier: 	
Terrain Line: 		Skew Section: 	













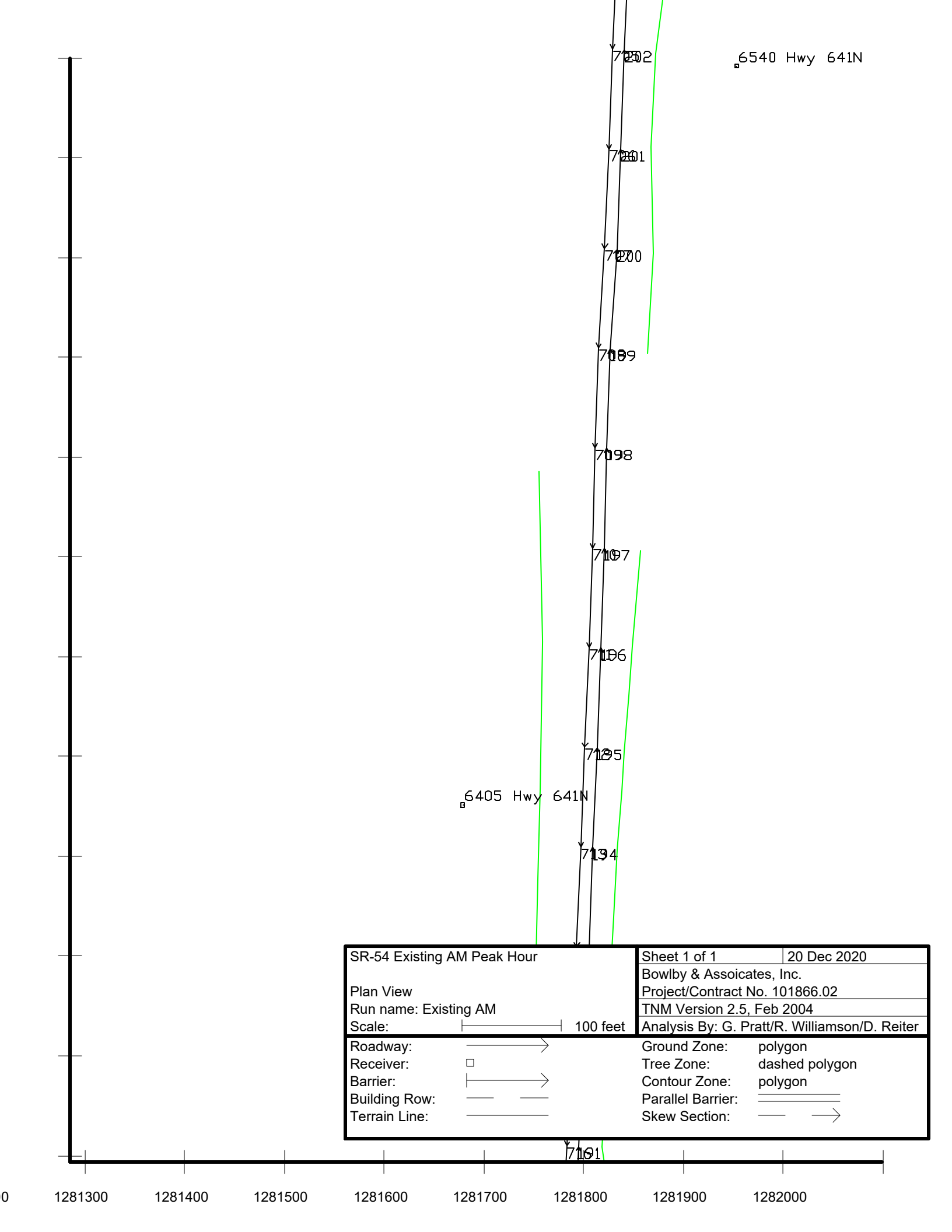


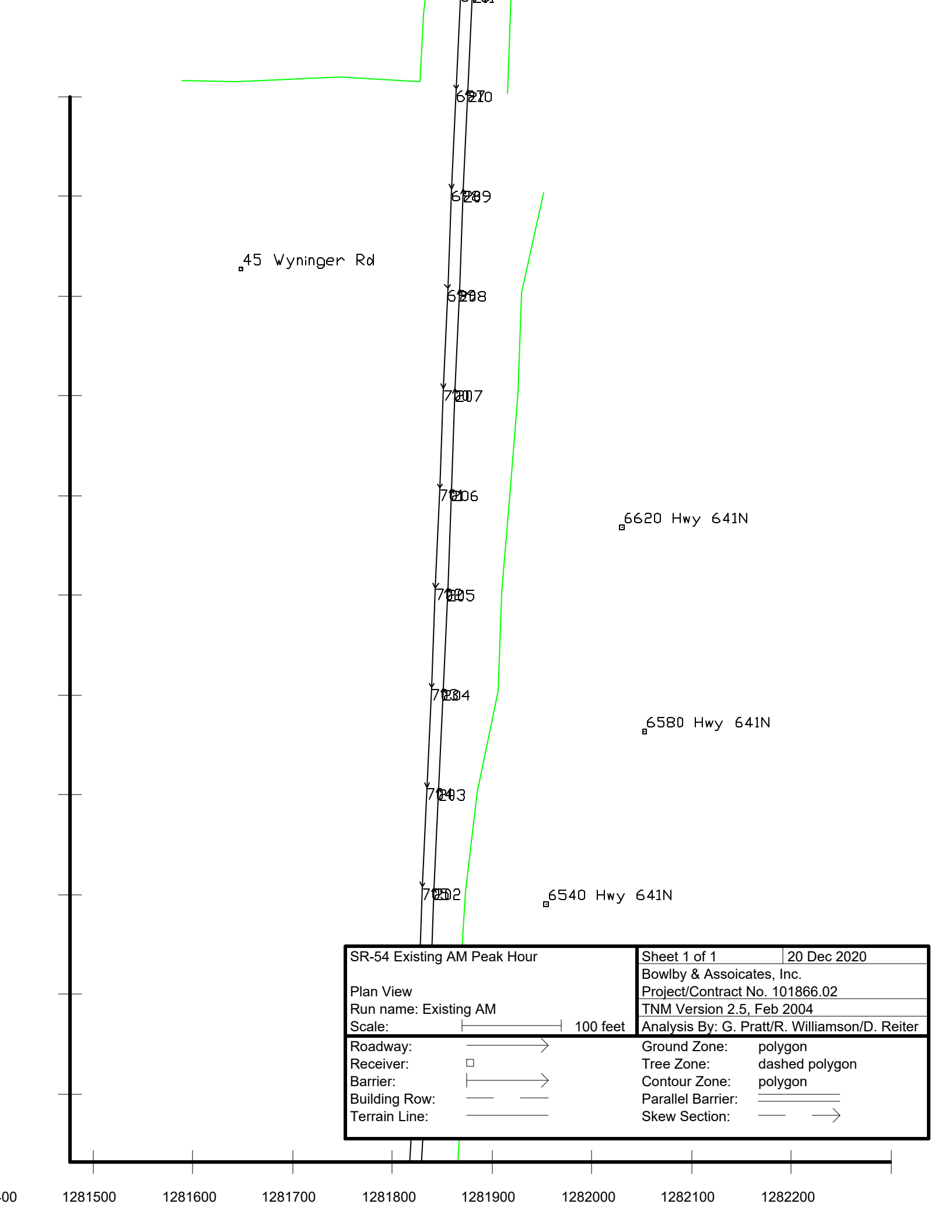




1281100 1281200 1281300 1281400 1281500 1281600 1281700 1281800

SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	





45 Wyninger Rd

6210

6289

6288

7207

7206

7205

7234

7243

7252

6620 Hwy 641N

6580 Hwy 641N

6540 Hwy 641N


SR-54 Existing AM Peak Hour


Plan View

Run name: Existing AM


Scale: 100 feet

Roadway: 

Receiver: 

Barrier: 

Building Row: 

Terrain Line: 

Sheet 1 of 1

20 Dec 2020

Bowlby & Associates, Inc.

Project/Contract No. 101866.02


TNM Version 2.5, Feb 2004


Analysis By: G. Pratt/R. Williamson/D. Reiter

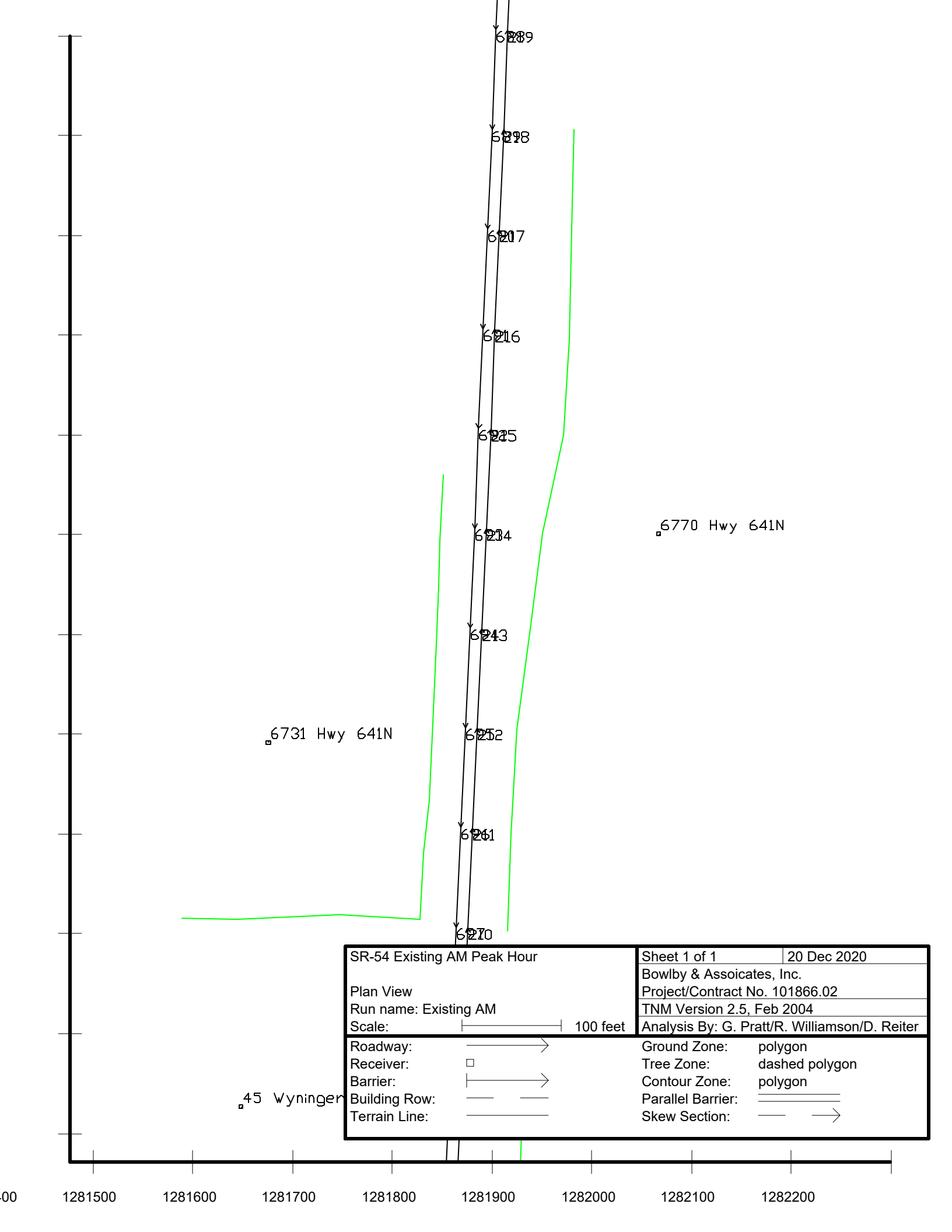
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Tree Zone: dashed polygon

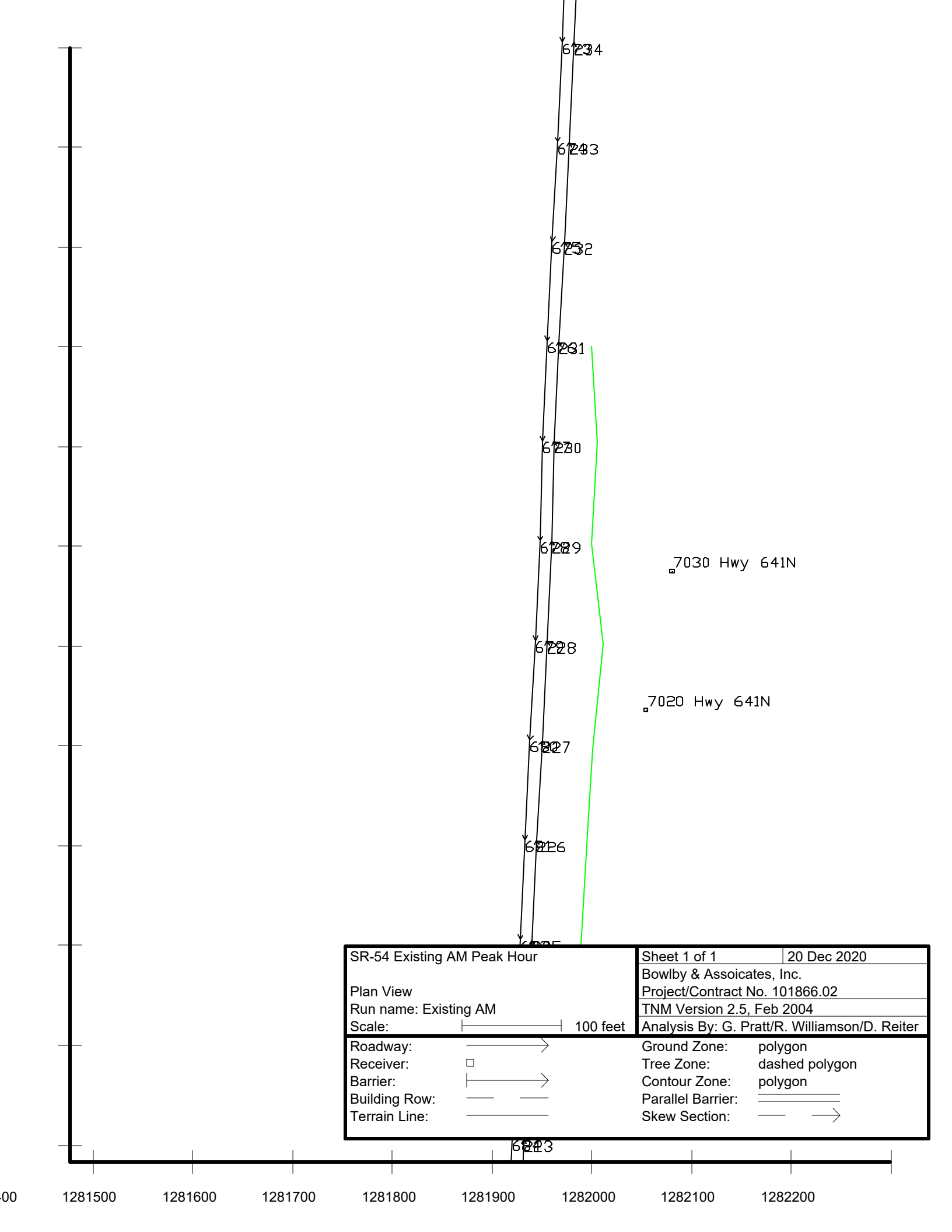
Contour Zone: polygon









Parallel Barrier: 

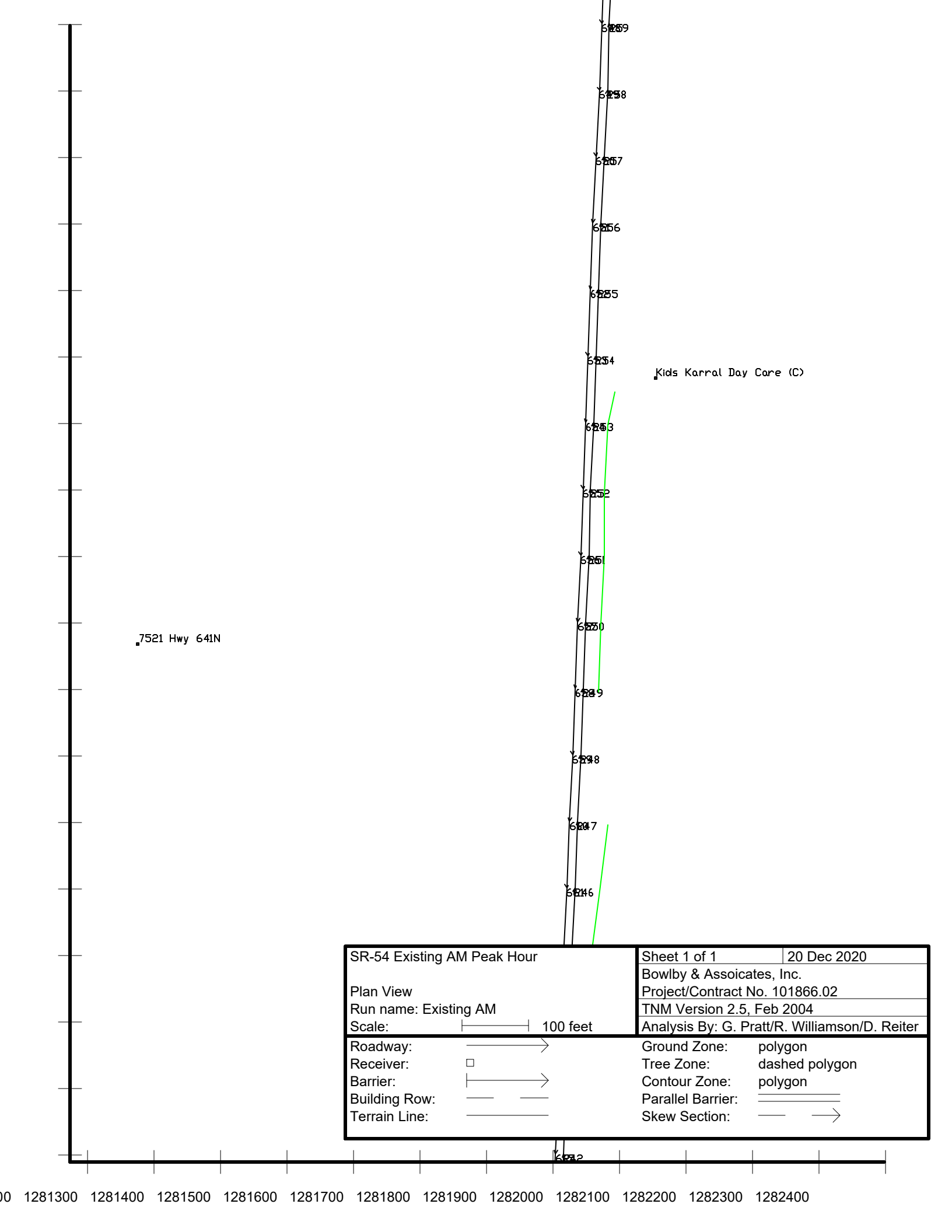
Skew Section: 



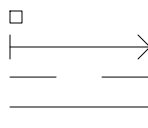



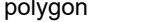

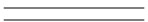


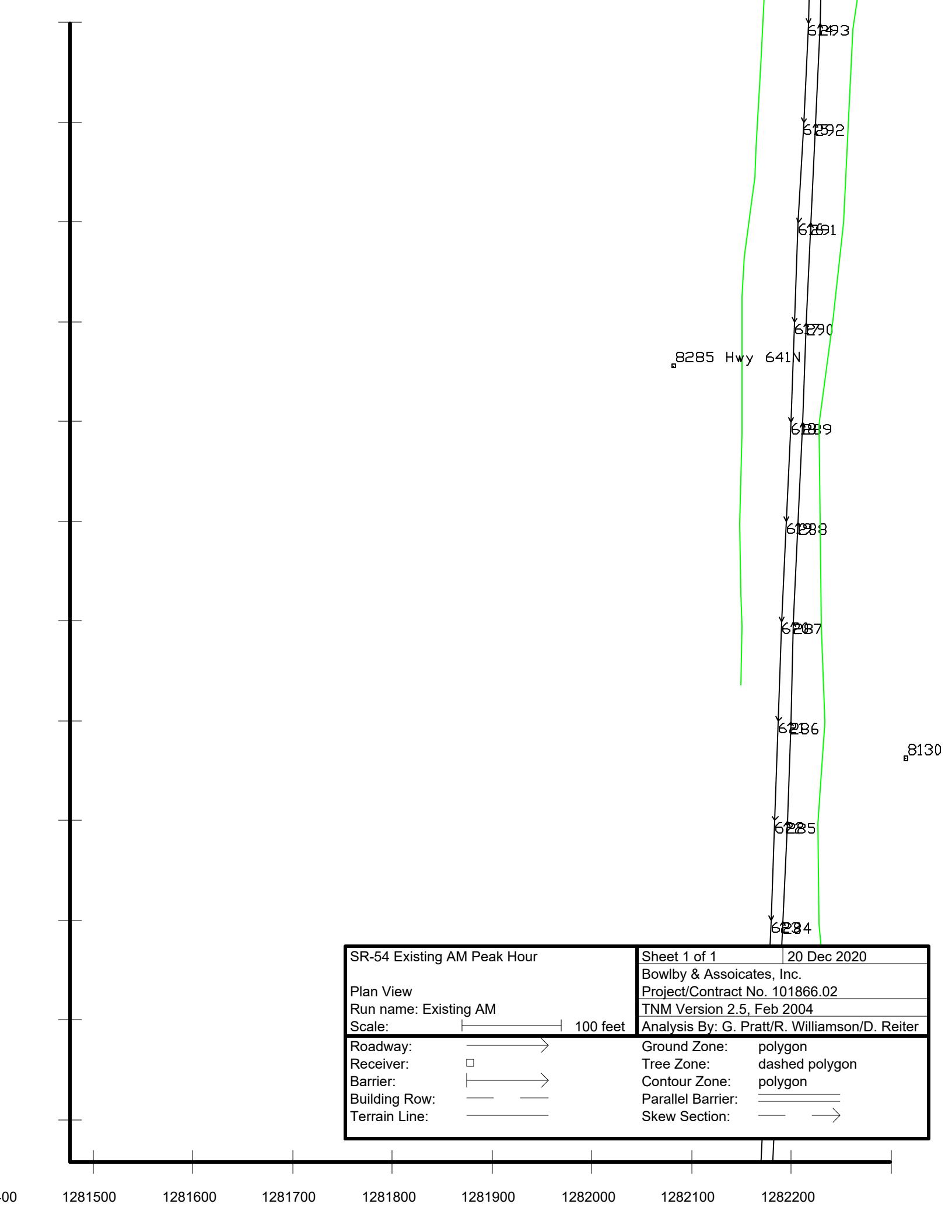
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Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	






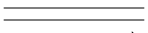




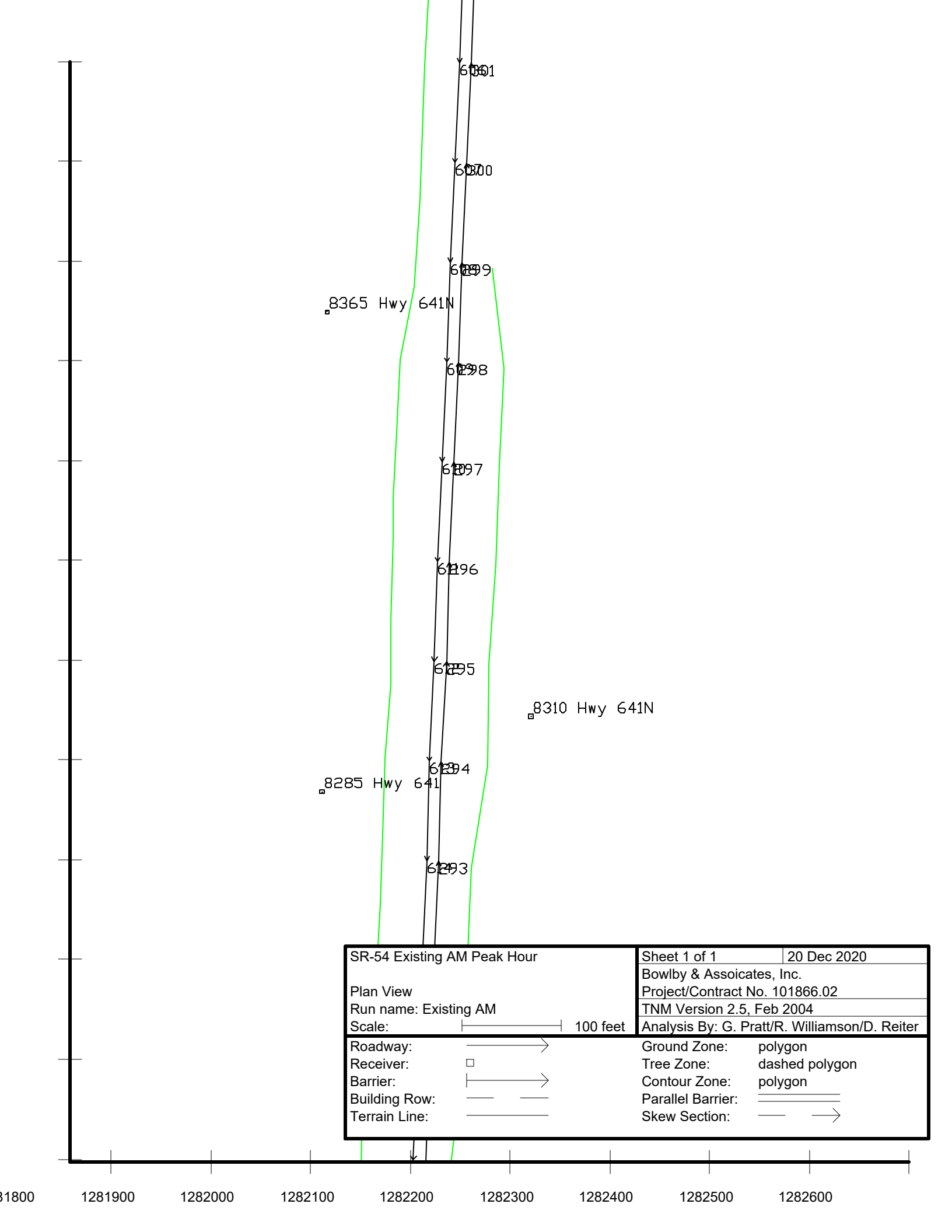
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Plan View		Bowlby & Associates, Inc.	
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Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

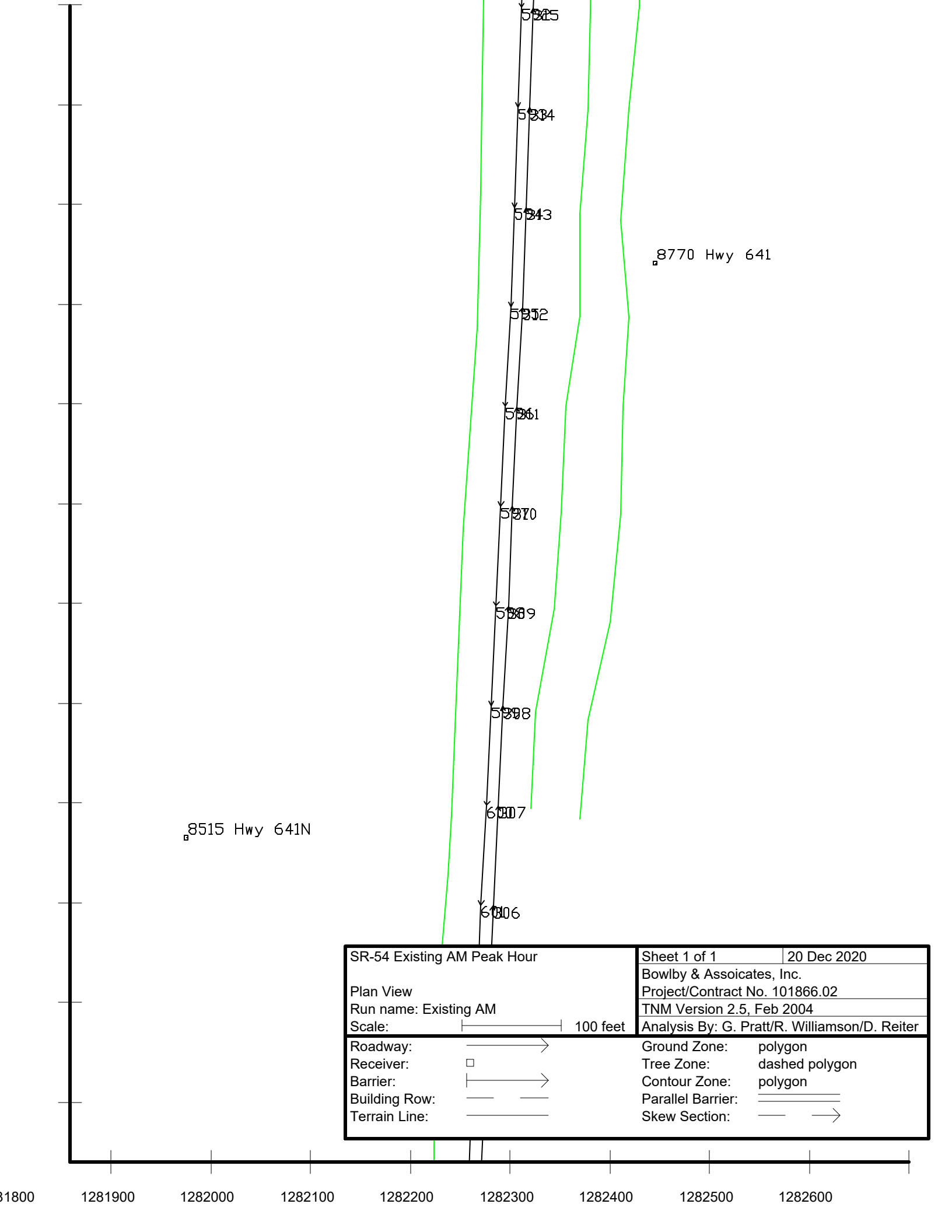


SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 		Ground Zone:	polygon
Receiver: 		Tree Zone:	dashed polygon
Barrier: 		Contour Zone:	polygon
Building Row: 		Parallel Barrier:	
Terrain Line: 		Skew Section:	



SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	





5925

5924

5923

5922

5921

5920

5919









5918

5917

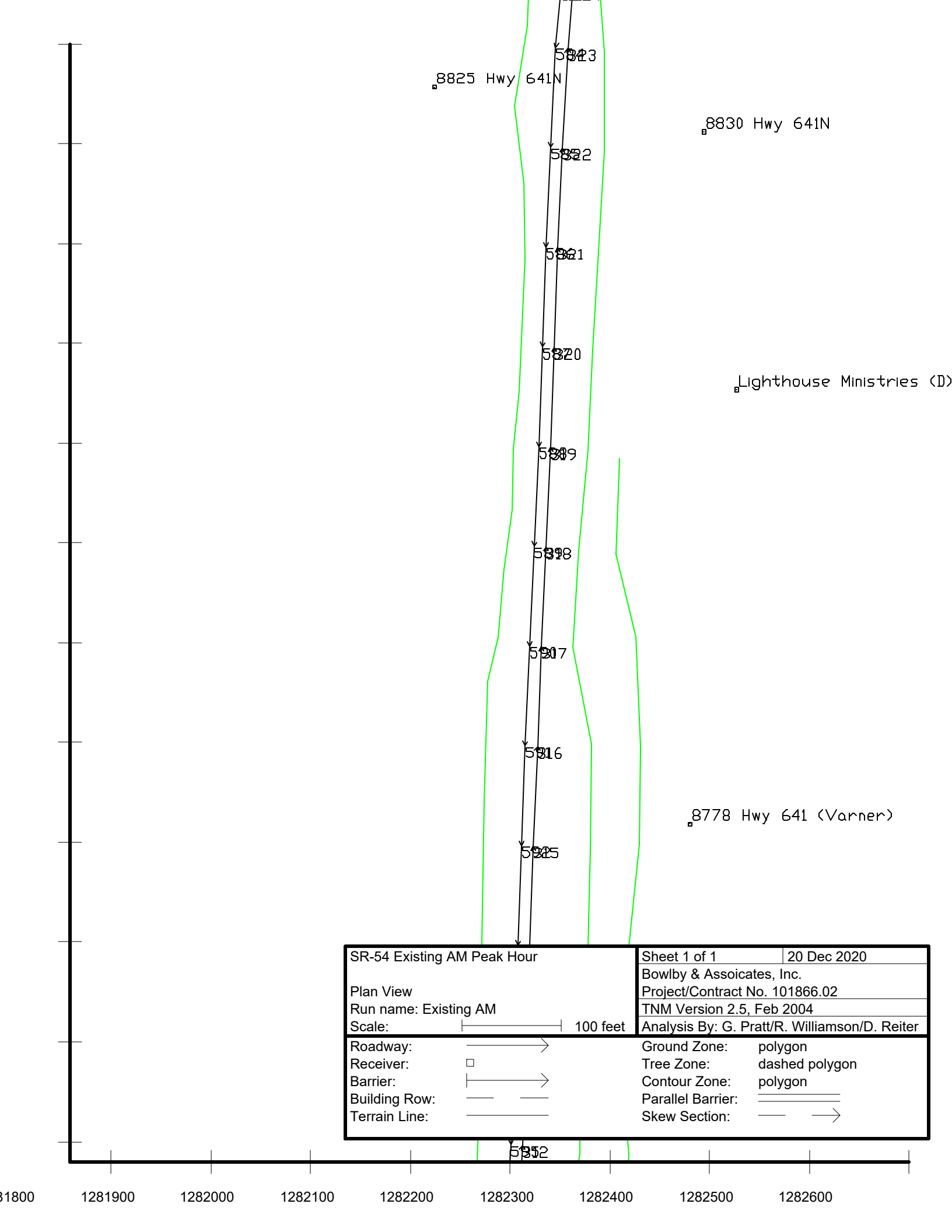
5916

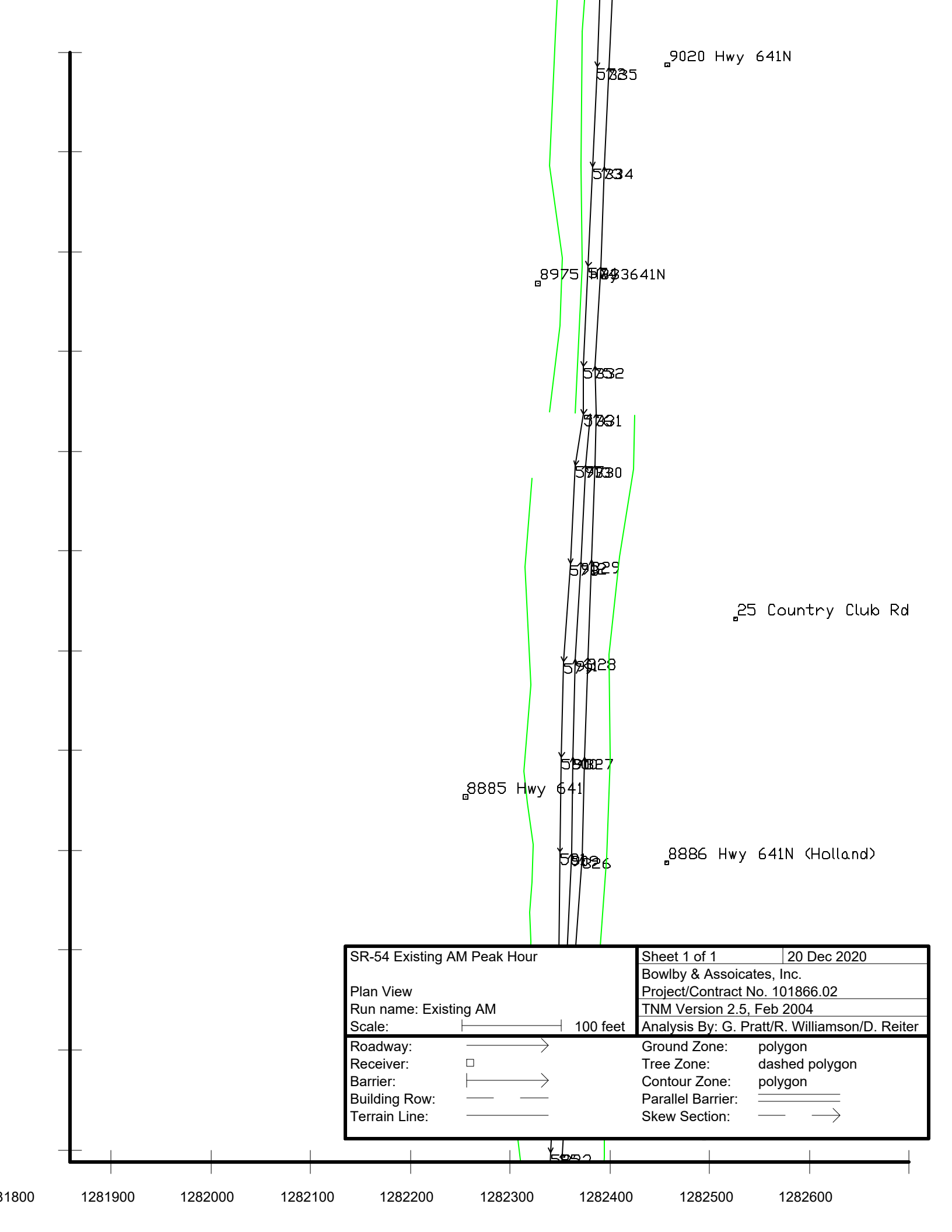
8515 Hwy 641N









8770 Hwy 641

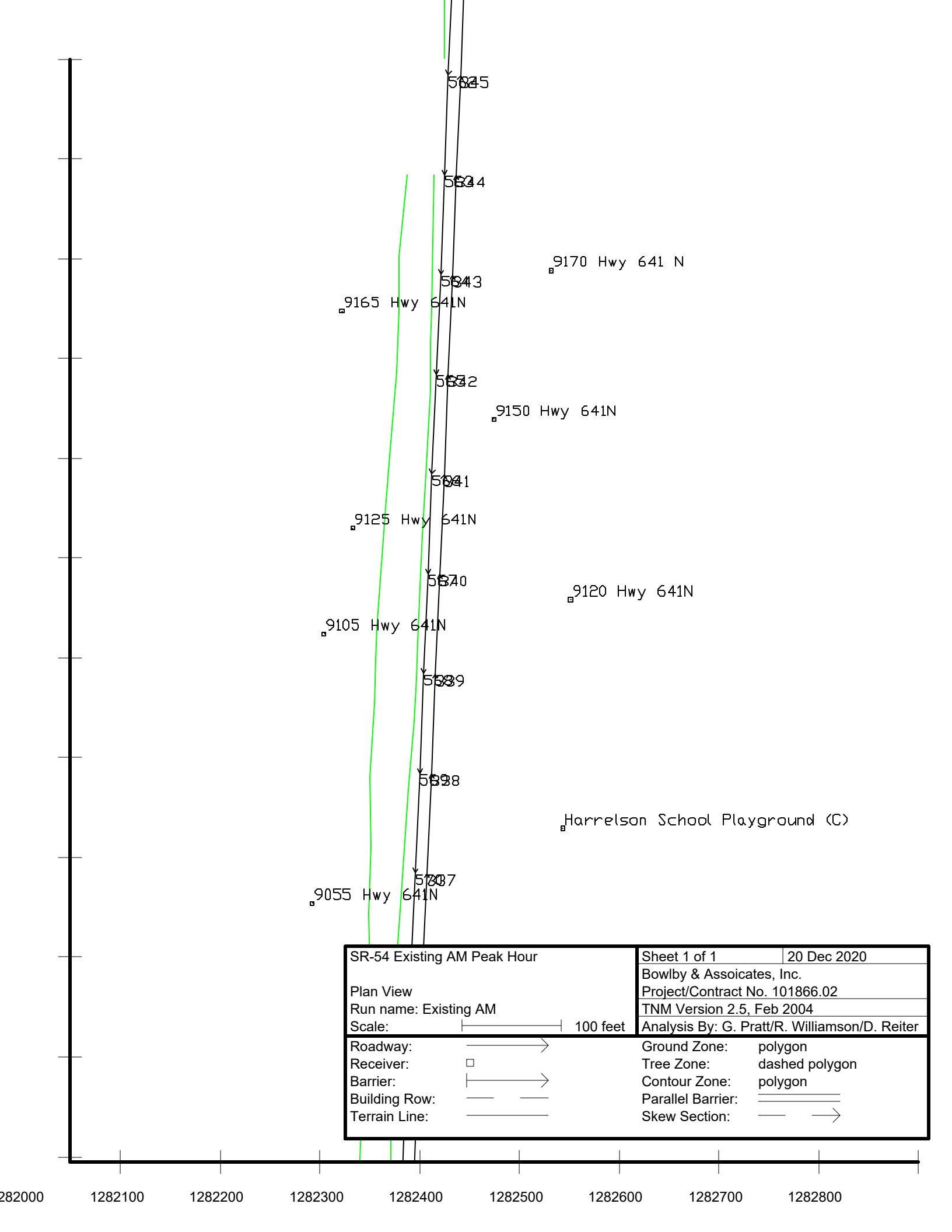
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Scale:  100 feet		TNM Version 2.5, Feb 2004	
Analysis By: G. Pratt/R. Williamson/D. Reiter			
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		









1281800 1281900 1282000 1282100 1282200 1282300 1282400 1282500 1282600

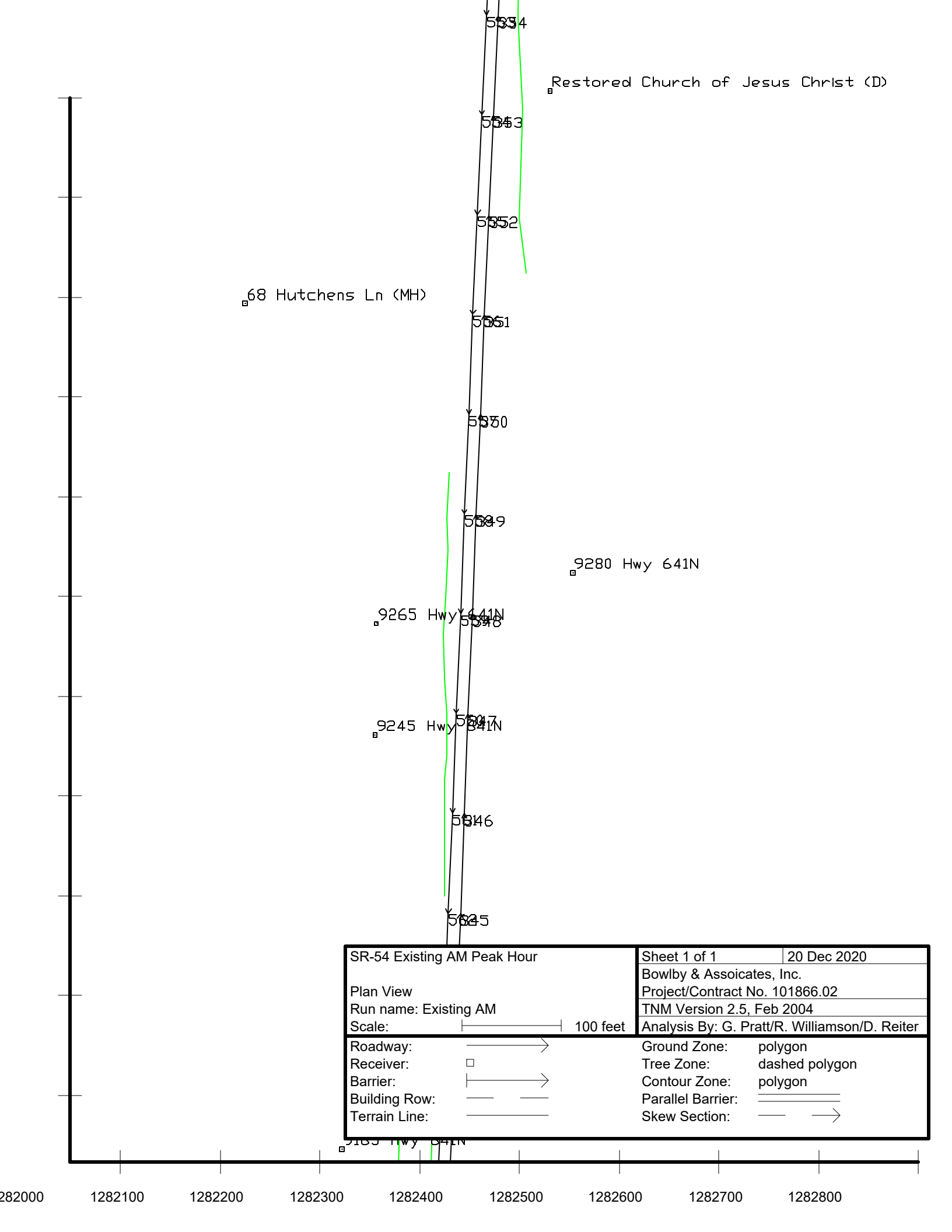


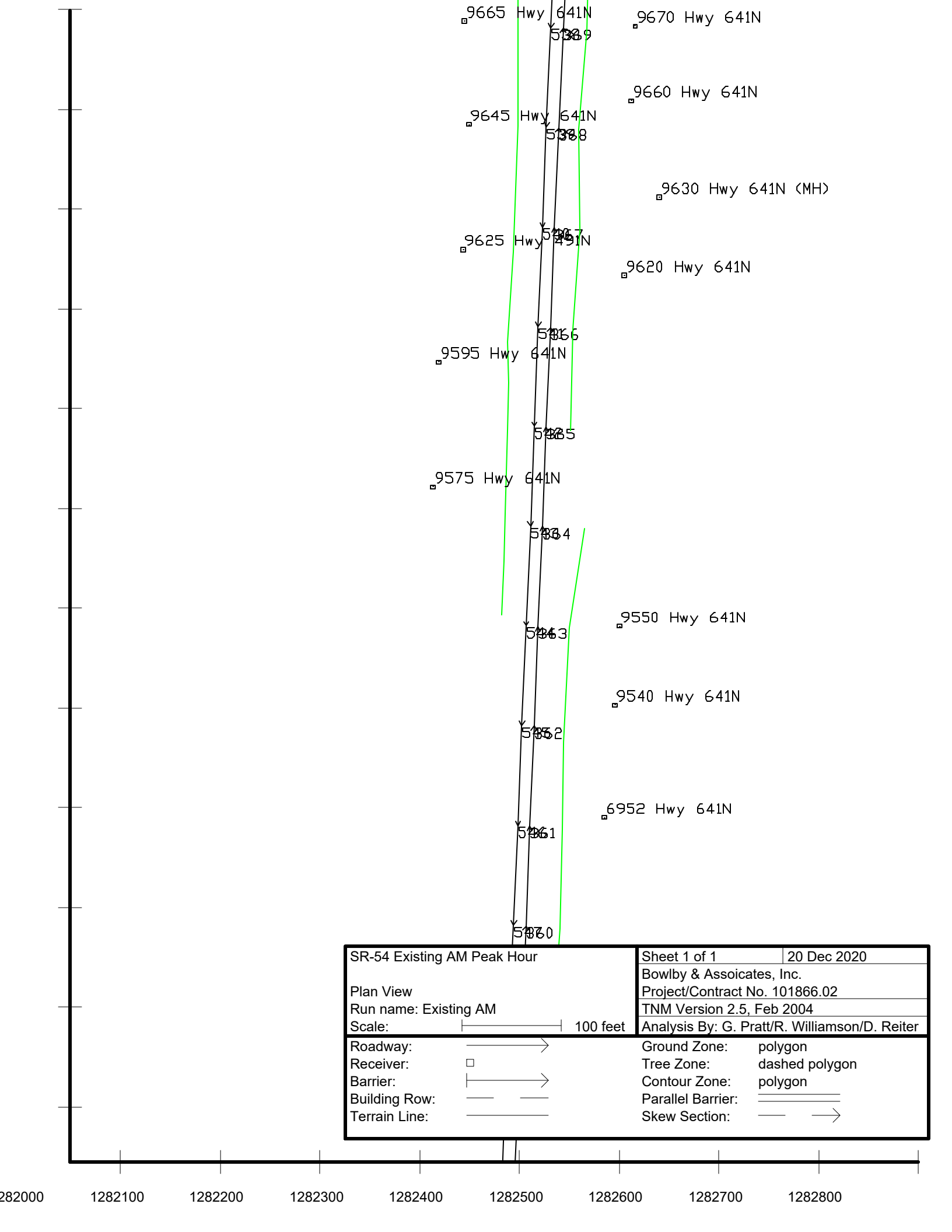


SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	











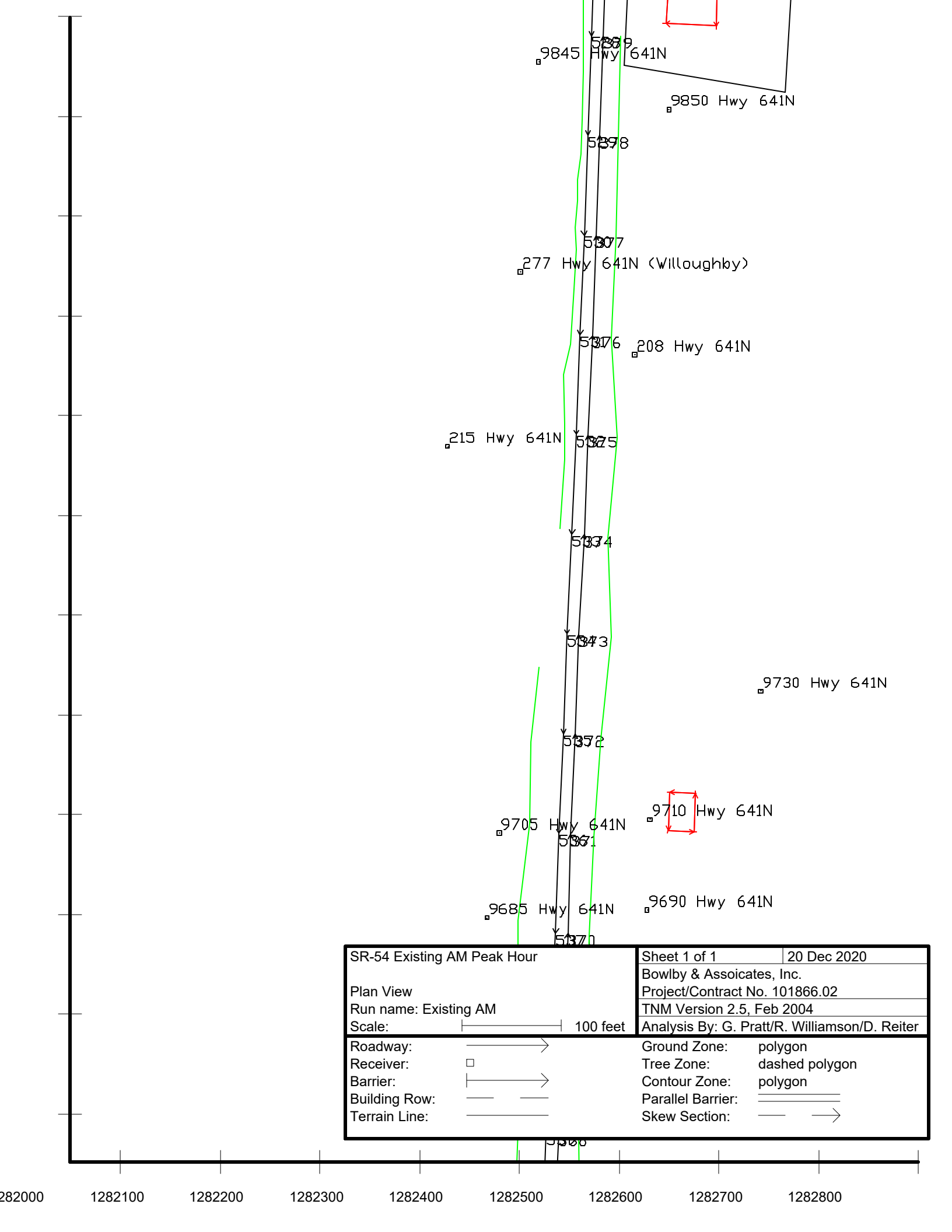
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Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

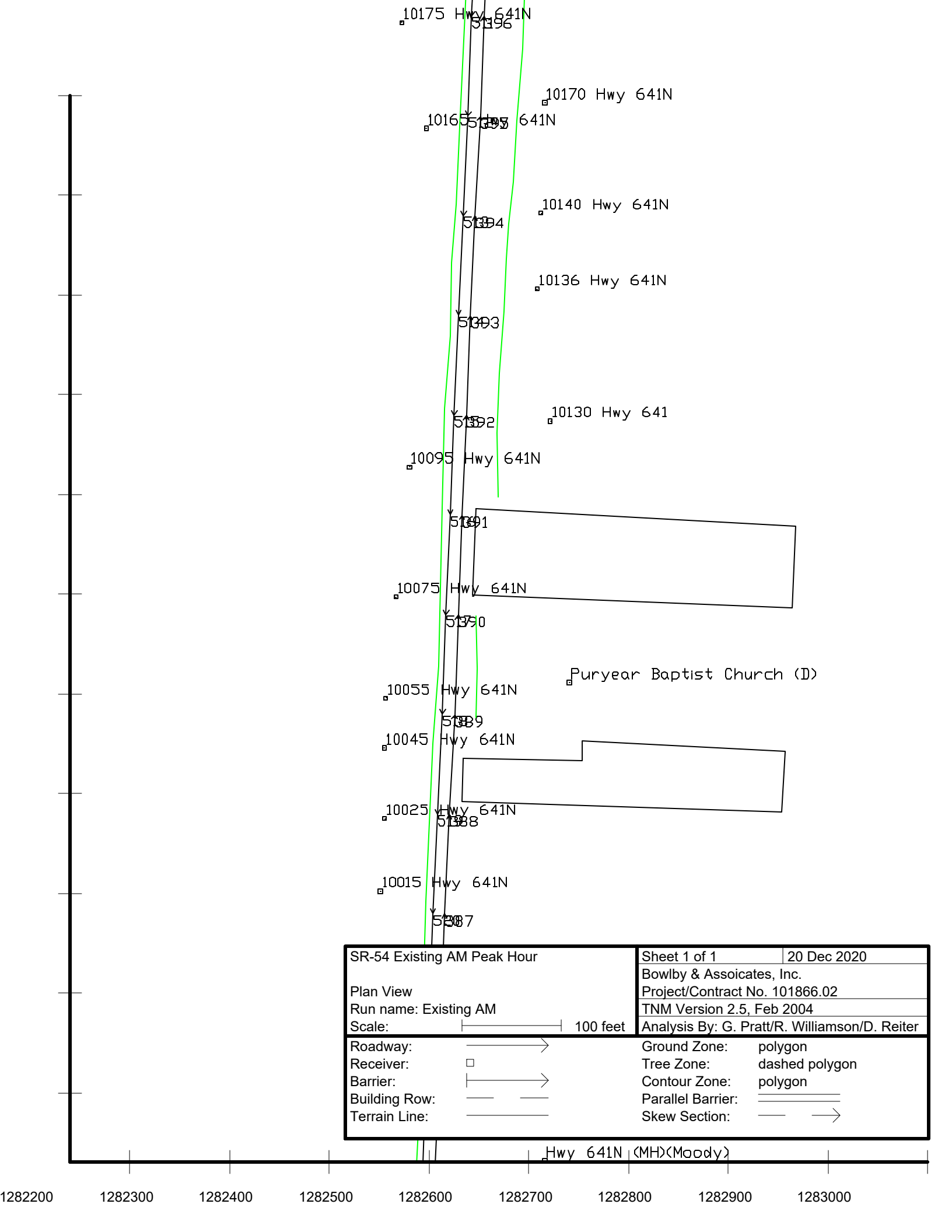












9665 Hwy 641N
9660 Hwy 641N
9645 Hwy 641N
9630 Hwy 641N (MH)
9625 Hwy 641N
9620 Hwy 641N
9595 Hwy 641N
9575 Hwy 641N
9550 Hwy 641N
9540 Hwy 641N
9520 Hwy 641N
9500 Hwy 641N
9480 Hwy 641N
9460 Hwy 641N
9440 Hwy 641N
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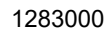
SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

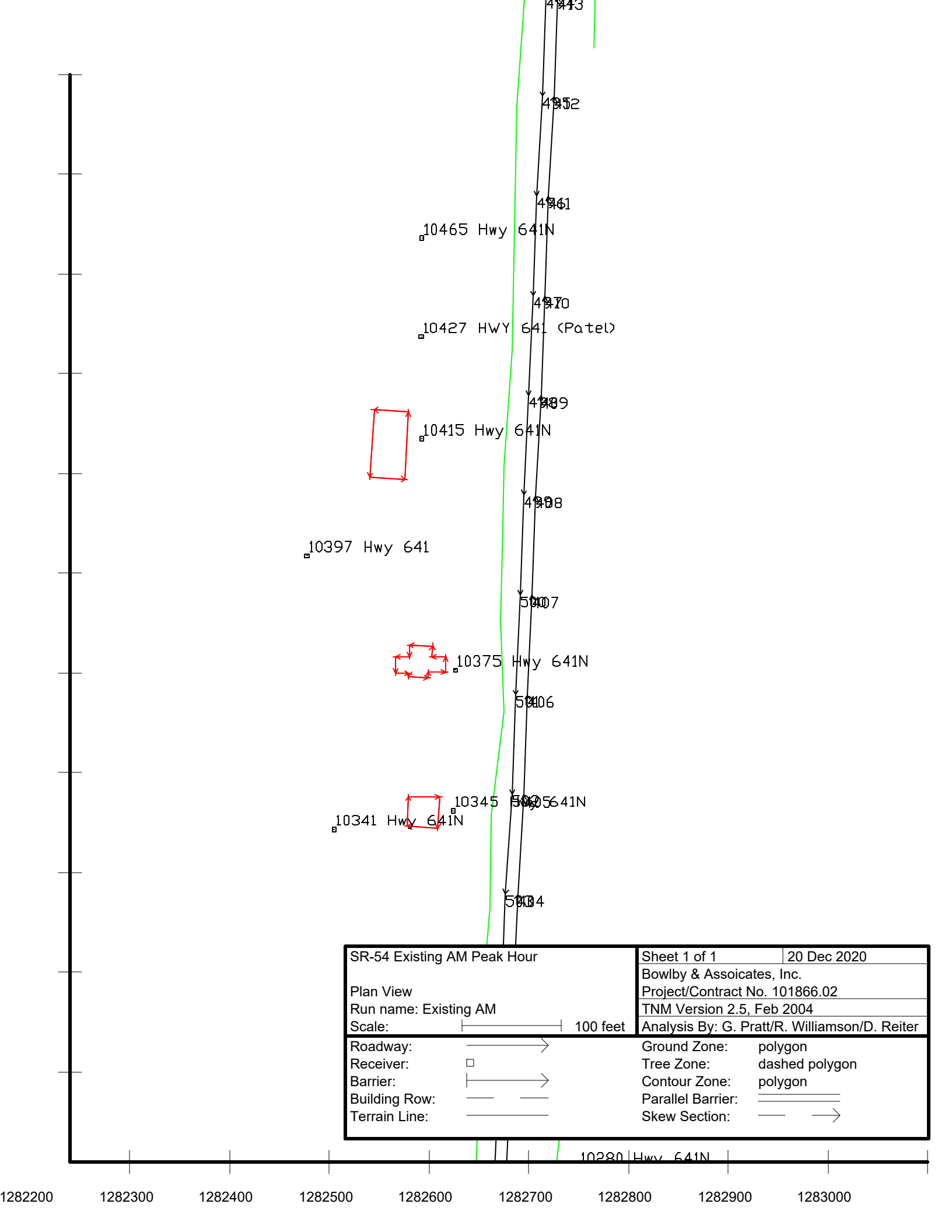







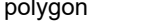

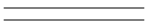


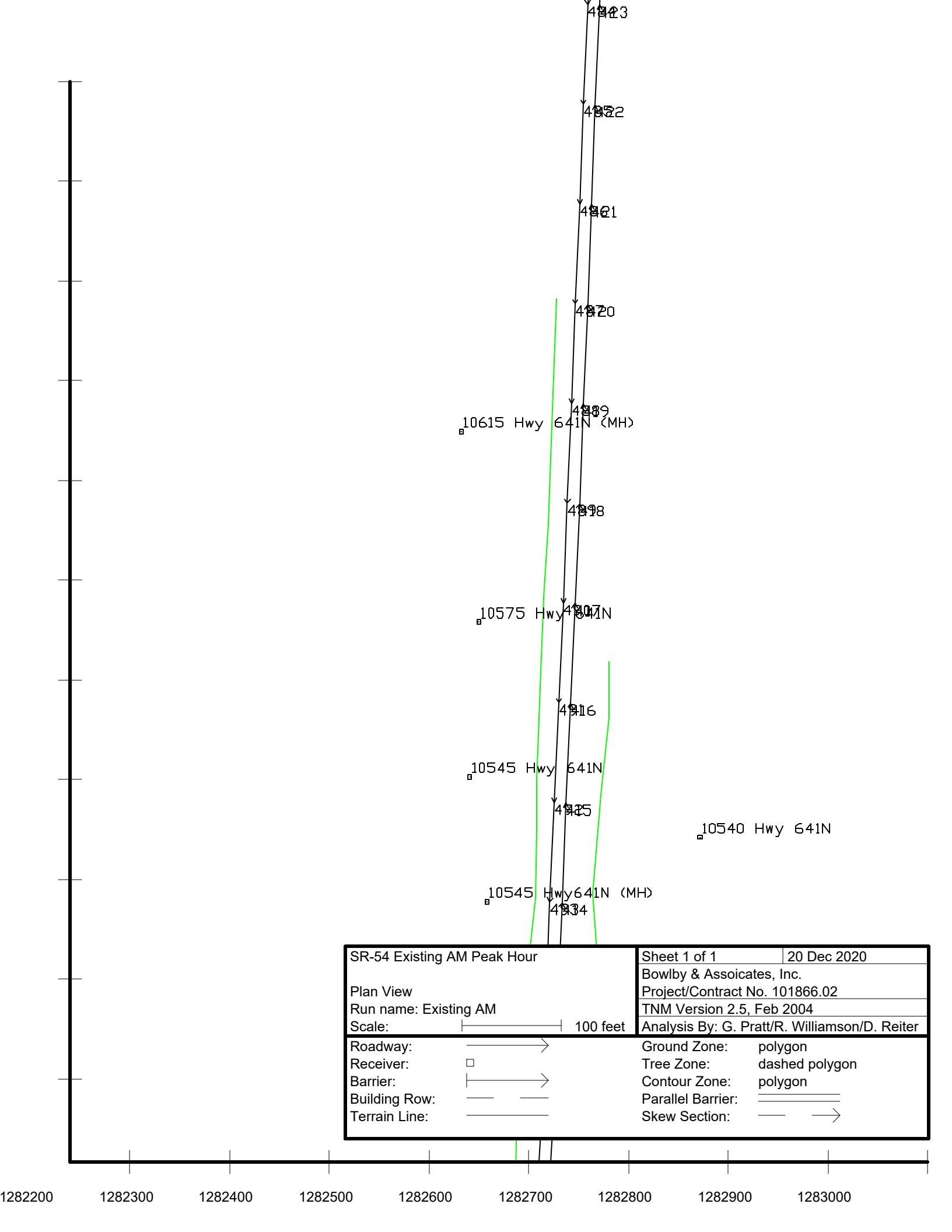
SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		

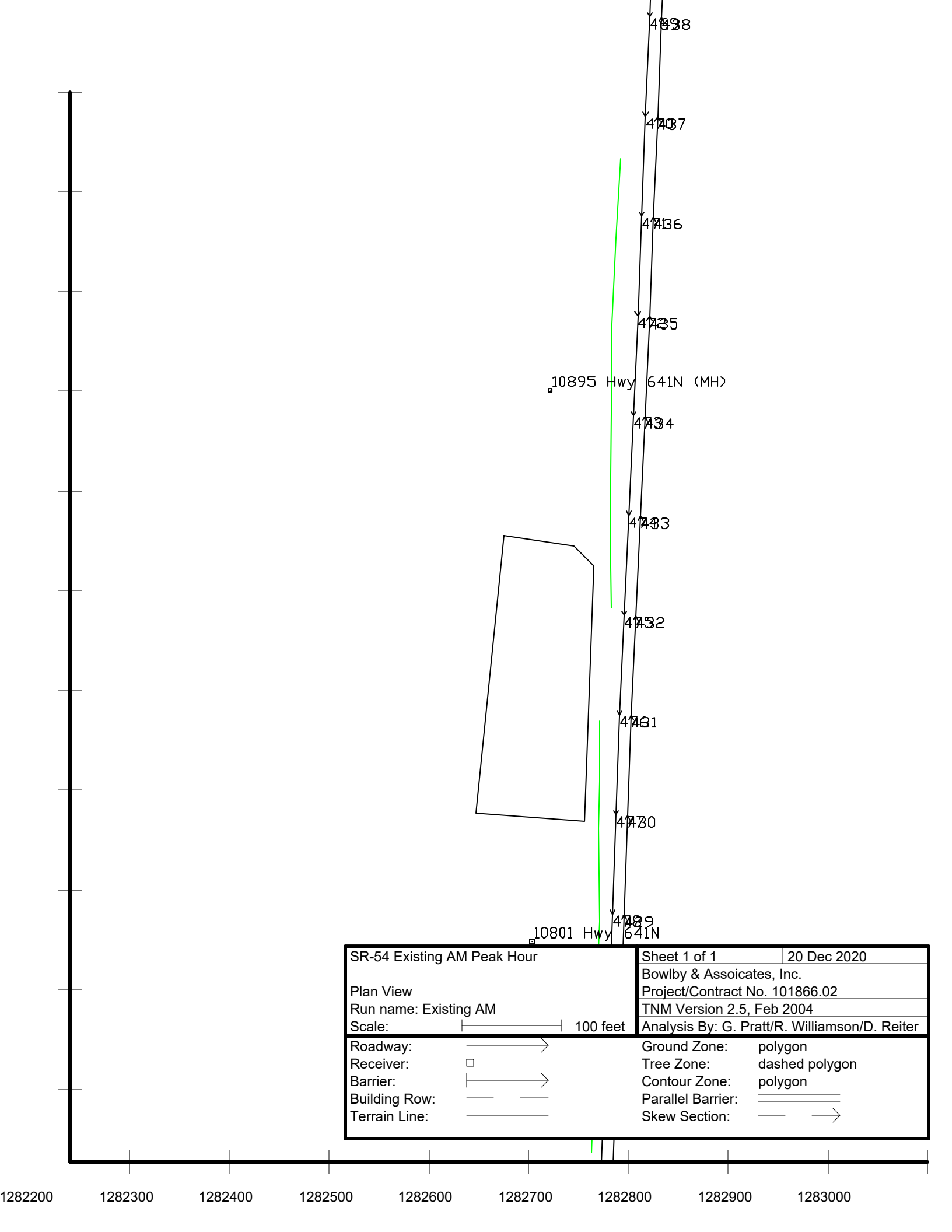
Hwy 641N (MH)(Moody)

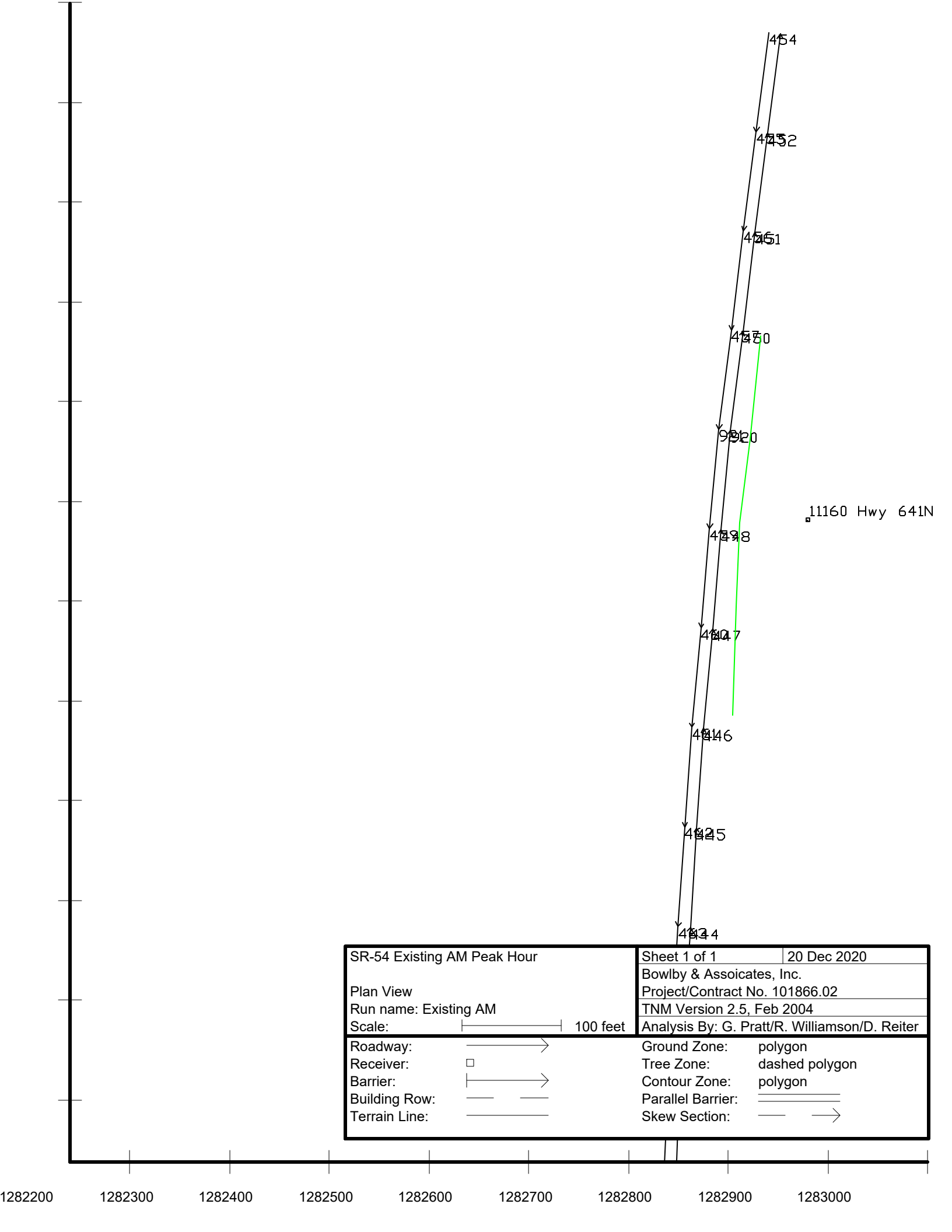




SR-54 Existing AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Existing AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	







Build

TNM Modeling Checklist

All modeling must be done in accordance with TDOT's Noise Procedures and TNM Modeling Guidelines

Project	SR-54
County	Henry
PIN	101886.02
Project Number	40003-0224-04
Project Plans Description and Date	Functional Plans (2018)
Traffic Data Source and Date	TDOT (8/2/20)
TNM Modeler	G Pratt
Date Checklist Completed	12/2/2020
TNM Reviewer	R Williamson
Date Checklist Completed	12/3/2020

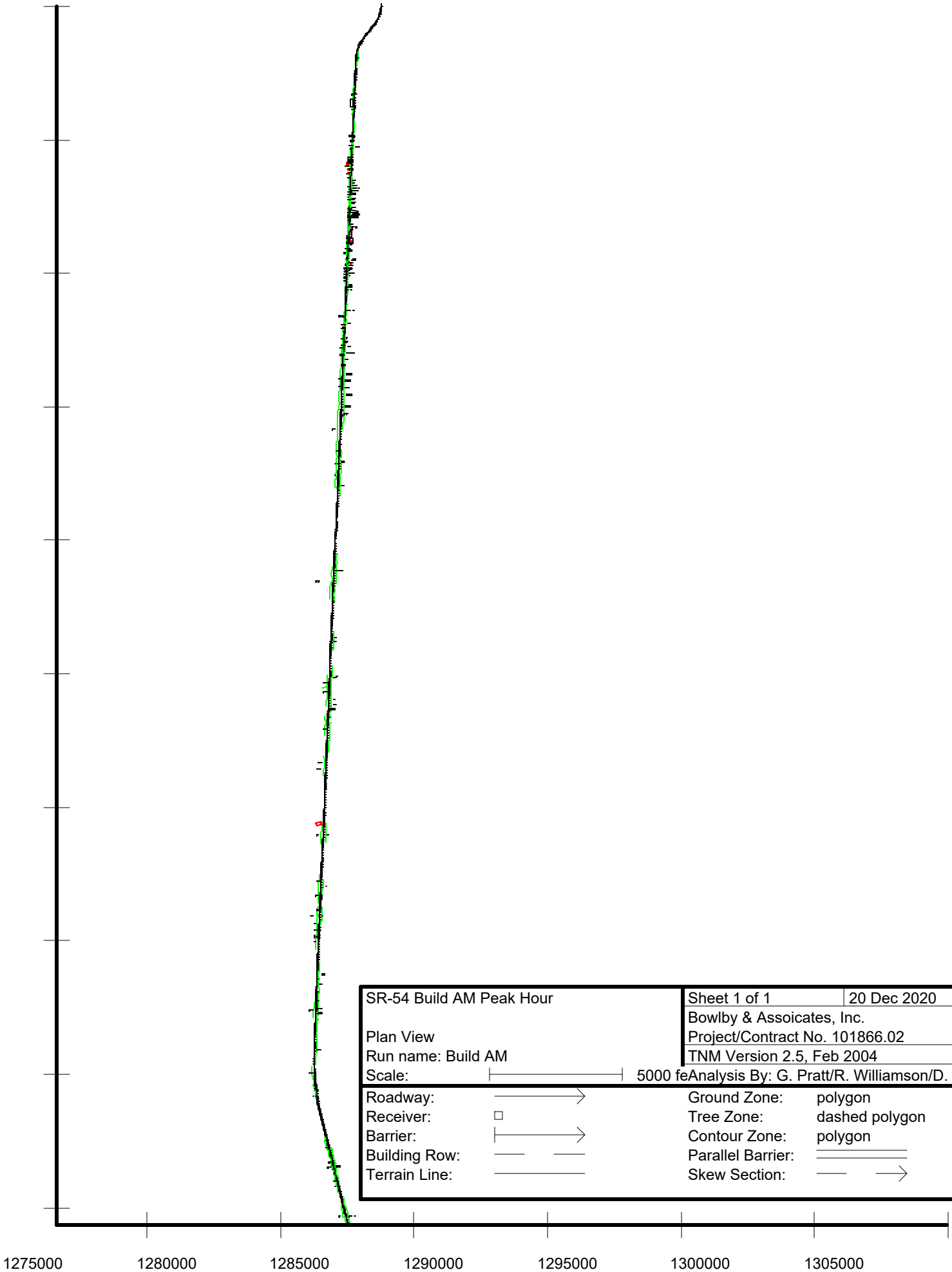
TNM Run	Build AM		Modeling Year
Input	Task	Complete?	Notes
Setup	Run Information	<input checked="" type="checkbox"/>	
	General	<input checked="" type="checkbox"/>	
Roadways	Roadway names assigned	<input checked="" type="checkbox"/>	
	Traffic and Speeds on all Roadways	<input checked="" type="checkbox"/>	
	Widths of All Roadways per Guidance	<input checked="" type="checkbox"/>	(large outer lane width {OK})
	Lengths of all roadways are adequate to accurately represent roadway contributions	<input checked="" type="checkbox"/>	
	Points tied to stationing if available	<input checked="" type="checkbox"/>	
	Elevations appear to be correct	<input checked="" type="checkbox"/>	
	Traffic Flow Control Devices Modeled <ul style="list-style-type: none"> • Traffic Signals • Stop Signs • On-Ramps 	<input type="checkbox"/>	assume still need signal at STA480 {Done}
	Roadways modeled on structure as appropriate	<input checked="" type="checkbox"/>	n/a









TNM Modeling Checklist

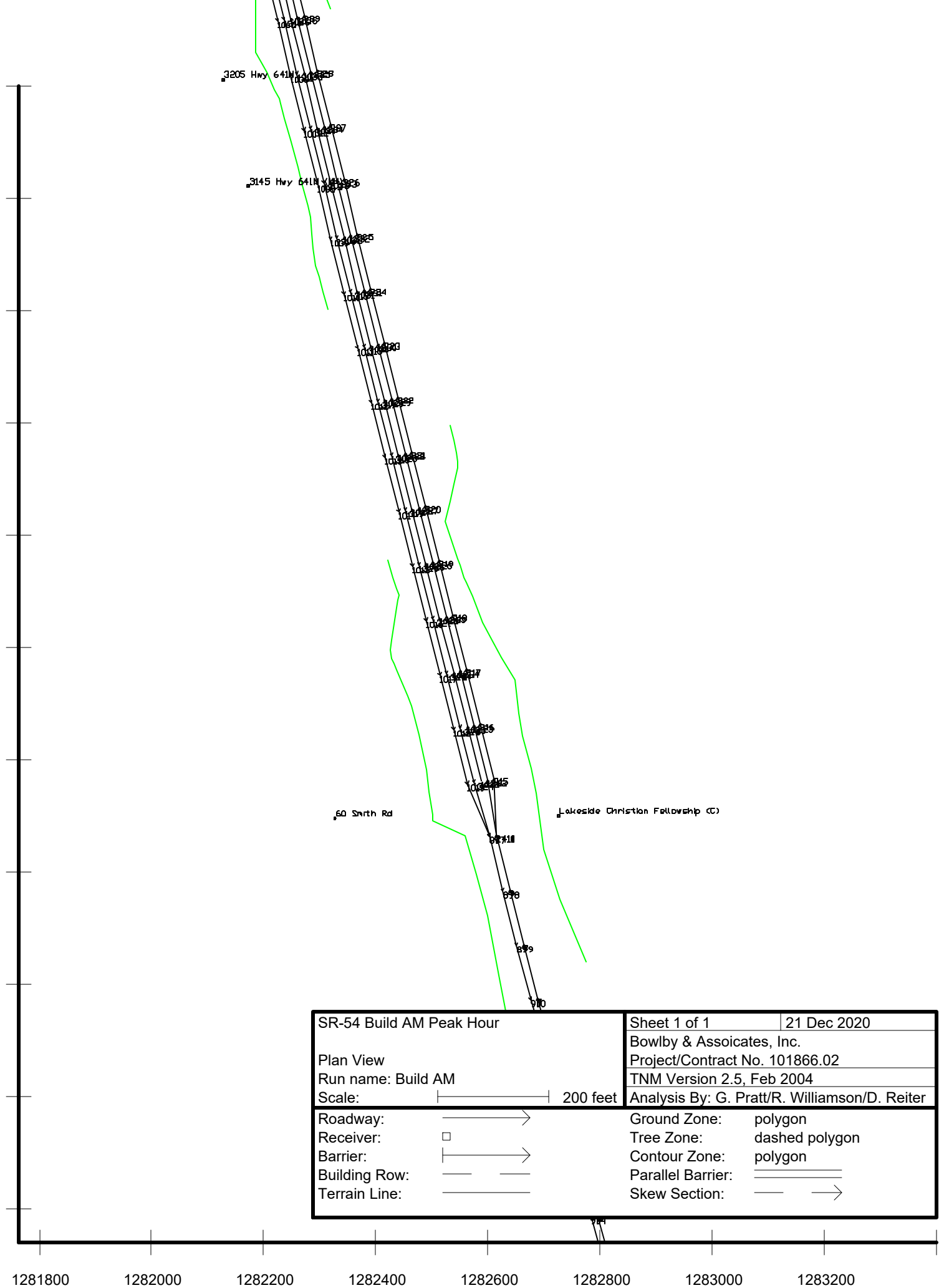
TNM Run	Build AM		Modeling Year	
Input	Task	Complete?	Notes	
Receivers	Receivers named by address or stationing	<input checked="" type="checkbox"/>		
	Number of dwelling units set for each receiver (if applicable)	<input type="checkbox"/>	- "10230 Hwy 641N (Duplex)" should be 2; - "7621 Hwy 641N" does not seem to be freq human use area; - There are churches, playgrounds, and a field that should be 0 {Done}	
	Receivers in order of adjacent traffic flow	<input checked="" type="checkbox"/>		
	Elevations appear to be correct	<input checked="" type="checkbox"/>		
	Elevations at second-story locations at appropriate heights (if applicable)	<input checked="" type="checkbox"/>	n/a	
	Enough receivers modeled (for impacts and benefits)	<input checked="" type="checkbox"/>		
	NAC set per State's Policy for each receiver/ land use	<input checked="" type="checkbox"/>	n/a (externally)	
	Noise Reduction set per State's Policy	<input checked="" type="checkbox"/>	n/a (externally)	
	Substantial Increase set per State's Policy	<input checked="" type="checkbox"/>	n/a (externally)	
Barriers	Significant buildings modeled	<input checked="" type="checkbox"/>	(maybe add some buildings north of receiver "5655 Hwy 641" {Done}	
	Parapets, etc. modeled	<input checked="" type="checkbox"/>	n/a	
	Perturbable barriers modeled as applicable	<input checked="" type="checkbox"/>	n/a	
	Barrier names assigned	<input checked="" type="checkbox"/>		
	Barrier points named by stationing or length	<input checked="" type="checkbox"/>		
	Barrier heights assigned	<input checked="" type="checkbox"/>		
	Elevations appear to be correct	<input checked="" type="checkbox"/>		
	Increment and #up/down assigned	<input checked="" type="checkbox"/>	n/a	
	Barriers modeled on structure as appropriate and shielded lists are correct	<input checked="" type="checkbox"/>	n/a	

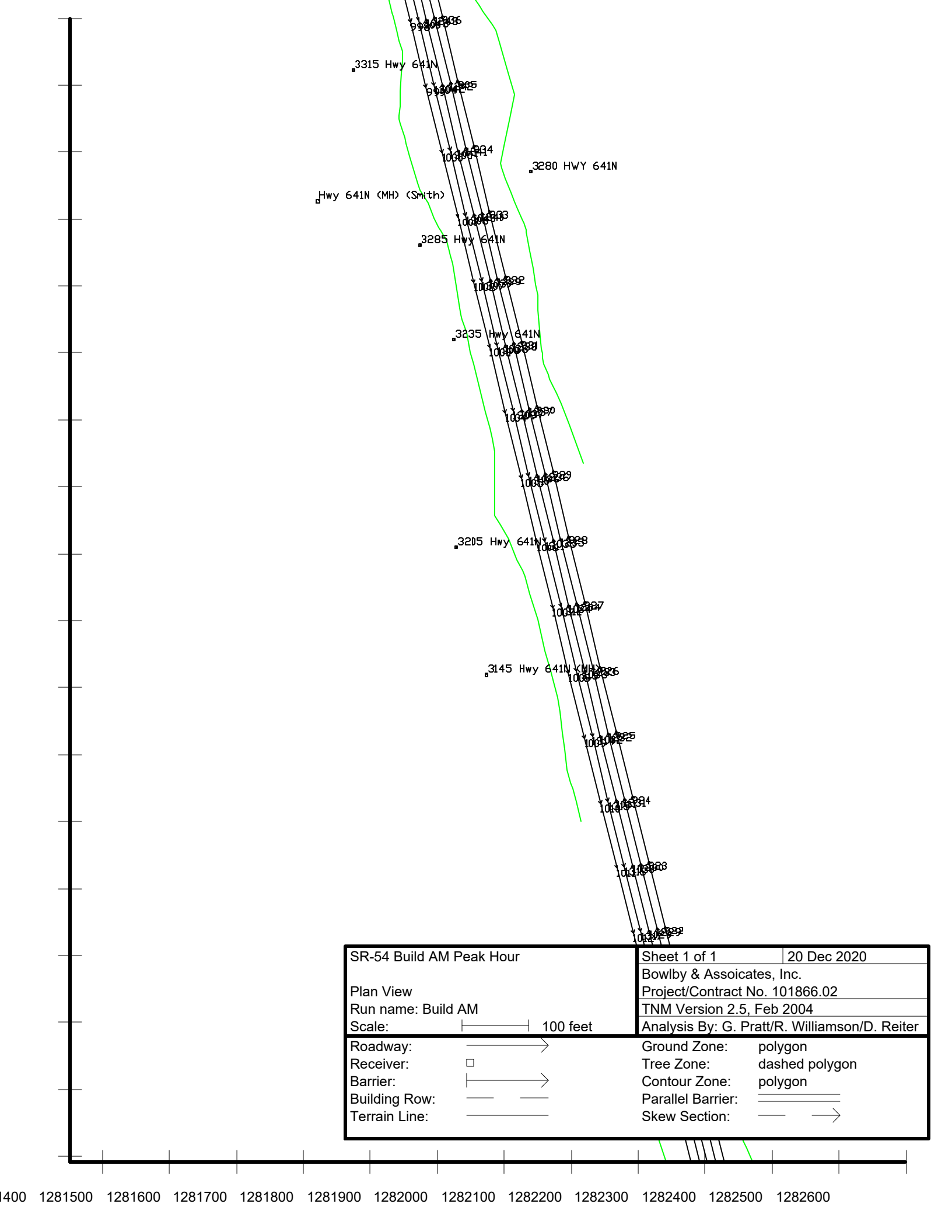
TNM Modeling Checklist









TNM Run	Build AM		Modeling Year	
Input	Task	Complete?	Notes	
Building Rows	Building rows modeled per FHWA Guidance	<input checked="" type="checkbox"/>	n/a	
	Elevations appear to be correct	<input checked="" type="checkbox"/>	n/a	
	Height and percentage assigned	<input checked="" type="checkbox"/>	n/a	
Terrain Lines	Significant terrain features modeled	<input checked="" type="checkbox"/>		
	Terrain line names assigned	<input checked="" type="checkbox"/>	(not crucial) some generic	
	Elevations appear to be correct	<input checked="" type="checkbox"/>		
Ground Zones	Ground Zones modeled per FHWA Guidance	<input checked="" type="checkbox"/>		
	Ground zone names assigned	<input checked="" type="checkbox"/>		
	Ground zone types assigned	<input checked="" type="checkbox"/>		
Tree Zones	Tree zones modeled per FHWA Guidance	<input checked="" type="checkbox"/>	n/a	
	Tree zone names assigned	<input checked="" type="checkbox"/>	n/a	
	Elevations appear to be correct	<input checked="" type="checkbox"/>	n/a	
Perspective Views	Perspective views checked for accuracy	<input checked="" type="checkbox"/>		
Skew Views	Numerous skew views cut and checked for accuracy	<input checked="" type="checkbox"/>		
Input Check	Input Check completed and errors fixed/documented	<input checked="" type="checkbox"/>		

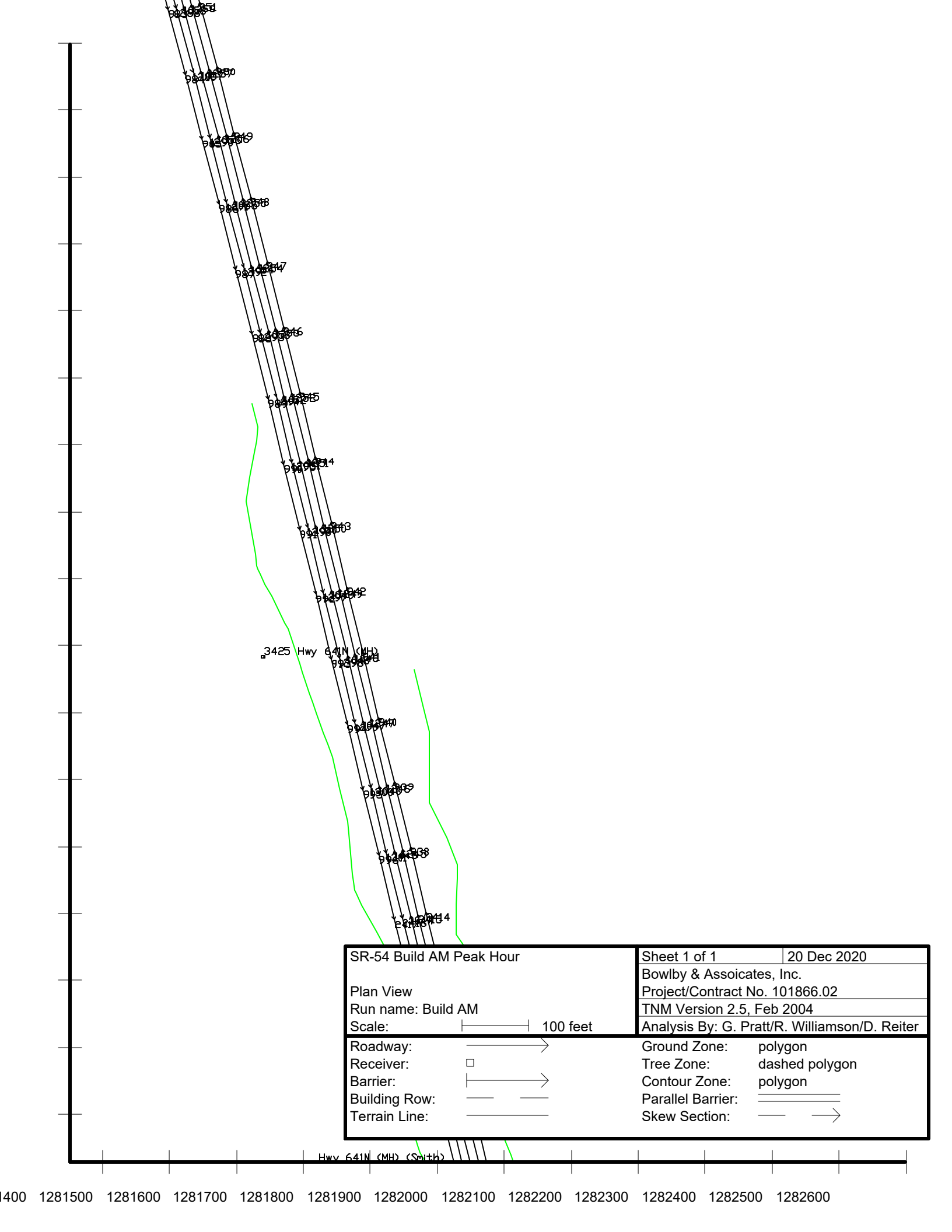










SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	



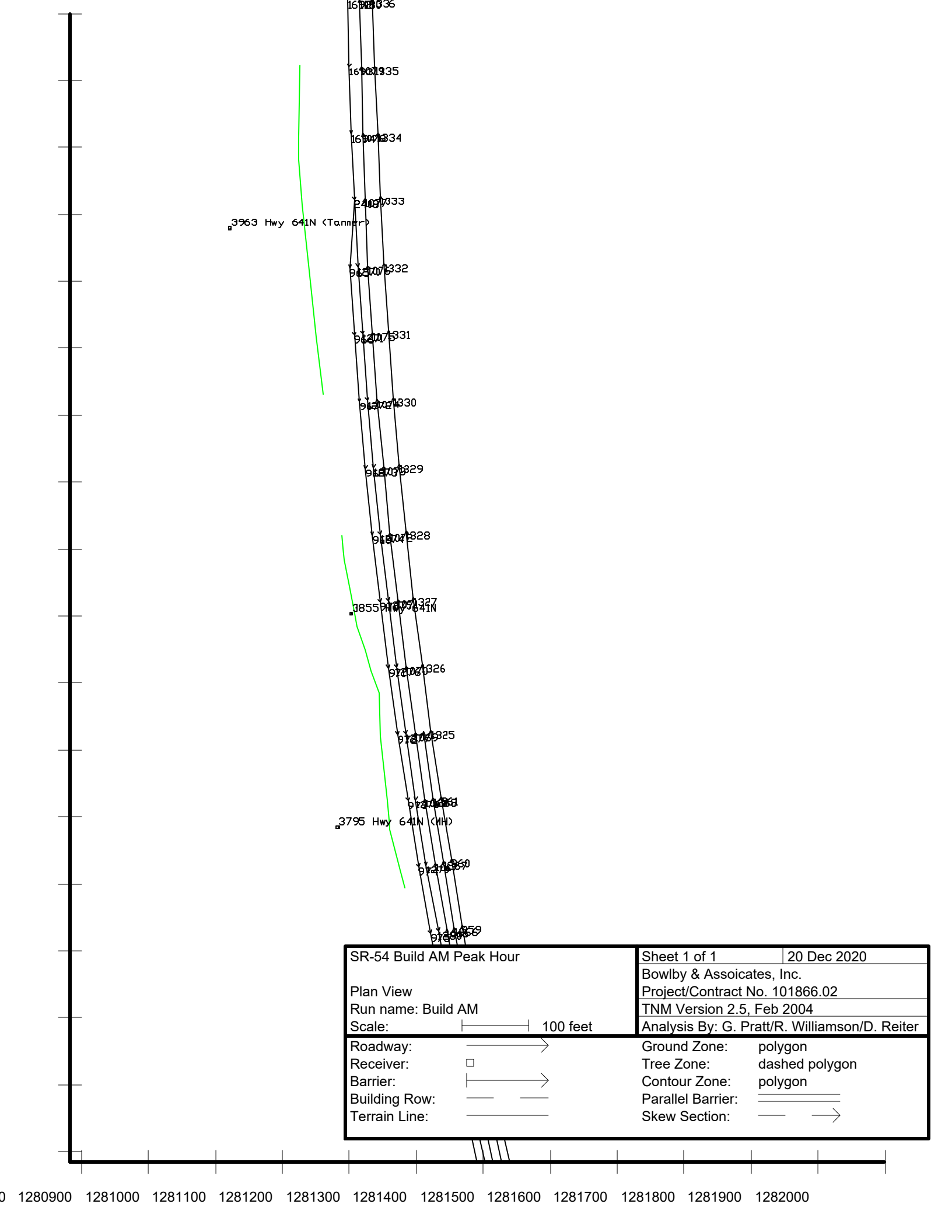


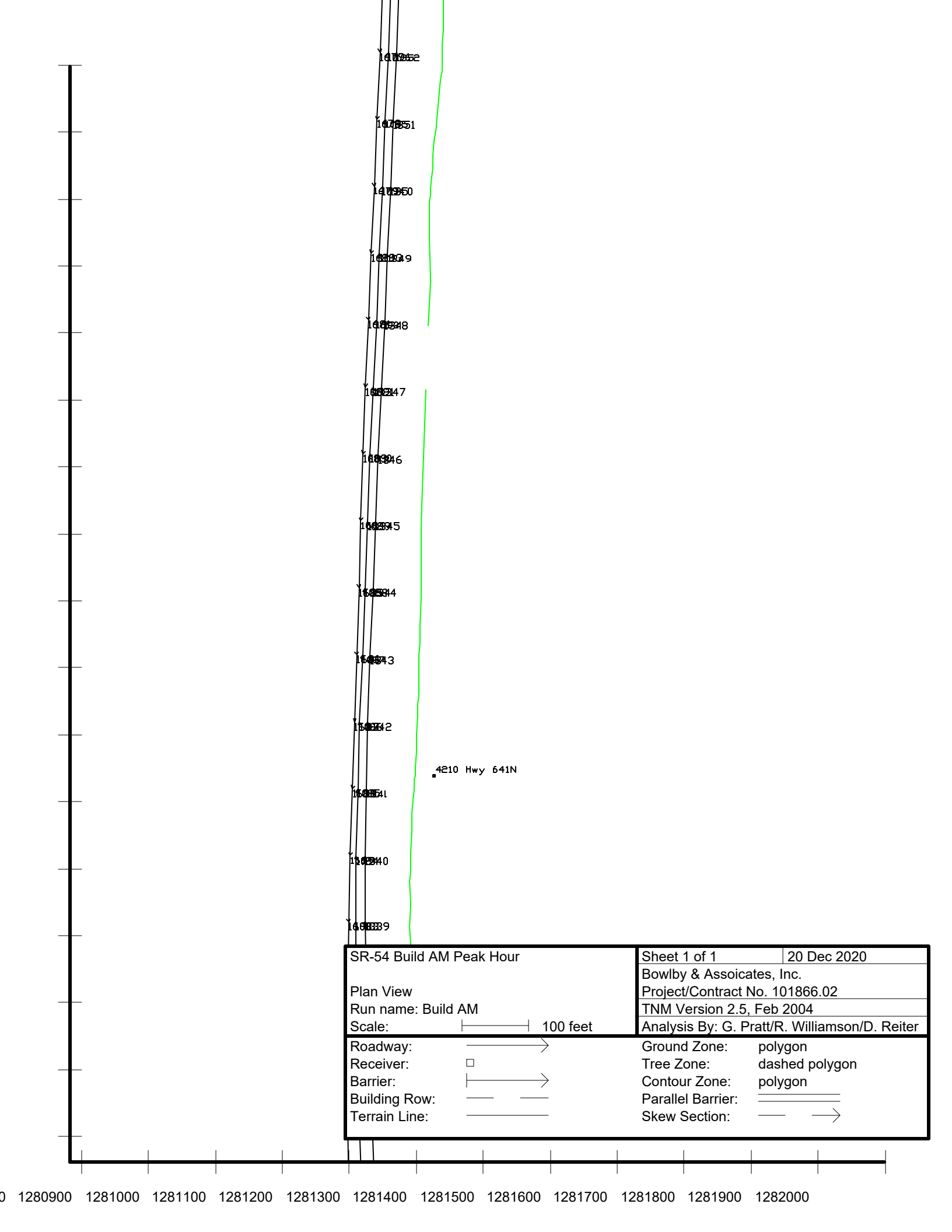
SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		

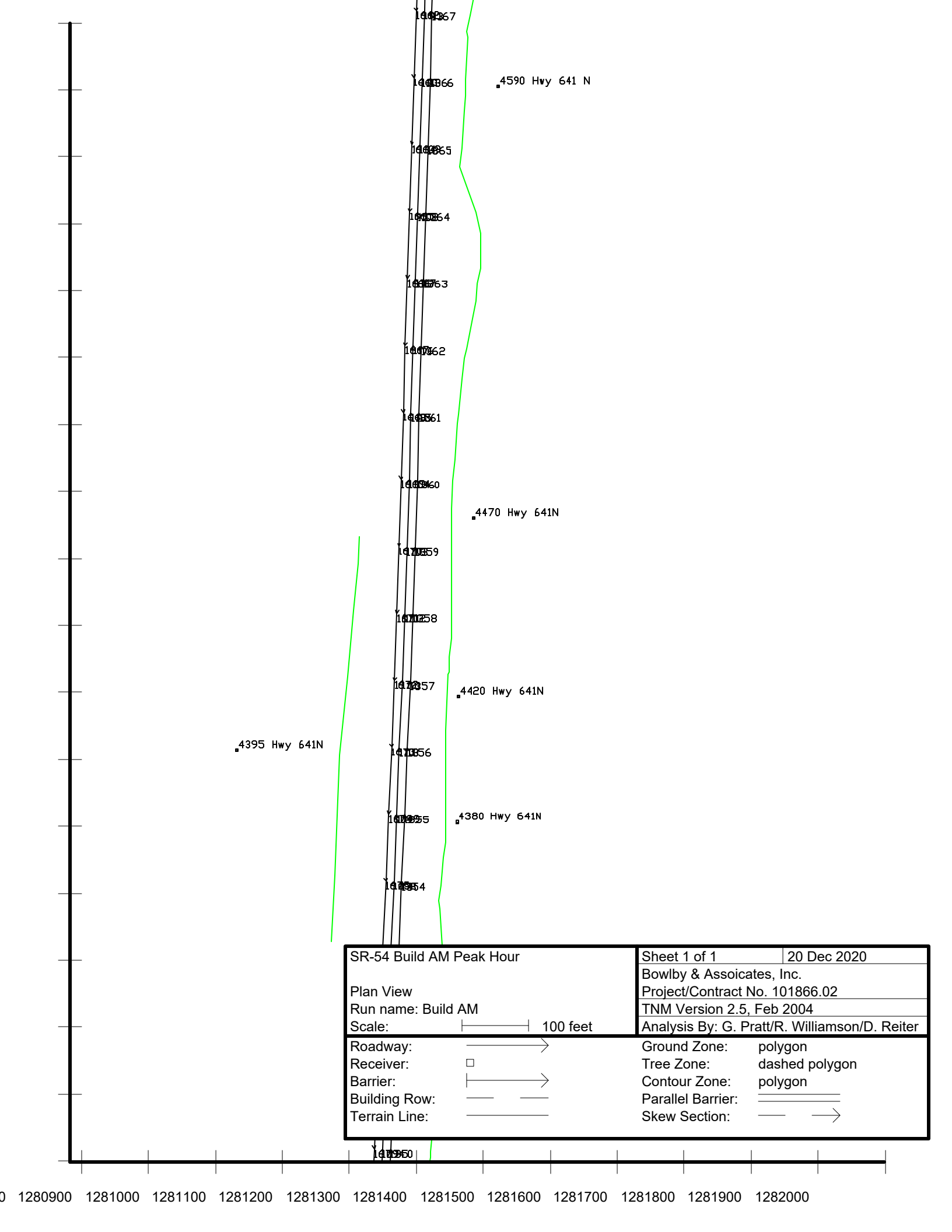


SR-54 Build AM Peak Hour		Sheet 1 of 1		20 Dec 2020	
Plan View		Bowlby & Associates, Inc.			
Run name: Build AM		Project/Contract No. 101866.02			
Scale: 		TNM Version 2.5, Feb 2004			
		Analysis By: G. Pratt/R. Williamson/D. Reiter			
Roadway:		Ground Zone:	polygon		
Receiver:		Tree Zone:	dashed polygon		
Barrier:		Contour Zone:	polygon		
Building Row:		Parallel Barrier:			
Terrain Line:		Skew Section:			

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4420 Hwy 641N









4395 Hwy 641N

101856

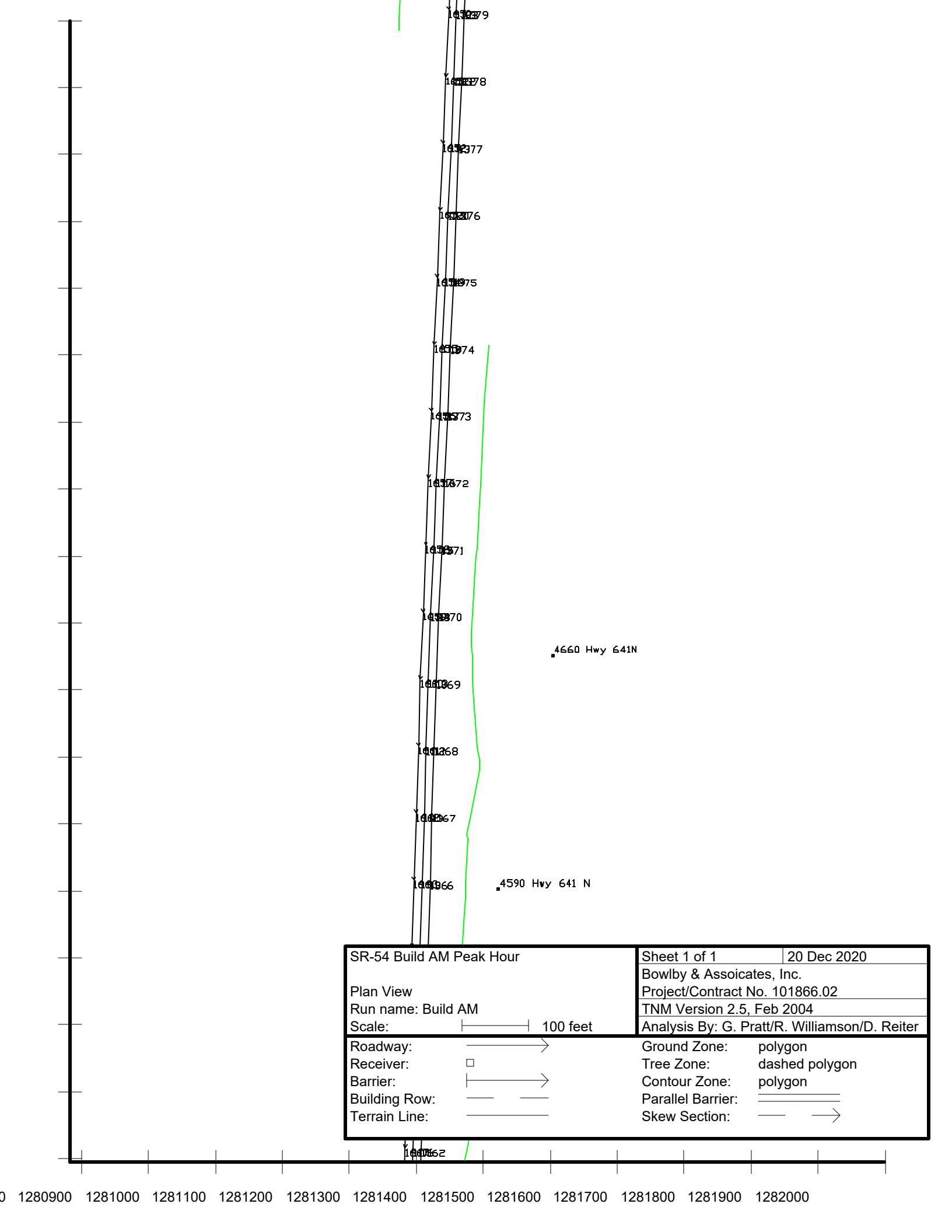
101855

4380 Hwy 641N

101854

SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale:  100 feet		TNM Version 2.5, Feb 2004	
Analysis By: G. Pratt/R. Williamson/D. Reiter			
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		

101853



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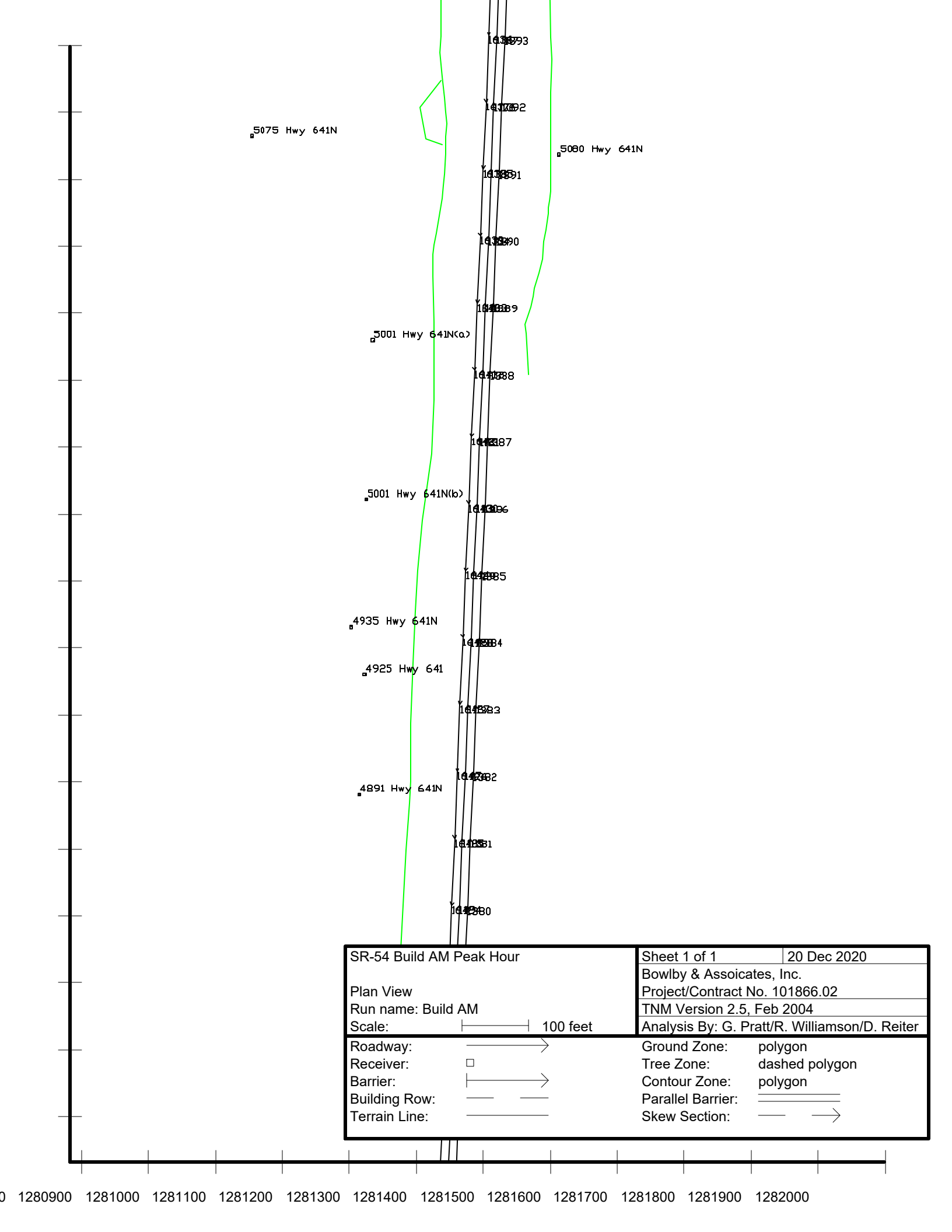
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4660 Hwy 641N

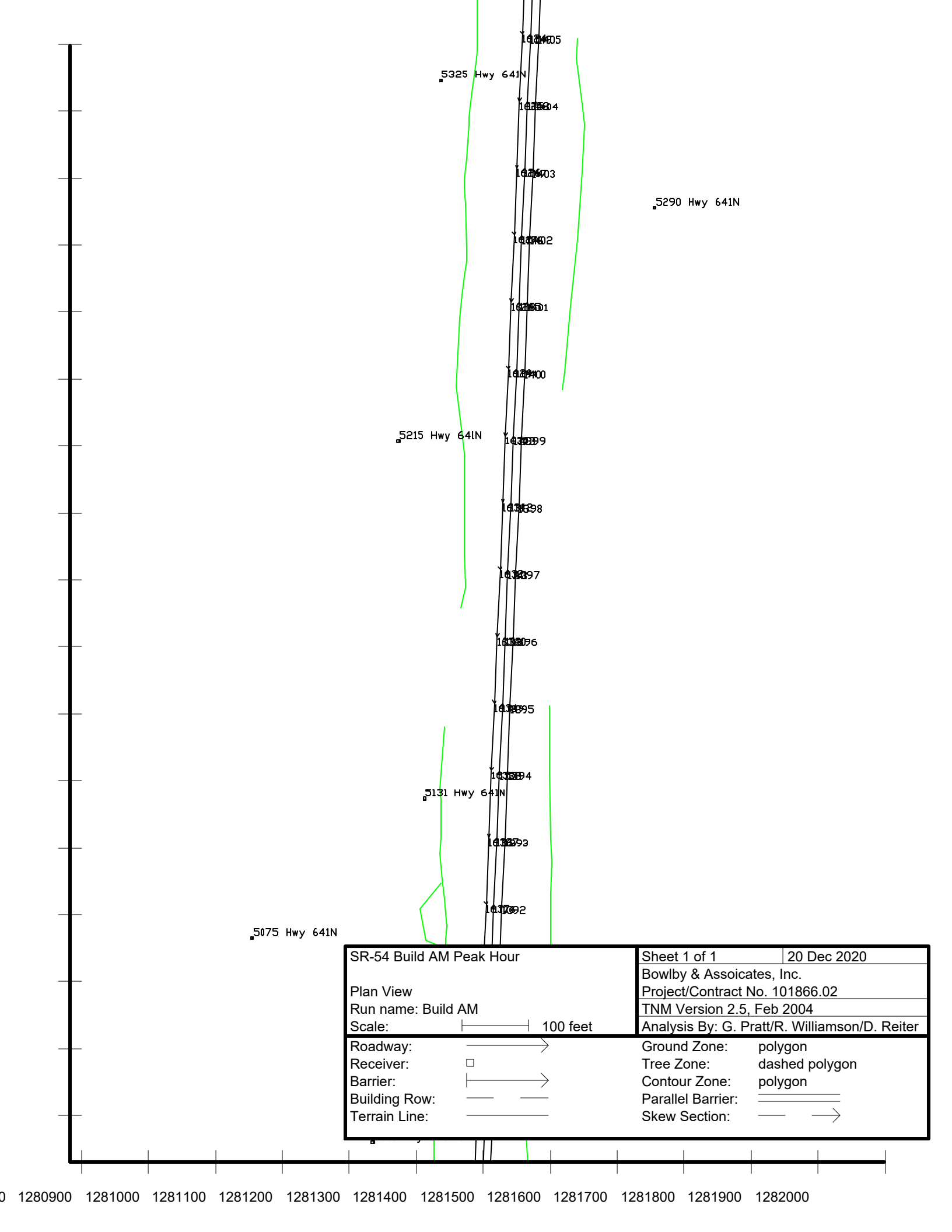
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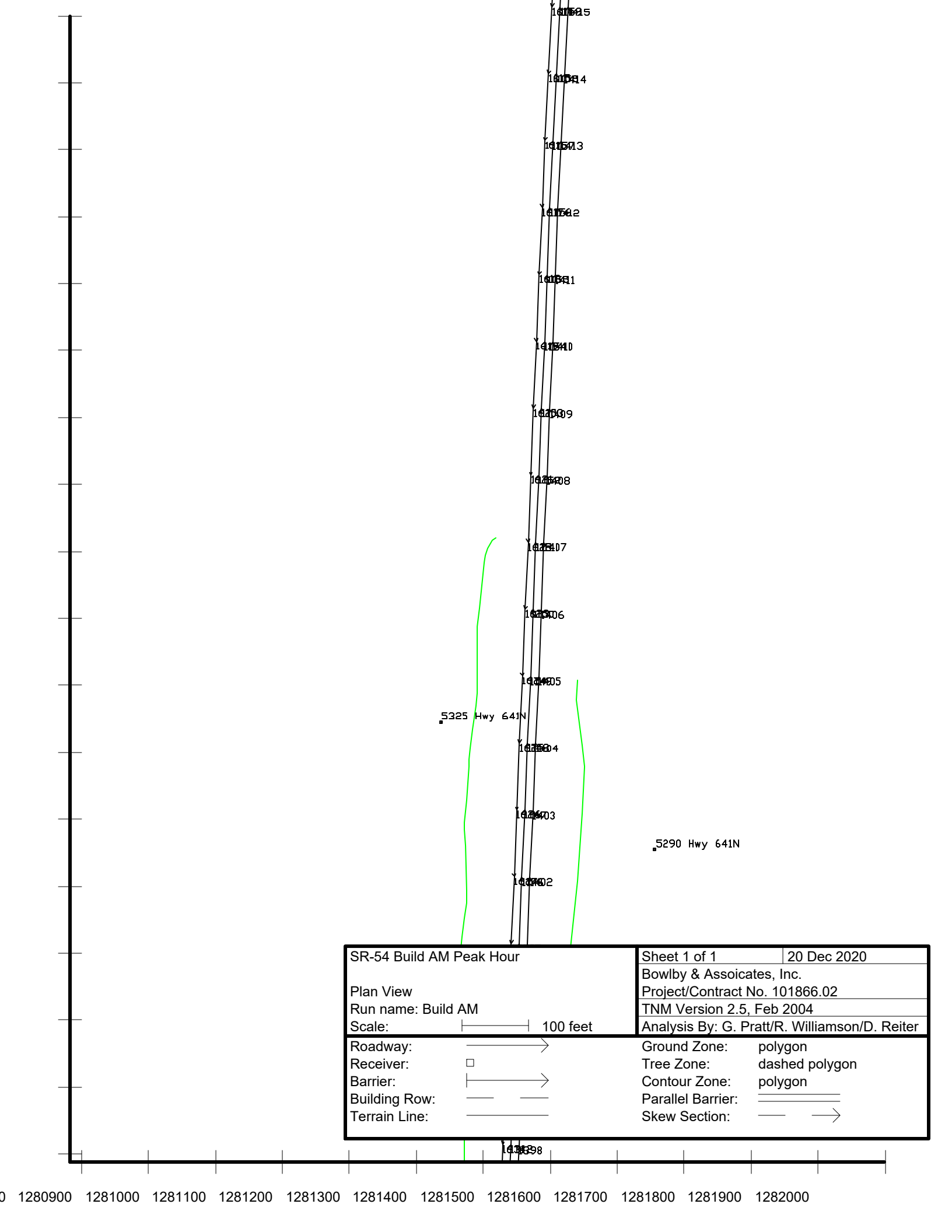
SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		

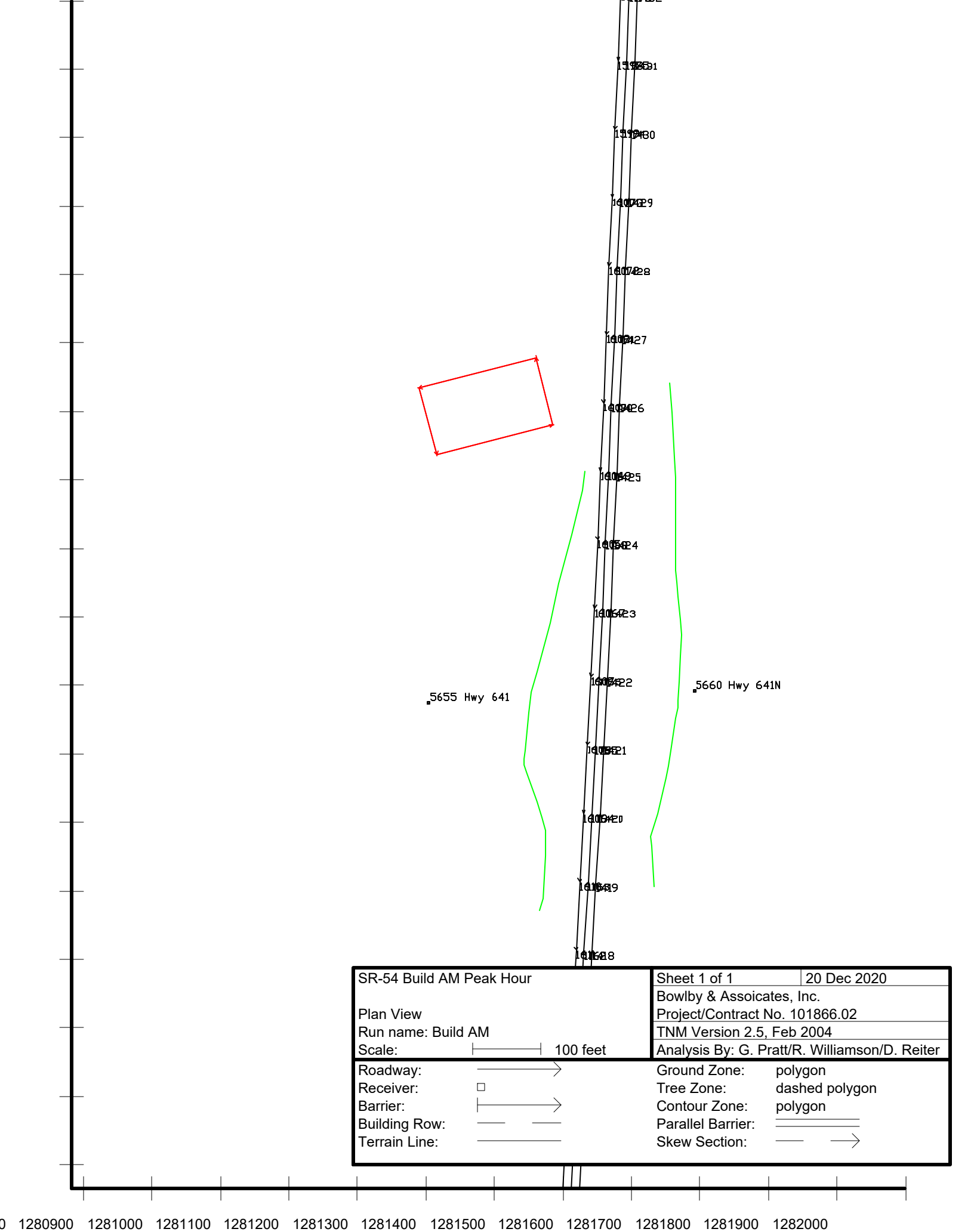
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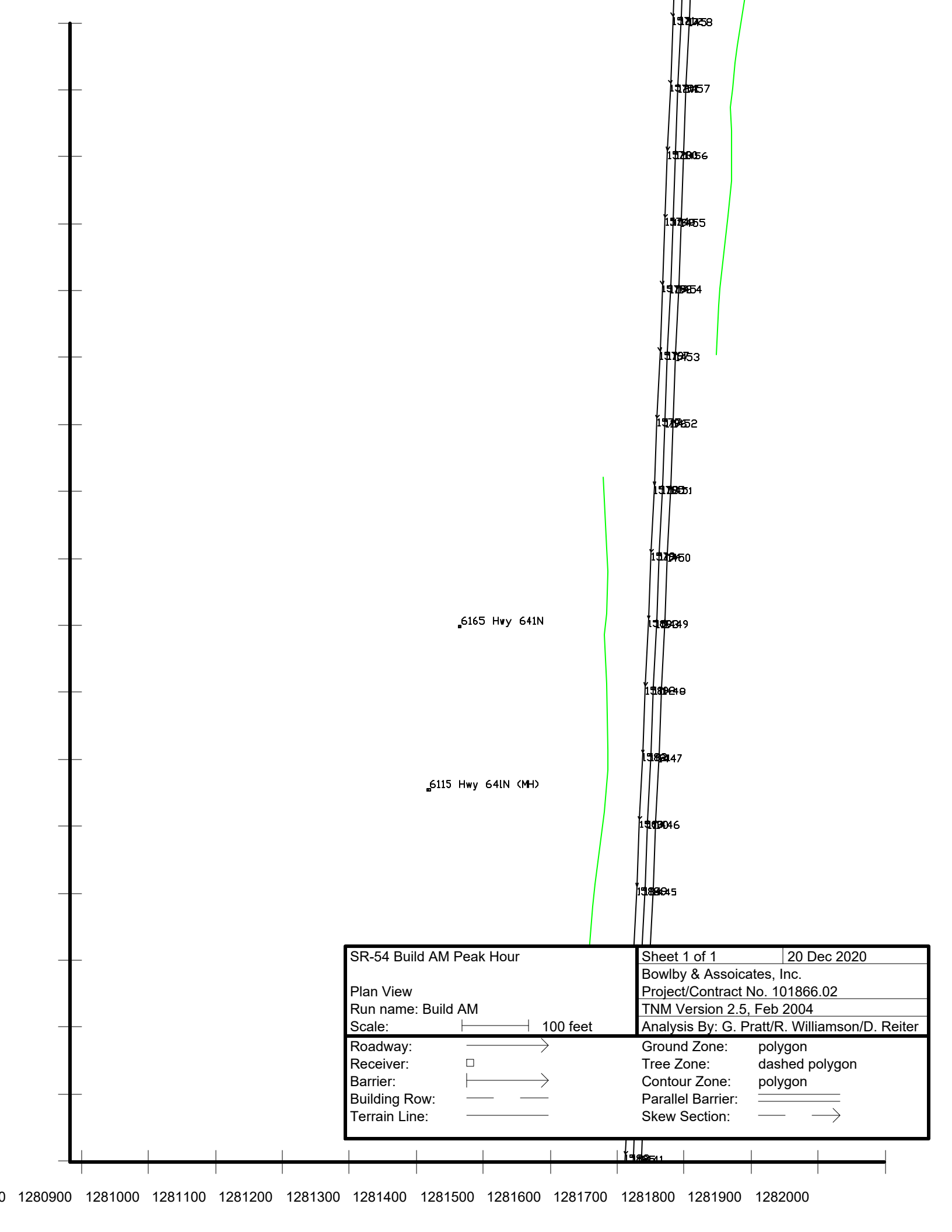


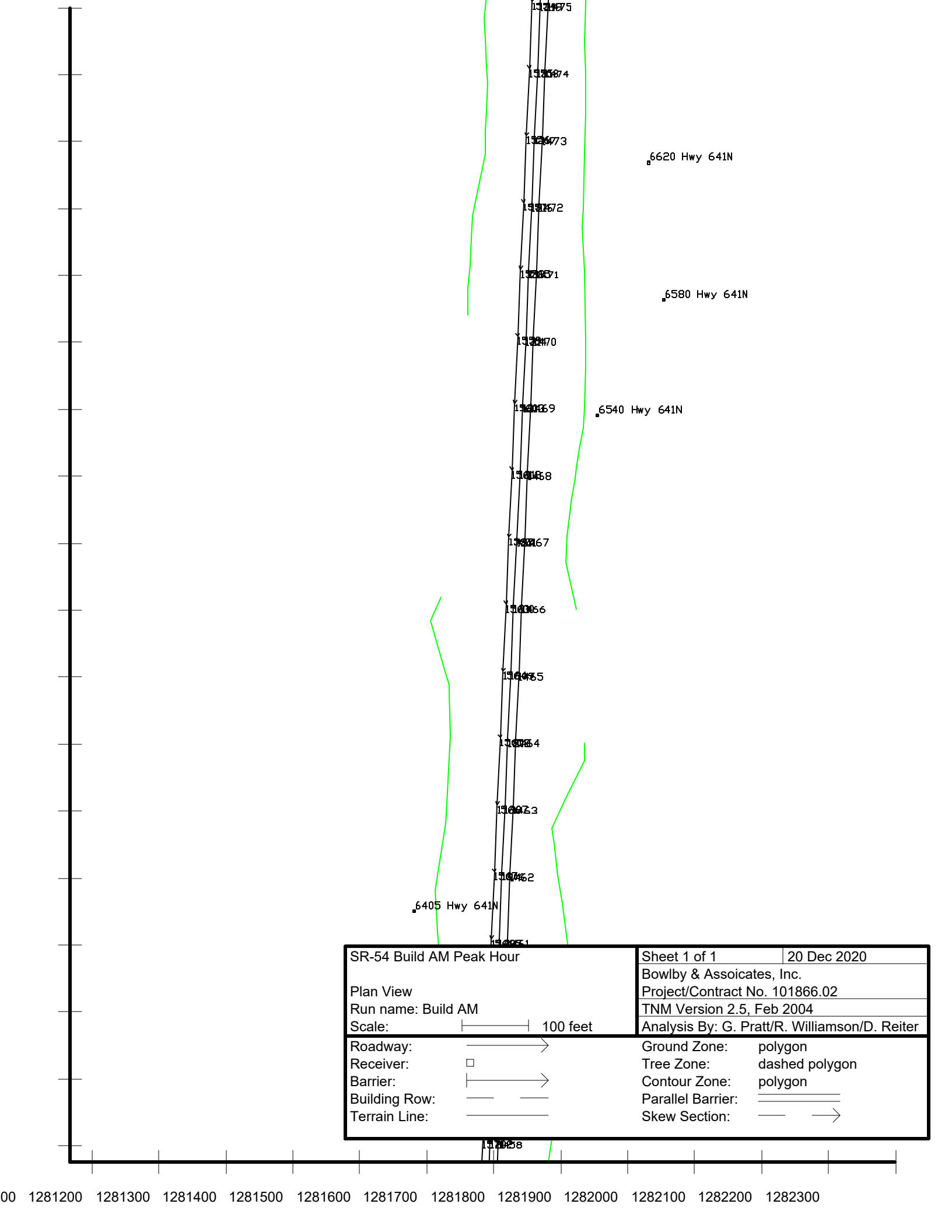
SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale:  100 feet		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

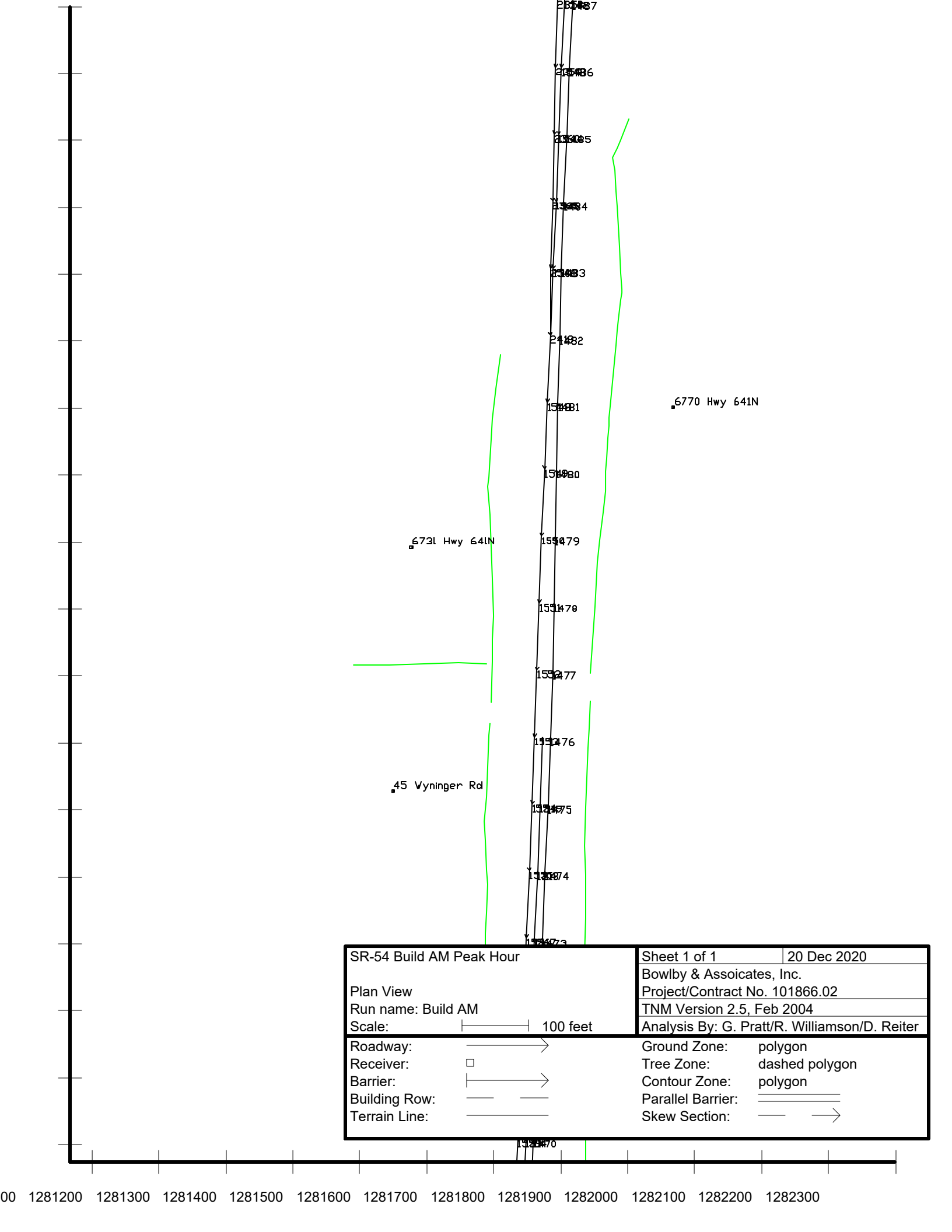


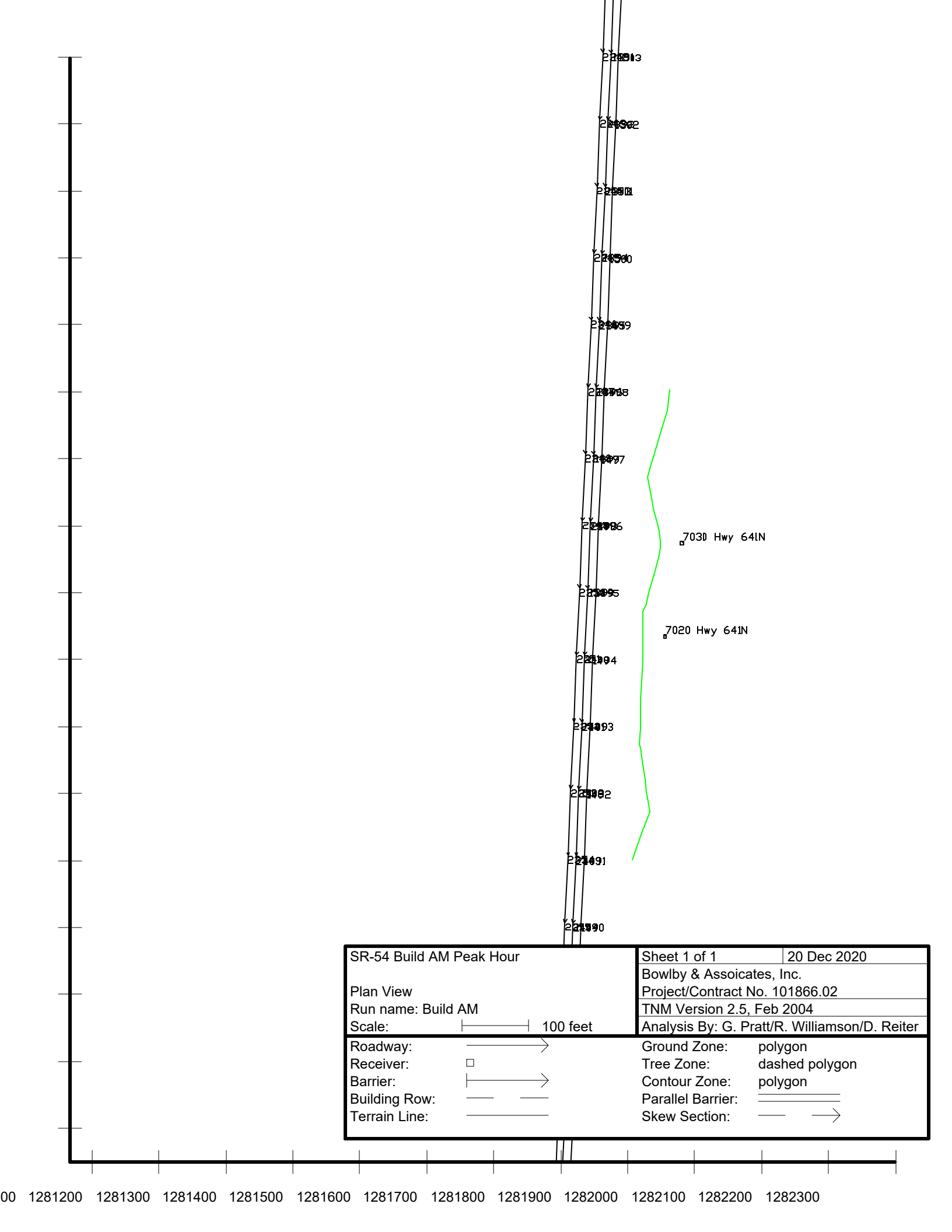


















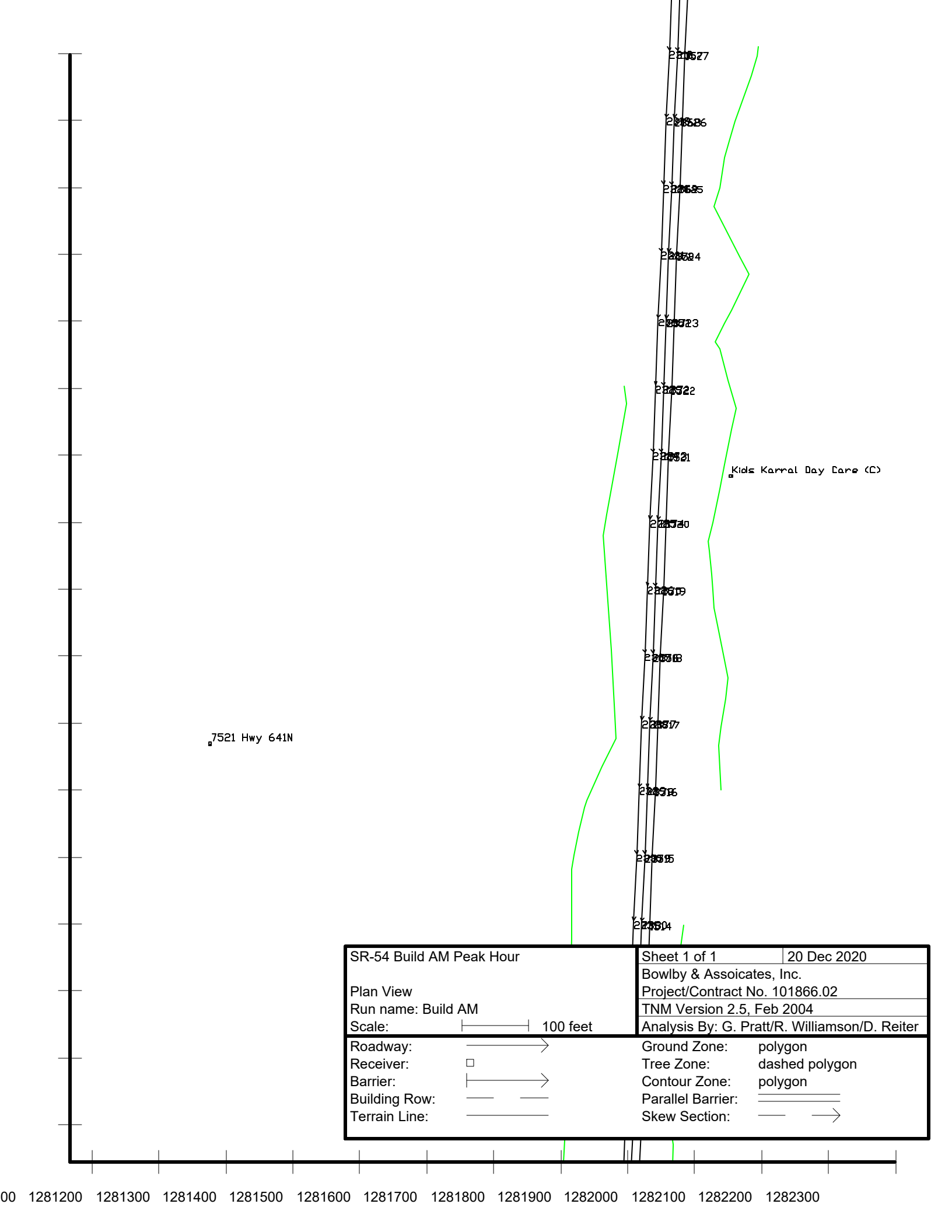


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7020 Hwy 641N









SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

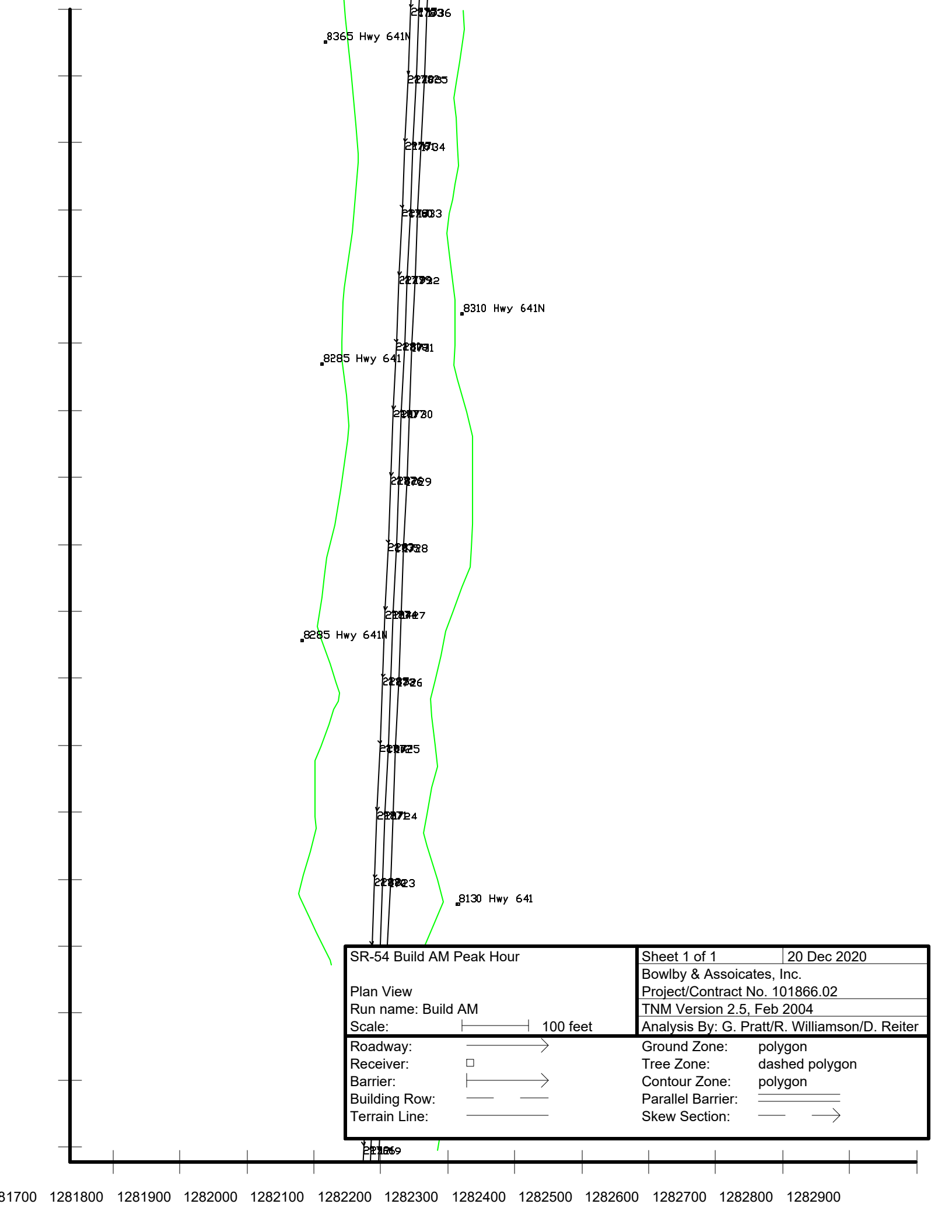
00 1281200 1281300 1281400 1281500 1281600 1281700 1281800 1281900 1282000 1282100 1282200 1282300



7521 Hwy 641N

Kids Kernal Day Care (C)

SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		



8365 Hwy 641N

21185

21184

21183

21182

8310 Hwy 641N

21181

8285 Hwy 641

21180

21179

21178

21177

8285 Hwy 641N

21176

21175

21174

21173

8130 Hwy 641

SR-54 Build AM Peak Hour

Sheet 1 of 1

20 Dec 2020

Plan View

Bowlby & Associates, Inc.

Run name: Build AM

Project/Contract No. 101866.02

Scale:

100 feet

TNM Version 2.5, Feb 2004

Analysis By: G. Pratt/R. Williamson/D. Reiter

Roadway:



Receiver:



Barrier:



Building Row:



Terrain Line:



Ground Zone:

polygon

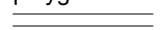
Tree Zone:

dashed polygon

Contour Zone:

polygon

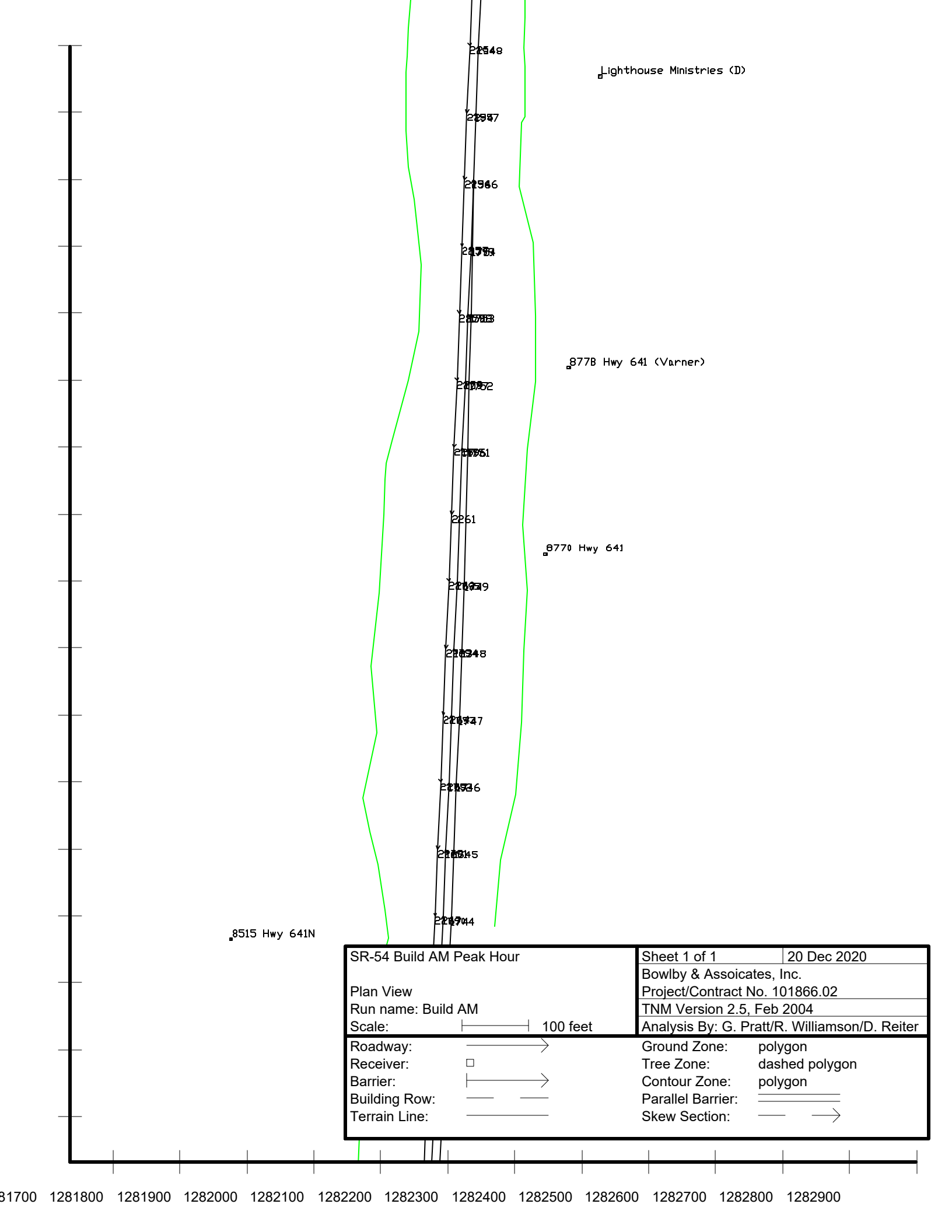
Parallel Barrier:

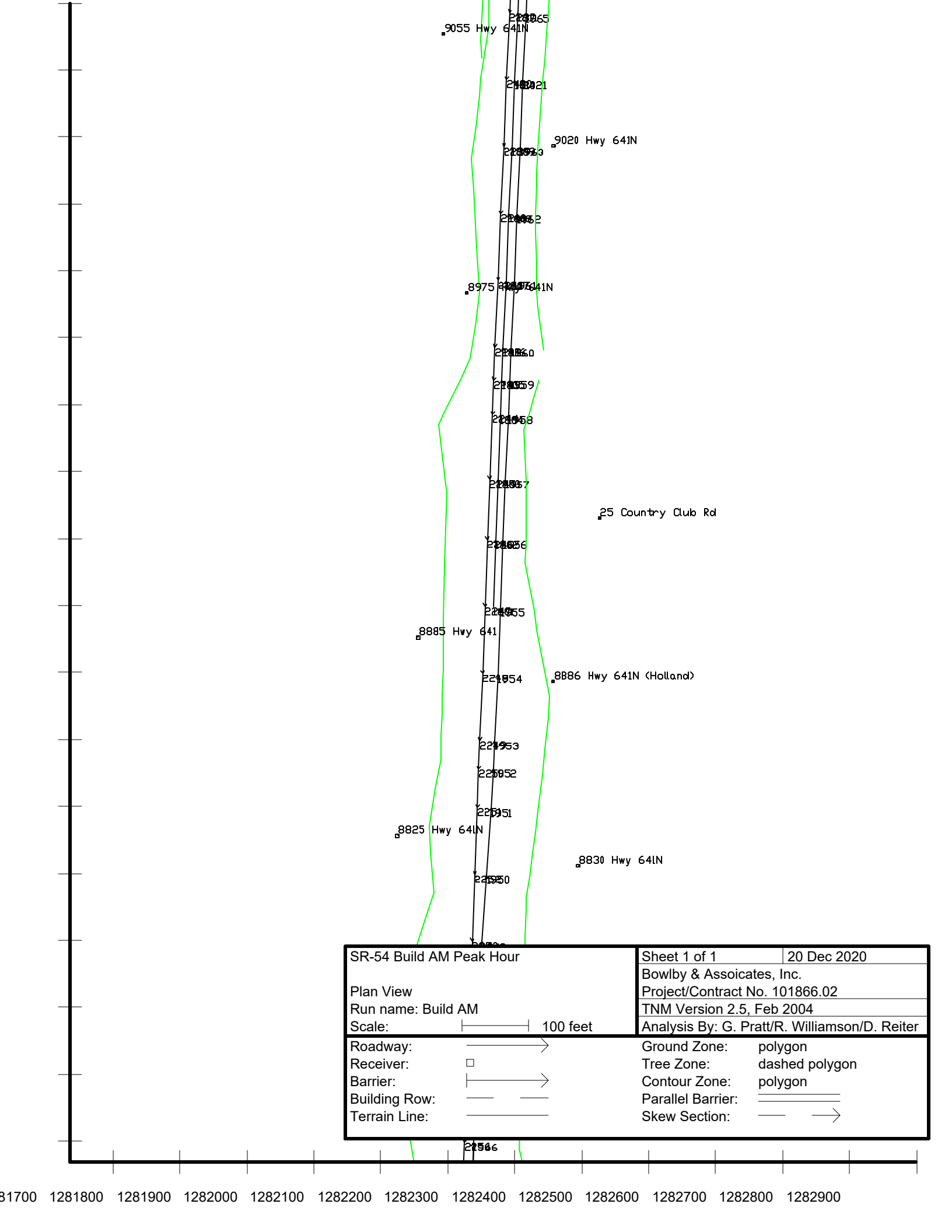


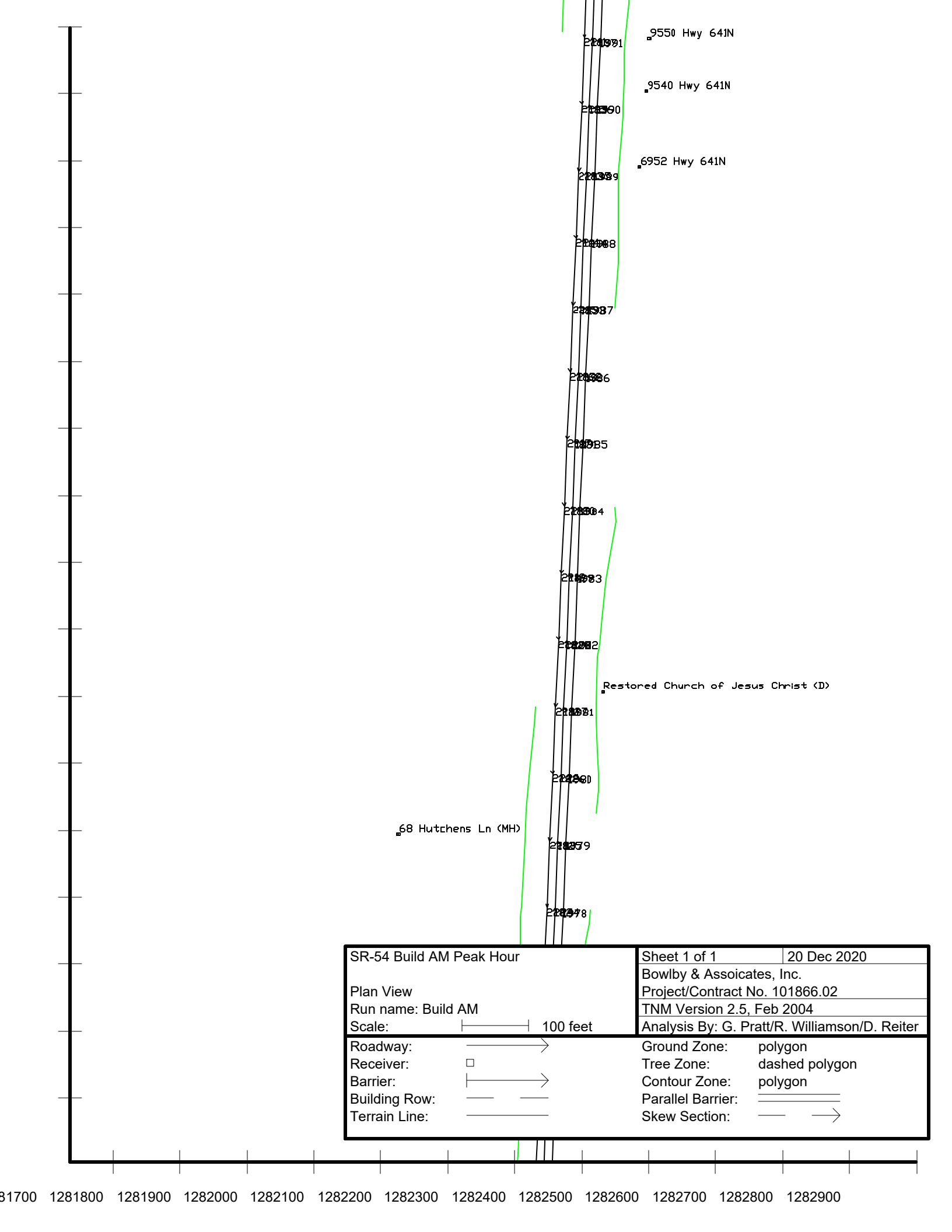
Skew Section:











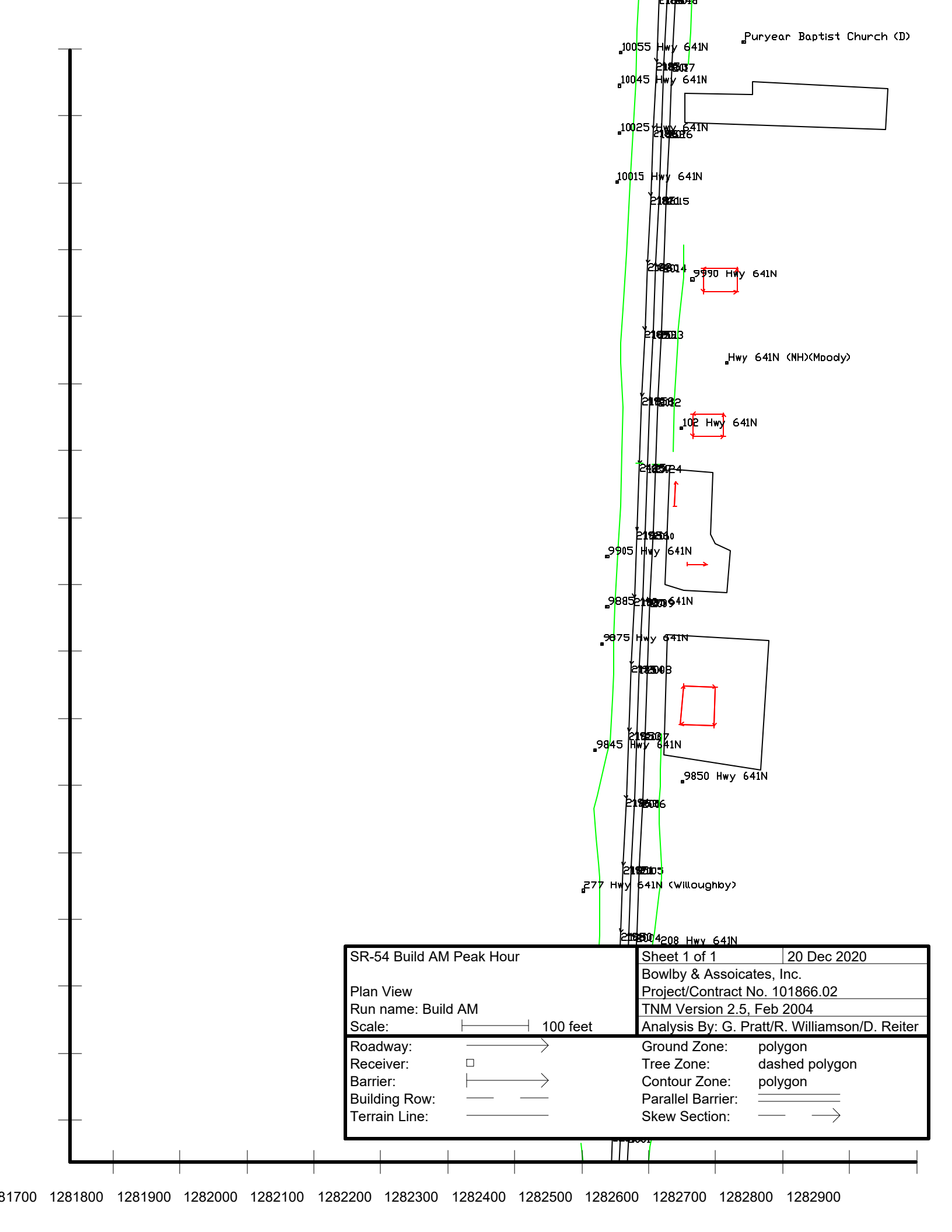
21169

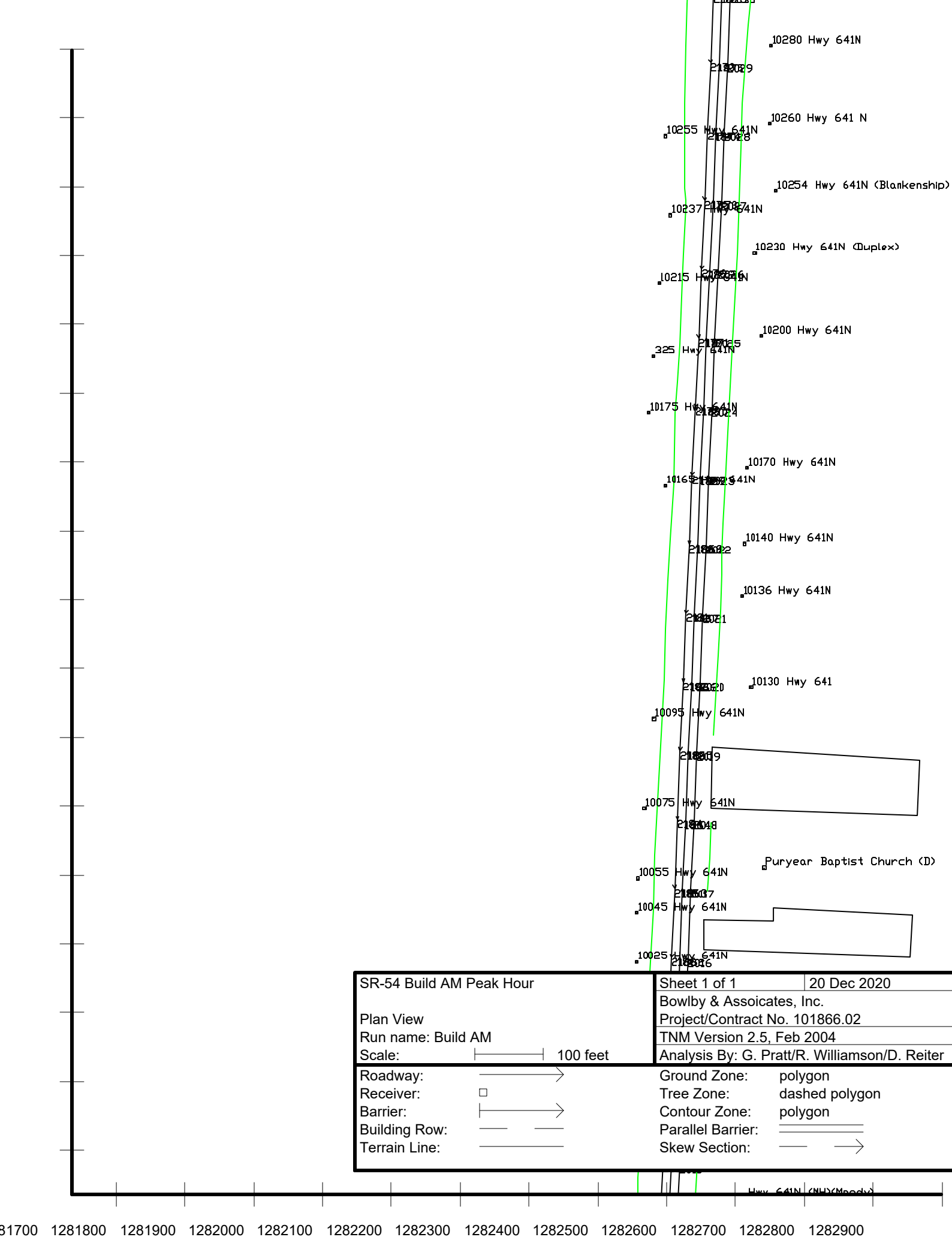


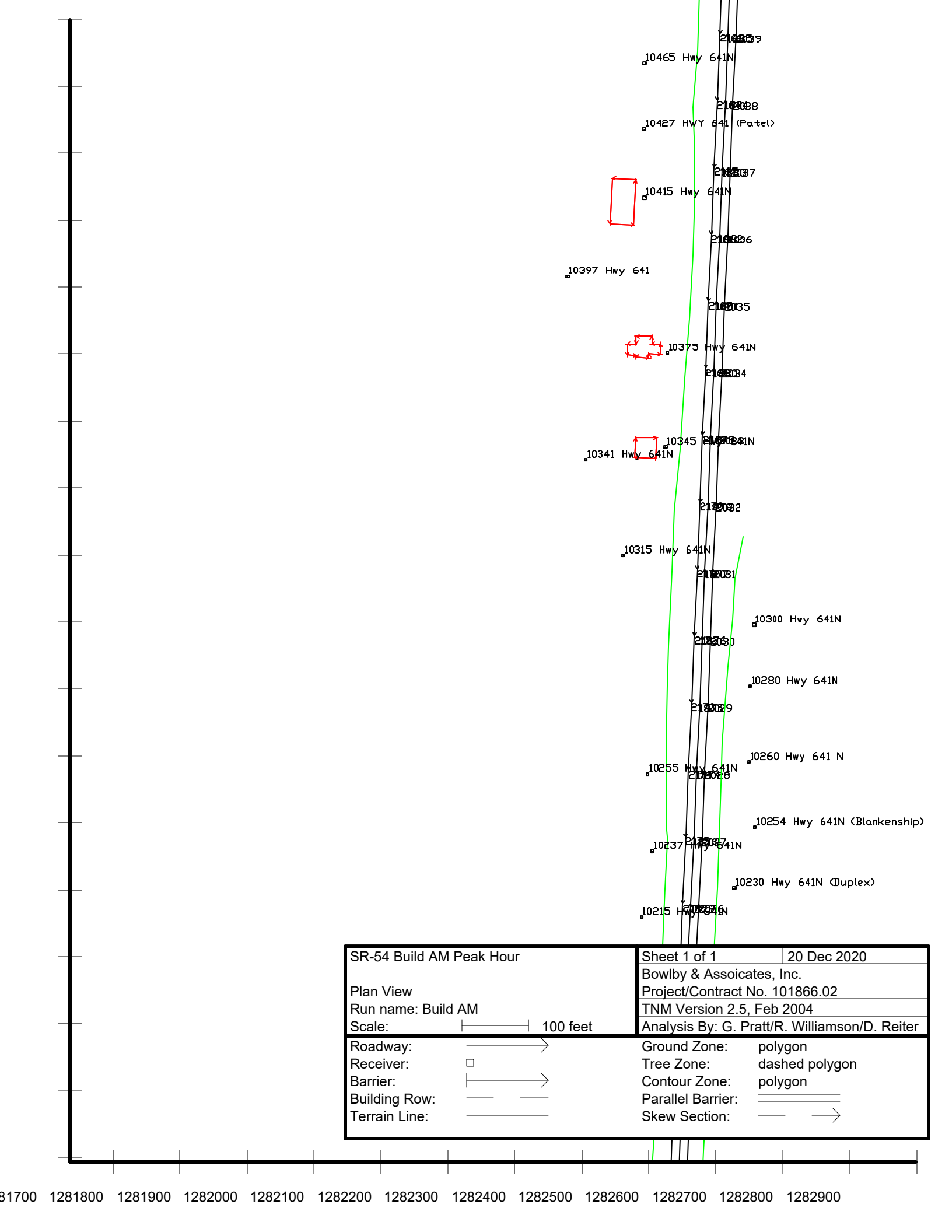












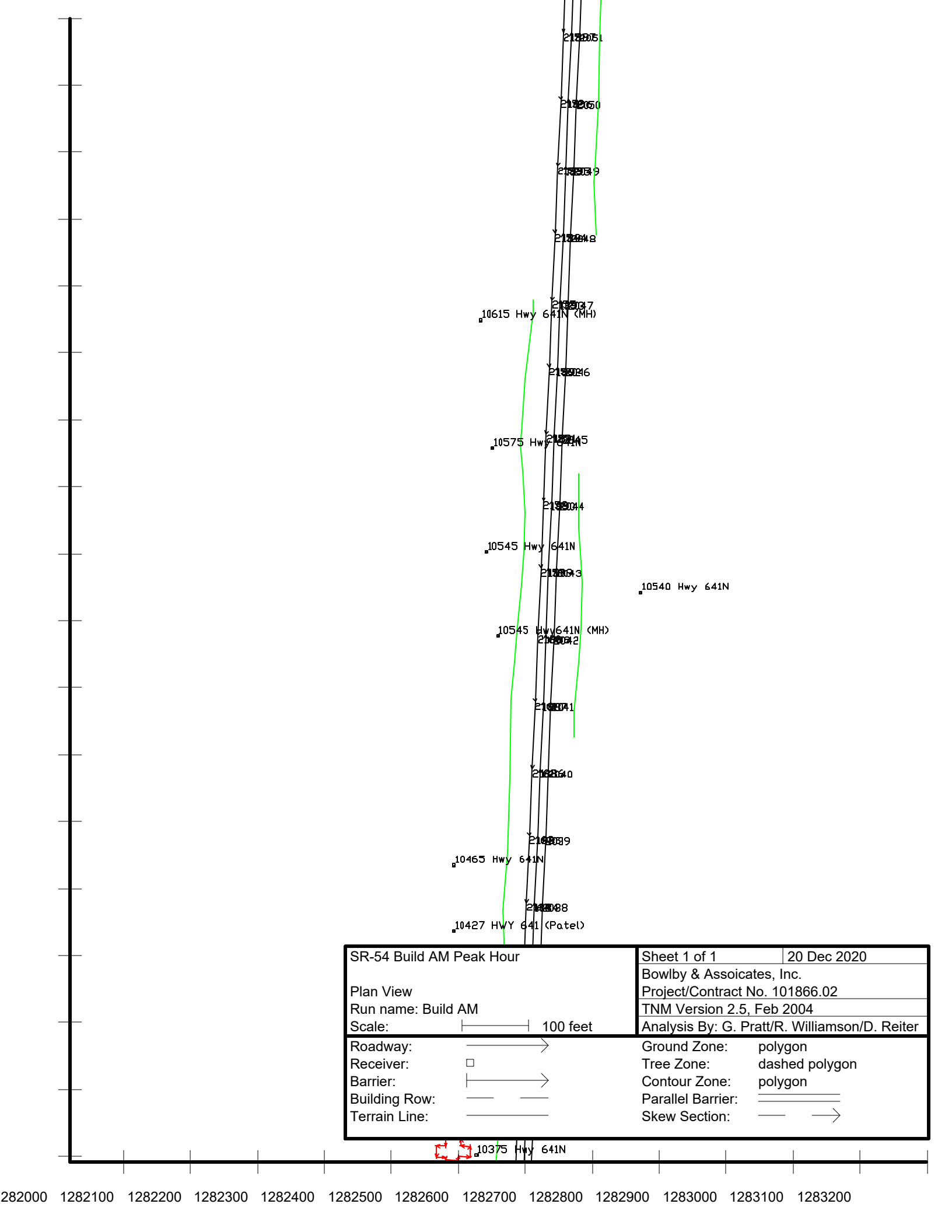
SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		











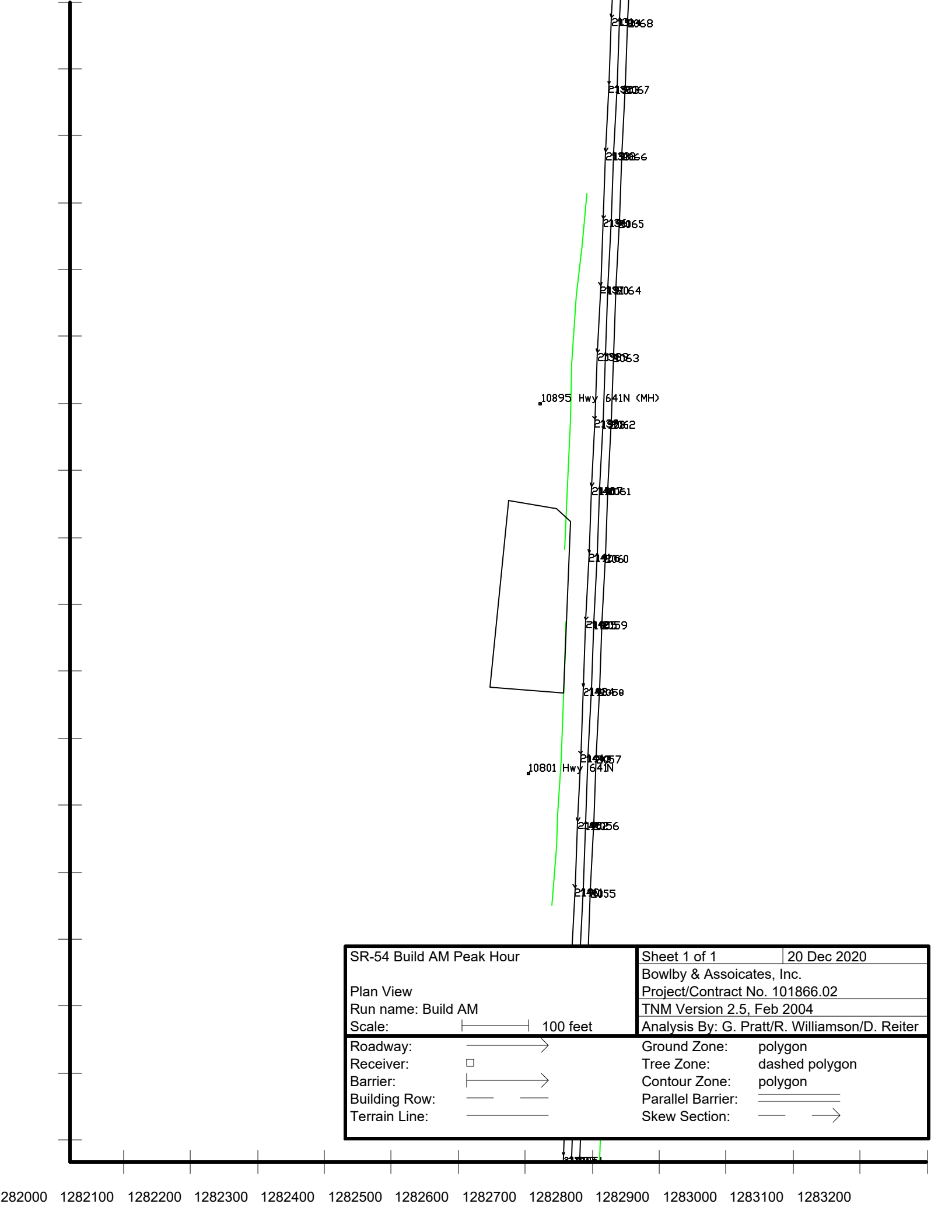












SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		



SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway: 	Ground Zone: polygon		
Receiver: 	Tree Zone: dashed polygon		
Barrier: 	Contour Zone: polygon		
Building Row: 	Parallel Barrier: 		
Terrain Line: 	Skew Section: 		



SR-54 Build AM Peak Hour		Sheet 1 of 1	20 Dec 2020
Plan View		Bowlby & Associates, Inc.	
Run name: Build AM		Project/Contract No. 101866.02	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: G. Pratt/R. Williamson/D. Reiter	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

Appendix D

Existing and Design Year Noise Levels and Impacts

Project:	SR-54 Henry County
PIN:	101886.02
Design Year:	2043
Alternative:	Build

	Number of	Existing $L_{eq}(th)$ (dBA)		Design Year $L_{eq}(th)$ (dBA)		Noise Level	Approach or	Substantial		Impacted
Lakeside Christian Fellowship (C)	0	58	58	61	61	3	No	No	No	0
3280 HWY 641N	1	60	59	64	64	5	No	No	No	0
4210 Hwy 641N	1	60	60	63	62	3	No	No	No	0
4380 Hwy 641N	1	62	62	67	67	5	Yes	No	Yes	1
4420 Hwy 641N	1	62	62	67	67	5	Yes	No	Yes	1
4470 Hwy 641N	1	62	62	66	66	5	Yes	No	Yes	1
4590 Hwy 641 N	1	61	61	65	65	5	No	No	No	0
4660 Hwy 641N	1	57	57	58	58	1	No	No	No	0
5080 Hwy 641N	1	62	62	66	66	4	Yes	No	Yes	1
5290 Hwy 641N	1	56	56	61	61	5	No	No	No	0
5660 Hwy 641N	1	57	57	64	64	8	No	No	No	0
6540 Hwy 641N	1	61	61	66	65	5	Yes	No	Yes	1
6580 Hwy 641N	1	56	56	61	60	5	No	No	No	0
6620 Hwy 641N	1	57	57	63	62	5	No	No	No	0
6770 Hwy 641N	1	57	57	62	62	5	No	No	No	0
7020 Hwy 641N	1	61	61	65	65	5	No	No	No	0
7030 Hwy 641N	1	60	60	65	64	5	No	No	No	0
Kids Karral Day Care (C)	0	63	63	66	66	3	Yes	No	Yes	0
8130 Hwy 641	1	61	61	65	65	4	No	No	No	0
8310 Hwy 641N	1	64	64	67	67	3	Yes	No	Yes	1
8770 Hwy 641	1	57	57	59	60	2	No	No	No	0
8778 Hwy 641 (Varner)	1	56	56	60	61	5	No	No	No	0
Lighthouse Ministries (D)	0	57	57	62	62	5	No	No	No	0
8830 Hwy 641N	1	59	59	64	64	5	No	No	No	0
8886 Hwy 641N (Holland)	1	64	64	66	66	2	Yes	No	Yes	1
25 Country Club Rd	1	60	61	64	64	3	No	No	No	0
9020 Hwy 641N	1	66	66	69	68	2	Yes	No	Yes	1
Harrelson School Playground (C)	0	57	57	62	62	5	No	No	No	0
9120 Hwy 641N	1	56	56	61	61	5	No	No	No	0
9150 Hwy 641N	1	64	64	66	66	2	Yes	No	Yes	1
9170 Hwy 641 N	1	59	58	63	62	4	No	No	No	0
9280 Hwy 641N	1	58	58	62	62	4	No	No	No	0
Restored Church of Jesus Christ (D)	0	63	63	65	65	2	No	No	No	0
6952 Hwy 641N	1	61	61	64	64	3	No	No	No	0
9540 Hwy 641N	1	61	60	63	63	3	No	No	No	0
9550 Hwy 641N	1	61	60	63	63	3	No	No	No	0
9620 Hwy 641N	1	62	61	64	64	3	No	No	No	0
9630 Hwy 641N (MH)	1	59	58	62	62	4	No	No	No	0
9660 Hwy 641N	1	62	61	64	64	3	No	No	No	0
9670 Hwy 641N	1	62	61	64	64	2	No	No	No	0
9690 Hwy 641N	1	61	61	64	64	3	No	No	No	0
9710 Hwy 641N	1	61	61	64	64	2	No	No	No	0
9730 Hwy 641N	1	54	54	59	59	5	No	No	No	0
208 Hwy 641N	1	65	65	67	66	1	Yes	No	Yes	1
9850 Hwy 641N	1	63	62	65	65	2	No	No	No	0
102 Hwy 641N	1	68	67	69	68	2	Yes	No	Yes	1
Hwy 641N (MH)(Moody)	1	59	58	63	62	4	No	No	No	0
9990 Hwy 641N	1	65	64	67	66	2	Yes	No	Yes	1
Puryear Baptist Church (D)	1	58	58	62	62	4	No	No	No	0
10130 Hwy 641	1	60	60	64	63	3	No	No	No	0
10136 Hwy 641N	1	62	62	65	65	3	No	No	No	0
10140 Hwy 641N	1	62	62	65	64	3	No	No	No	0
10170 Hwy 641N	1	63	62	65	65	2	No	No	No	0
10200 Hwy 641N	1	61	61	64	64	3	No	No	No	0
10230 Hwy 641N (Duplex)	1	63	62	65	65	2	No	No	No	0
10254 Hwy 641N (Blankenship)	1	59	59	63	63	4	No	No	No	0
10260 Hwy 641 N	1	61	61	64	64	3	No	No	No	0
10280 Hwy 641N	1	61	61	64	64	3	No	No	No	0
10300 Hwy 641N	1	61	61	64	64	3	No	No	No	0
10540 Hwy 641N	1	56	56	61	60	4	No	No	No	0
11160 Hwy 641N	1	61	61	64	64	3	No	No	No	0
10895 Hwy 641N (MH)	1	60	60	63	63	3	No	No	No	0
10801 Hwy 641N	1	60	60	63	63	3	No	No	No	0
10615 Hwy 641N (MH)	1	58	58	61	62	4	No	No	No	0
10575 Hwy 641N	1	61	61	63	63	2	No	No	No	0
10545 Hwy 641N	1	60	61	63	63	2	No	No	No	0
10545 Hwy641N (MH)	1	62	63	64	64	2	No	No	No	0
10465 Hwy 641N	1	57	58	61	61	4	No	No	No	0
10427 HWY 641 (Patel)	1	58	58	61	62	4	No	No	No	0
10415 Hwy 641N	1	58	58	62	62	4	No	No	No	0
10397 Hwy 641	1	51	51	55	55	4	No	No	No	0
10375 Hwy 641N	1	62	63	64	64	2	No	No	No	0
10345 Hwy 641N	1	63	63	64	65	2	No	No	No	0
10341 Hwy 641N	1	53	53	57	58	5	No	No	No	0
10315 Hwy 641N	1	57	57	61	61	4	No	No	No	0
10255 Hwy 641N	1	62	63	64	64	1	No	No	No	0
10237 Hwy 641N	1	64	64	65	65	1	No	No	No	0
10215 Hwy 641N	1	62	62	64	64	2	No	No	No	0
325 Hwy 641N	1	62	62	64	64	2	No	No	No	0
10175 Hwy 641N	1	61	62	64	64	2	No	No	No	0
10165 Hwy 641N	1	65	65	66	66	1	Yes	No	Yes	1
10095 Hwy 641N	1	65	65	66	66	1	Yes	No	Yes	1
10075 Hwy 641N	1	64	64	65	65	1	No	No	No	0
10055 Hwy 641N	1	64	64	65	65	2	No	No	No	0
10045 Hwy 641N	1	64	64	65	65	1	No	No	No	0
10025 Hwy 641N	1	64	64	65	65	1	No	No	No	0
10015 Hwy 641N	1	64	64	65	65	1	No	No	No	0
9905 Hwy 641N	1	66	66	67	67	1	Yes	No	Yes	1
9885 Hwy 641N	1	66	66	67	67	1	Yes	No	Yes	1
9875 Hwy 641N	1	66	65	66	67	1	Yes	No	Yes	1
9845 Hwy 641N	1	65	65	65	66	1	Yes	No	Yes	1
277 Hwy 641N (Willoughby)	1	63	63	64	65	2	No	No	No	0
215 Hwy 641N	1	57	57	61	61	4	No	No	No	0
9705 Hwy 641N	1	63	63	64	65	2	No	No	No	0
9685 Hwy 641N	1	62	62	64	64	2	No	No	No	0

Project:	SR-54 Henry County
PIN:	101886.02
Design Year:	2043
Alternative:	Build

	Number of	Existing L _{eq} (th) (dBA)		Design Year L _{eq} (th) (dBA)		Noise Level	Approach or	Substantial		Impacted
9665 Hwy 641N	1	60	60	63	63	3	No	No	No	0
9645 Hwy 641N	1	61	61	63	64	3	No	No	No	0
9625 Hwy 491N	1	61	61	63	64	3	No	No	No	0
9595 Hwy 641N	1	59	59	62	63	3	No	No	No	0
9575 Hwy 641N	1	59	59	62	62	3	No	No	No	0
68 Hutchens Ln (MH)	1	52	52	56	56	4	No	No	No	0
9265 Hwy 641N	1	60	60	63	63	3	No	No	No	0
9245 Hwy 641N	1	60	60	63	63	3	No	No	No	0
9165 Hwy 641N	1	59	59	62	62	4	No	No	No	0
9125 Hwy 641N	1	61	61	63	63	3	No	No	No	0
9105 Hwy 641N	1	59	59	62	62	4	No	No	No	0
9055 Hwy 641N	1	60	60	63	64	4	No	No	No	0
8975 Hwy 641N	1	68	68	69	69	1	Yes	No	Yes	1
8885 Hwy 641	1	63	63	65	66	2	Yes	No	Yes	1
8825 Hwy 641N	1	61	61	65	65	3	No	No	No	0
8515 Hwy 641N	1	53	53	56	56	3	No	No	No	0
8365 Hwy 641N	1	60	61	64	64	4	No	No	No	0
8285 Hwy 641	1	61	61	65	65	4	No	No	No	0
8285 Hwy 641N	1	62	62	65	65	3	No	No	No	0
7521 Hwy 641N	1	46	46	47	47	1	No	No	No	0
6731 Hwy 641N	1	56	56	61	62	5	No	No	No	0
45 Wyninger Rd	1	56	56	60	60	5	No	No	No	0
6405 Hwy 641N	1	59	59	65	65	5	No	No	No	0
6165 Hwy 641N	1	53	53	58	58	5	No	No	No	0
6115 Hwy 641N (MH)	1	52	52	56	56	4	No	No	No	0
5655 Hwy 641	1	54	54	58	58	3	No	No	No	0
5325 Hwy 641N	1	61	61	64	65	4	No	No	No	0
5215 Hwy 641N	1	57	57	62	62	5	No	No	No	0
5131 Hwy 641N	1	62	62	66	66	4	Yes	No	Yes	1
5075 Hwy 641N	1	52	52	55	56	4	No	No	No	0
5001 Hwy 641N(a)	1	59	59	63	63	4	No	No	No	0
5001 Hwy 641N(b)	1	58	59	63	63	5	No	No	No	0
4935 Hwy 641N	1	57	58	62	63	5	No	No	No	0
4925 Hwy 641	1	59	59	64	64	5	No	No	No	0
4891 Hwy 641N	1	58	59	63	64	5	No	No	No	0
4395 Hwy 641N	1	55	55	59	59	4	No	No	No	0
3963 Hwy 641N (Tanner)	1	57	57	61	61	4	No	No	No	0
3855 Hwy 641N	1	68	68	68	68	(0)	Yes	No	Yes	1
3795 Hwy 641N (MH)	1	61	61	61	62	0	No	No	No	0
3425 Hwy 641N (MH)	1	62	63	61	61	(2)	No	No	No	0
3315 Hwy 641N	1	60	60	63	63	3	No	No	No	0
Hwy 641N (MH) (Smith)	1	55	54	59	59	5	No	No	No	0
3285 Hwy 641N	1	63	63	65	65	2	No	No	No	0
3235 Hwy 641N	1	65	65	66	66	1	Yes	No	Yes	1
3205 Hwy 641N	1	59	58	62	62	3	No	No	No	0
3145 Hwy 641N (MH)	1	57	57	61	60	4	No	No	No	0
60 Smith Rd	1	51	52	53	53	1	No	No	No	0
Impacted Residences									23	
Category C Impacts									1	
Category E Impacts									0	
Total Impacts									24	

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix K
PIN 101886.02
Farmland



United States Department of Agriculture

December 8, 2021

Sam Patterson
Environmental Supervisor
Environmental Division, TDOT

RE: Henry Co SR-54, PIN 101886.02

Dear Mr. Patterson,

Attached is the completed CPA-106 form for the SR-54 project in Henry County, Tennessee. The project under evaluation contains prime farmland and/or farmland of statewide importance. Following the completion of Parts VI and VII, please return a copy of the form to tnhawc@usda.gov.

For your reference, NRCS policy and procedures on prime and unique farmlands are published in the Code of Federal Regulations 7 CFR 657.

The website is: <https://www.ecfr.gov/current/title-7/subtitle-B/chapter-VI/subchapter-F/part-657?toc=1>

Please let me know if you have any questions.

Sincerely,

Brooke Lucas

Brooke Lucas
TN-State Office
Soil Scientist

Natural Resources Conservation Service
801 Broadway, 675 U.S. Courthouse
Nashville, Tennessee 37203
Voice (615) 277-2531 Fax (855) 591-1284
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**FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS**

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 11/16/20	4. Sheet 1 of _____
1. Name of Project State Route 54		5. Federal Agency Involved Federal Highway Administration	
2. Type of Project Transportation		6. County and State Henry County, Tennessee	
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 11/30/21	2. Person Completing Form Brooke Lucas
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated 4136	Average Farm Size 287
5. Major Crop(s) Corn	6. Farmable Land in Government Jurisdiction Acres: 211993 % 55.8	7. Amount of Farmland As Defined in FPPA Acres: 103336 % 27.2	
8. Name Of Land Evaluation System Used Henry Co. TN	9. Name of Local Site Assessment System n/a	10. Date Land Evaluation Returned by NRCS 12/8/21	

PART III (To be completed by Federal Agency)		Alternative Corridor For Segment			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		146.09			
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor		146.09			
PART IV (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland		11.6			
B. Total Acres Statewide And Local Important Farmland		0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		.011			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		80			
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)		56			
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points			
1. Area in Nonurban Use	15	12			
2. Perimeter in Nonurban Use	10	2			
3. Percent Of Corridor Being Farmed	20	1			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	0			
6. Creation Of Nonfarmable Farmland	25	25			
7. Availability Of Farm Support Services	5	3			
8. On-Farm Investments	20	15			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	5			
TOTAL CORRIDOR ASSESSMENT POINTS		160	63	0	0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	56	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)		160	63	0	0
TOTAL POINTS (Total of above 2 lines)		260	119	0	0
1. Corridor Selected: Corridor A	2. Total Acres of Farmlands to be Converted by Project: 11.6	3. Date Of Selection: 2/7/22	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>		
5. Reason For Selection:					

Signature of Person Completing this Part: **Hope Weaver, Environmental Planner** DATE **2/7/22**

NOTE: Complete a form for each segment with more than one Alternate Corridor

MEMORANDUM

Date: February 07, 2022

To: TDOT Environmental Division

From: Meredith Krebs
Hope Weaver
Kimley-Horn and Associates, Inc.

RE: ***NRCS CPA-106 Form, Part VI Site Assessment Criteria – Memorandum to File
State Route 54 (US-641), From near Smith Road to Near Howard Road (North of
Puryear), Henry County, Tennessee, TDOT PIN 101886.02***

Purpose of Memorandum

The following memorandum documents the methodologies that were followed and assumptions that were made in order to complete Part VI of the Farmland Conversion Impact Rating Form (NRCS-CPA-106) for the proposed State Route 54 project in Henry County, TN (PIN 101866.02). All acreage amounts used in this assessment are based off of the right-of-way amounts identified in the Technical Report (dated 04/02/2020) for the Selected Alternative (PIN 101866.02). See Figure 1.

As indicated on the NRCS-CPA-106 Form, the criteria analyzed in the tables on the subsequent pages are explained in 7 CFR 658.5(c).

Conclusion

Based on the point values assigned in the tables on the subsequent pages, the Total Corridor Assessment Points = **63 points**.

Figure 1: Project Area



Question 1 – Area in non-urban use (15 maximum points)

Per 7 CFR 658.5(c), Question 1 – How much land is in non-urban use within a radius of 1.0 mile from where the project is intended? (90 to 20 percent – 14 to 1 point(s))

Methodology /Assumption

In order to determine the area of land in non-urban use, first a one-mile buffer was created around the proposed right-of-way (ROW) using GIS. This one-mile buffer was then used to clip the parcel data layer to identify all parcels located within the one-mile buffer. Once all parcels within a one-mile radius were identified, each parcel's designated land use was identified. A comparison between acreage total of parcels classified as non-urban use versus acreage total of all parcels identified within a one-mile radius was completed. Examples of non-urban use include: agricultural, range land, forest land, golf courses, non-paved parks/recreational areas, mining sites, farm storage, lakes/ponds/other waterbodies, rural roads (with houses spread at least ¼ mile apart), open space, wetlands, fish protection and pasture/hay land.

Calculation

Total area in non-urban use within a one-mile radius = 10,829.60 acres

Total area of impacted parcels within a one-mile radius = 14,049.21 acres

Percent of area in non-urban use within a one-mile radius:

$$\frac{(10,829.60 \text{ acres})}{(14,049.21 \text{ acres})} \times 100 = 77 \%$$

The NRCS-CPA-106 Form indicates that 90 to 20 percent = 14 to 1 point(s).

Based on the assumption that 90 percent is equivalent to 14 points, it was determined that 77 percent is equivalent to 12 points as shown in the calculations below:

$$\frac{90 \text{ percent}}{14 \text{ points}} = \frac{77 \text{ percent}}{X}$$

$$\frac{77 \text{ percent} \times 14 \text{ points}}{90 \text{ percent}} = X = 12 \text{ points}$$

Point Total

12 out of 15

Question 2 – Perimeter in non-urban use (10 maximum points)

Per 7 CFR 658.5(c), Question 2 – How much of the perimeter of the site borders on land in non-urban use? (90 to 20 percent – 9 to 1 point(s))

Methodology In order to determine how much of the perimeter of the site borders land in non-urban use, a GIS clip was performed between the proposed ROW and the parcel data layer. Following completion of the GIS clip, the designated land use of each parcel within the proposed ROW was identified. A comparison between acreage total of parcels classified as non-urban use versus acreage total of all parcels identified within the proposed ROW was completed.

Calculation Total area in non-urban use within the proposed ROW = 32.58 acres
Total area of impacted parcels within the proposed ROW = 146.09 acres
Percent of area in non-urban use within the proposed ROW:
$$\frac{32.58 \text{ acres}}{146.09 \text{ acres}} \times 100 = \mathbf{22\%}$$

The NRCS-CPA-106 Form indicates that 90 to 20 percent = 9 to 1 point(s). Based on the assumption that 90 percent is equivalent to 9 points, it was determined that 22 percent is equivalent to 2 points as shown in the calculations below:
$$\frac{90 \text{ percent}}{9 \text{ points}} = \frac{22 \text{ percent}}{X}$$

$$\frac{22 \text{ percent} \times 9 \text{ points}}{90 \text{ percent}} = X = \mathbf{2.2 \text{ points rounded down to 2 points}}$$

Point Total 2 out of 10

Question 3 – Percent of corridor being farmed (20 maximum points)	
<i>Per 7 CFR 658.5(c), Question 3 – How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than 5 years of the last 10 years? (90 to 20 percent – 19 to 1 point(s))</i>	
Methodology /Assumption	It was assumed that all farmland within the proposed ROW has been farmed more than 5 years of the of the last 10 years. The total area of farmland within the proposed ROW was determined to be 32.58 acres after a GIS clip between the ROW file and parcel data layer was completed. A comparison between acreage total of farmland versus acreage total of all parcels identified within the proposed ROW was completed.
Calculation	<p>Total area classified as “Agricultural” within the proposed ROW = 32.58 acres Total area of impacted parcels within the proposed ROW = 146.09 acres Percent of agricultural area within the proposed ROW:</p> $\frac{32.58 \text{ acres}}{146.09 \text{ acres}} \times 100 = 22 \%$ <p>The NRCS-CPA-106 Form indicates that 90 to 20 percent = 19 to 1 point(s). Based on the assumption that 20 percent is equivalent to 1 point, it was determined that 22 percent is equivalent to 1 point as shown in the calculations below:</p> $\frac{20 \text{ percent}}{1 \text{ point}} = \frac{22 \text{ percent}}{X}$ $\frac{22 \text{ percent} \times 1 \text{ point}}{20 \text{ percent}} = X = 1.1 \text{ points rounded down to 1 point}$
Point Total	1 out of 20

Question 4 – Protection provided by state and local government (20 maximum points)	
<i>Per 7 CFR 658.5(c), Question 4 – Is the site subject to State or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland? (Site is not protected – 0 points)</i>	
Methodology /Assumption	Farmlands within Tennessee are afforded no protection by state and local governments. Consequently, zero points were awarded for this question.
Calculation	N/A
Point Total	0 out of 20

Question 5 – Size of present farm unit compared to average (10 maximum points)

Per 7 CFR 658.5(c), Question 5 – Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county? (Below average – deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average – 9 to 0 points)

Methodology /Assumption	According to the USDA National Agricultural Statistics Service 2017 Census of Agriculture County Profile for Henry County, Tennessee, the average size of a farm in Henry County is 287 acres. In order to calculate the average farm size within the limits of the project, an average acreage total was taken of the parcels classified as farmland/agricultural that would be impacted by the project. It is important to note that the farmland/agricultural parcels owned by the same individual/entity were combined in order to calculate a more representative average of the farm sizes within the project area.
Calculation	<p>The average farm size within the project area within Henry County = 93.47 acres The average farm size in Henry County = 287 acres</p> $\frac{93.47 \text{ acres}}{287 \text{ acres}} \times 100 = 33 \%$ <p>The NRCS-CPA-106 Form indicates that one point is to be deducted for each five percent below the average, down to 0 points if 50 percent or more below the average. Since 93.47 acres is 33% of 287 acres (which is more than 50 percent below the average), 0 points were awarded for this question.</p>
Point Total	0 out of 10

Question 6 – Creation of non-farmable farmland (25 maximum points)

Per 7 CFR 658.5(c), Question 6 – If this site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns? (Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s))

Methodology /Assumption	The maximum number of points (25) were awarded for this question due to the consideration that the remaining land on the parcels classified as farmland/agricultural could potentially become non-farmable due to being split by the proposed corridor.
Calculation	N/A
Point Total	25 out of 25

Question 7 – Availability of farm support services (5 maximum points)

Per 7 CFR 658.5(c), Question 7 – Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets? (Some required services are available – 4 to 1 points)

Methodology /Assumption	An average point total (3 points) was awarded for this question since there could be an adequate supply of farm support services and storage facilities within the project area.
Calculation	N/A
Point Total	3 out of 5

Question 8 – On-farm investments (20 maximum points)

Per 7 CFR 658.5(c), Question 8 – Does the site have substantial and well-maintained on-farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures? (Moderate amount of on-farm investment – 19 to 1 points)

Methodology /Assumption	A review of available google imagery indicates that areas designated as agricultural within the proposed ROW appear to be highly maintained and contain a moderate number of on-farm investments; therefore, an slightly above average point total (15 points) was awarded for this question.
Calculation	N/A
Point Total	15 out of 20

Question 9 – Effects of conversion on farm support services (25 maximum points)	
<i>Per 7 CFR 658.5(c), Question 9 – Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of farms remaining in the area? (No significant reduction in demand for support services if the site is converted – 0 points)</i>	
Methodology /Assumption	Based on the information provided by the NRCS in Part IV of the NRCS-CPA-106 Form, the total acres of farmland within the proposed ROW is 32.58 acres. This total amount of farmland to be converted (32.58 acres) compared with the total land in farms in Henry County (103,336 acres) would constitute less than one percent. Therefore, the expected conversion of farmland in the project area is not expected to result in a significant reduction in farm support services.
Calculation	<p>The area of farmland to be converted for the project = 32.58 acres</p> <p>The land in farms in Henry County = 203,991 acres</p> <p>Percent of farmland area to be converted for the project out of total farms in Henry County:</p> $\frac{32.58 \text{ acres}}{203,991 \text{ acres}} \times 100 = \mathbf{0.02\%}$ <p>The NRCS-CPA-106 Form indicates that 0 points are awarded if no significant reduction in demand for support services is expected if the site is converted. Since the expected conversion of farmland in the project area is expected to be less than one percent, 0 points were awarded for this question.</p>
Point Total	0 out of 10

Question 10 – Compatibility with existing agricultural use (10 maximum points)	
<i>Per 7 CFR 658.5(c), Question 10 – Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use? (Proposed project is incompatible to existing agricultural use of surrounding farmland – 10 points)</i>	
Methodology /Assumption	A total of 5 points (average point total) was given for this question, due to the fact that the project area is located within a predominately rural area of the state where the land use is not anticipated to change due to the proposed project.
Calculation	N/A
Point Total	5 out of 10

Total Corridor Assessment Points = 63 points



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION**

NEPA PROGRAMS OFFICE

SUITE 900, JAMES K. POLK BUILDING

505 DEADERICK STREET

NASHVILLE, TENNESSEE 37243-1402

(615) 741-3655

JOSEPH GALBATO, III
INTERIM COMMISSIONER

BILL LEE
GOVERNOR

November 29, 2021

Ms. Brooke Lucas
U.S. Department of Agriculture, Natural Resource Conservation Service
801 Broadway Street
675 U.S. Courthouse
Nashville, TN 37203

Subject: Updated Farmland Impact Conversion Rating, State Route 54 (US-641), From near Smith Road to Near Howard Road (North of Puryear), Henry County, Tennessee, PIN 101886.02

Dear Ms. Lucas,

In cooperation with the Federal Highway Administration (FHWA), the Tennessee Department of Transportation (TDOT) is preparing a National Environmental Policy Act (NEPA) (Construction) Re-evaluation for State Route (SR) 54 (US 641) from near Smith Road to Near Howard Road (North of Puryear) in Henry County, Tennessee, PIN 101886.02.

Previously an Environmental Assessment (EA) was approved by the FHWA on 10/20/2010 for the entire SR-54 (US-641) project from SR-69/Wood Street in Paris to Crossland Road/Brannon Lane (North of Puryear), Henry County Tennessee. Subsequently, the Finding of No Significant Impact (FONSI) was approved on 06/15/2011.

As part of the development for the 2010 EA/2011 FONSI, coordination with your agency was previously completed on 08/21/2009 for the Build Alternative (now the Selected Alternative) based on conceptual-level design plans available at the time. Please see Figure 1 for previous record of coordination with your agency.

Since the approval of the 2010 EA/2011 FONSI, the Selected Alternative has been split into two Design Segments (Design Segment 1 (PIN 101866.01) and Design Segment 2 (PIN 101866.02)) (See Figure 2); Design Segment 2 is the focus of the subject NEPA (Construction) Re-evaluation.

A TDOT Technical Report (dated 04/20/2020) has become available for Design Segment 2 (PIN 101866.02) of the Selected Alternative from near Smith Road in Paris to Near Howard Road (North of Puryear) (See Figure 3).

Design Segment 2 (PIN 101866.02) of the Selected Alternative would consist of the following typical sections:

- Near Smith Road to SR-218 (Log Mile (LM) 14.02 to LM 14.87): Widen existing SR-54 to an improved rural five (5) lane typical section consisting of four (4) twelve (12) foot travel lanes, a twelve (12) foot TWLTL, and six (6) foot paved shoulders using a design speed of fifty (50) Miles Per Hour (MPH). Curb and gutter is to be constructed on both sides of the roadway. The roadway alignment is shifted to the east from L.M 14.70 to LM 15.14 to reduce residential and commercial impact.
- From SR-218 to South of Puryear (LM 14.87 to LM 20.00): Widen existing SR-54 to an improved rural three (3) lane typical section consisting of two (2) twelve (12) foot travel lanes, a twelve (12) foot TWLTL, and ten (10) foot paved shoulders using a design speed of sixty (60) MPH. The bridge over North Folk Obion River at LM 16.47 and the bridge over Rowe Creek at LM 17.13 are to be widened. The roadway alignment is shifted to the east from LM 14.70 to LM 15.14 and from LM 16.76 to LM 16.97 to reduce residential and commercial impact.
- From South of Puryear to North of Puryear (LM 20.00 to LM 22.24): Widen existing SR-54 throughout the City of Puryear to an improved rural three (3) lane typical section consisting of two (2) twelve (12) foot travel lanes, a twelve (12) foot TWLTL, and four (4) foot paved shoulders using a design speed of forty-five (45) MPH.
- L.M. 17.87 to L.M.19.83: A passing lane in each direction was proposed in order to provide adequate distance for vehicles, particularly heavy vehicles, to pass slower-moving vehicles. The southbound passing lane is from LM 17.87 to LM 18.84 and the northbound passing lane is from LM 18.93 to LM 19.83. The acceleration lanes are expected to reduce the percent time spent following, therefore, improving travel time along SR-54 and providing a safe option for passing.

Based on the TDOT Technical Report (dated 04/02/2020) developed for this project, the Selected Alternative (PIN 101886.02) is anticipated to acquire approximately 146.09 acres of right-of-way.

TDOT would like to know if the Selected Alternative (PIN 101866.02) will have any effect, either favorable or adverse, on any programs being planned or executed by your agency. We request that you review the enclosed material and advise us with your comments on potential environmental impacts. The NEPA (Construction) Re-evaluation will assess a wide range of concerns including impacts on the social, economic, and ecological environment, and your input will assist us in the preparation of the environmental document.

In accordance with the *Farmland Protection Policy Act of 1981*, Title 7 C.F.R. 658.4, a Farmland Conversion Impact Rating Form (CPA-106) for the SR-54 (PIN 101866.02) is attached for your determination of whether this project contains farmland protected under the Act. Also attached are project maps and the shapefile that identifies the proposed right-of-way areas.

Please contact me by phone at 615-253-2464 or by email at Samuel.T.Patterson@tn.gov if you have any questions or need additional information.

Regards,

**Sam
Patterson**

Digitally signed by
Sam Patterson
Date: 2021.11.29
11:22:27 -06'00'

Sam Patterson

Environmental Supervisor

TDOT Environmental Division

Samuel.T.Patterson@tn.gov

615-253-2464

Enclosures: Farmland Conversion Impact Rating Form (CPA-106)
Project Location Maps
Shapefile of SR-54, PIN 101886.02 Right-of-Way

Figure 1: Previous NRCS Coordination, dated 08/21/2009

U.S. DEPARTMENT OF AGRICULTURE Natural Resources Conservation Service		NRCS-CPA-106 (Rev. 1-81)	
FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS			
PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request	8/21/09
1. Name of Project Section IV State Route 54 Widening		5. Federal Agency Involved Federal Highway Administration	4. Sheet 1 of 1
2. Type of Project Highway Widening		6. County and State Henry County, Tennessee	
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 9-21-2009	2. Person Completing Form C. J. Hines
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form).		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	4. Acres Irrigated NA
5. Major Crop(s) CORN, SOYBEANS		6. Farmable Land In Government Jurisdiction Acres: 213,198 % 56	7. Amount of Farmland As Defined in FPPA Acres: 12,995.6 % 61
8. Name Of Land Evaluation System Used CORN, SOYBEANS HENRY CO.		9. Name of Local Site Assessment System NA	10. Date Land Evaluation Returned by NRCS 9-22-2009
PART III (To be completed by Federal Agency)		Alternative Corridor For Segment	
		Corridor A	Corridor B
A. Total Acres To Be Converted Directly		314 AB-A	390 AB-B
B. Total Acres To Be Converted Indirectly, Or To Receive Services			
C. Total Acres In Corridor		314	390
PART IV (To be completed by NRCS) Land Evaluation Information			
A. Total Acres Prime And Unique Farmland		81	139
B. Total Acres Statewide And Local Important Farmland		NA	NA
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted		0.06	0.1
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value		71	71
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative Value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)		82	85
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points	
1. Area in Nonurban Use		15	12
2. Perimeter In Nonurban Use		10	7
3. Percent Of Corridor Being Farmed		20	15
4. Protection Provided By State And Local Government		20	0
5. Size of Present Farm Unit Compared To Average		10	3
6. Creation Of Nonfarmable Farmland		25	5
7. Availability Of Farm Support Services		5	1
8. On-Farm Investments		20	5
9. Effects Of Conversion On Farm Support Services		25	0
10. Compatibility With Existing Agricultural Use		10	8
TOTAL CORRIDOR ASSESSMENT POINTS		160	56
PART VII (To be completed by Federal Agency)			
Relative Value Of Farmland (From Part V)		100	82
Total Corridor Assessment (From Part VI above or a local site assessment)		160	56
TOTAL POINTS (Total of above 2 lines)		260	138
1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>
5. Reason For Selection:			
Signature of Person Completing this Part: KDPumpkin		DATE 10/14/09	
NOTE: Complete a form for each segment with more than one Alternate Corridor			

Figure 2: Project Overview Map

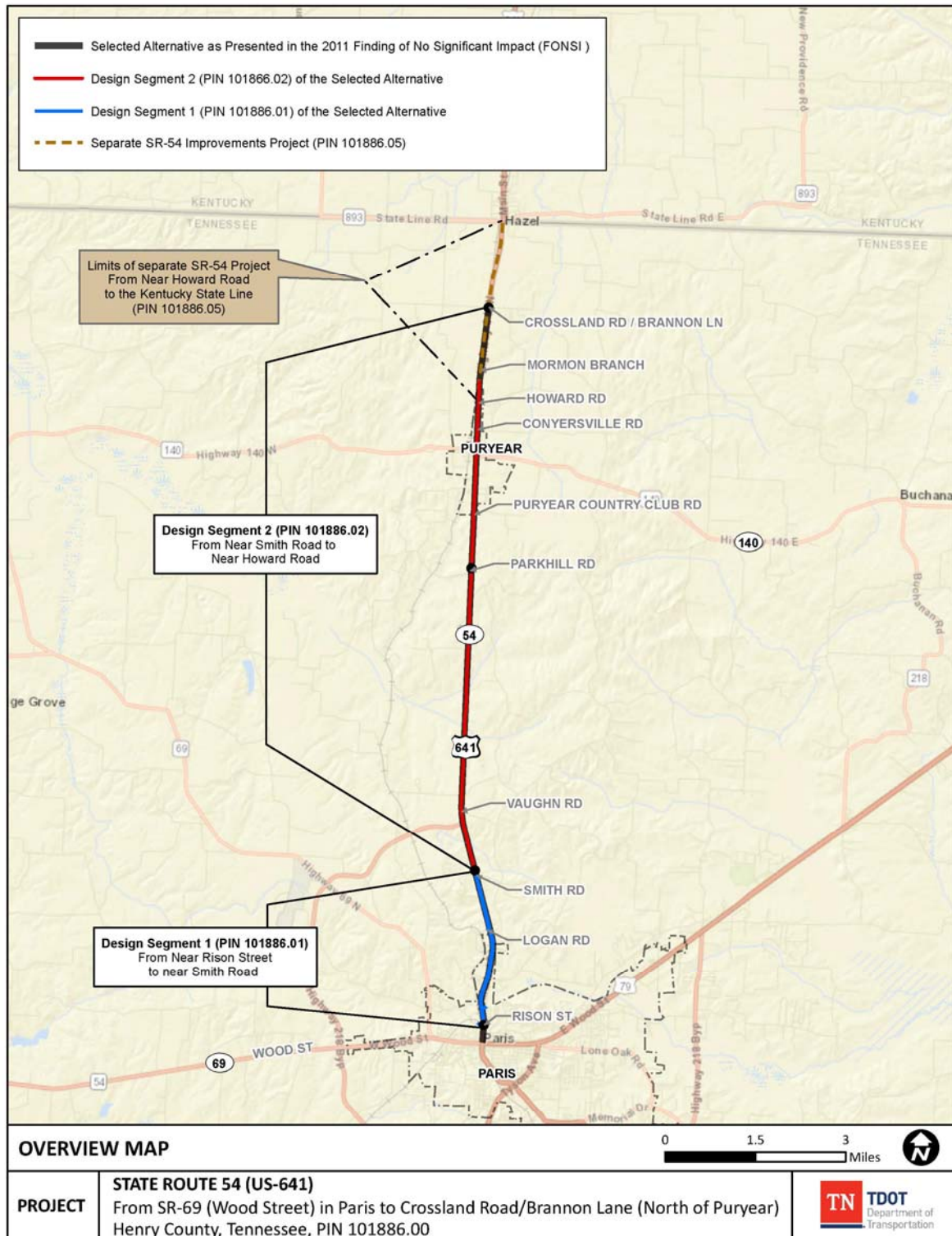
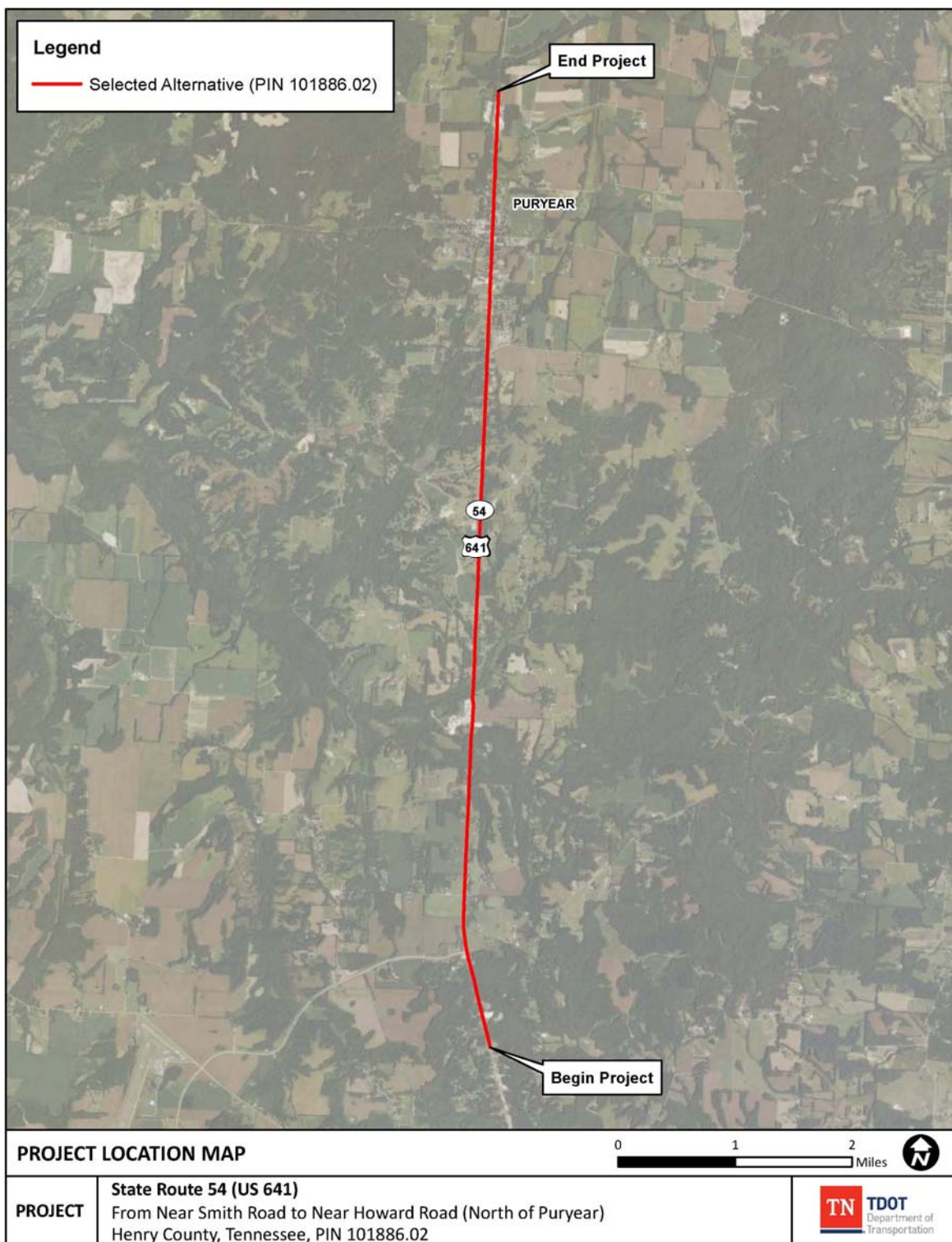


Figure 3: Project Location Map of the Portion of the Selected Alternative from near Smith Road in Paris to Near Howard Road (North of Puryear) (PIN 101886.02)



Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix L
PIN 101886.02
Cultural Resources/Section 106 Coordination

Environmental Studies

Historic Preservation

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Environmental Study

Technical Section

Section: Historic Preservation

Study Results

In a letter dated 09/29/2021, the TN-SHPO concurred that there are no architectural resources eligible for listing in the National Register of Historic Places that would be affected by the proposed project.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

Yes

Type: Historical-Architectural Report

Location: Email Attachment

Certification

Responder: Haley Seger

Title: TESS - Historic Preservation

Signature:

Haley Seger

Digitally signed by Haley
Seger
Date: 2021.11.15
08:05:26 -06'00'



TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

September 29, 2021

Mr. Joseph Santangelo
Tennessee Department of Transportation
505 Deaderick Street
Suite 900, James K. Polk Building
Nashville, TN 37243-1402

RE: FHWA / Federal Highway Administration, Architecture Review, Proposed Widening of SR-54 from near Smith Road to near Howard Road (North of Puryear) (IA)/ PIN 101886.02, Henry County, TN

Dear Mr. Santangelo:

In response to your request, we have reviewed the architectural survey report and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Based on the information provided, we are unable to make an eligibility determination for the Puryear Commercial Historic District. However, even if the Puryear Commercial Historic District were to be eligible for listing in the National Register of Historic Places, the proposed project would have no adverse effect to the district.

This office has no objection to the implementation of this project as currently planned. If project plans are changed please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions and comments may be directed to Casey Lee (615) 253-3163. We appreciate your cooperation.

Sincerely,

for: E. Patrick McIntyre, Jr.
State Historic Preservation Officer

Casey Lee
Historic Preservation Specialist/Coordinator
Section 106 Review and Compliance Program
Tennessee State Historic Preservation Office



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

September 27, 2021

Mr. E. Patrick McIntyre, Jr.
Executive Director and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

RE: Historic Preservation (Architectural/Historic) Assessment for the Proposed Widening of SR-54 from Near Smith Road to Near Howard Road (North of Puryear) (IA), Henry County, PIN 101886.02

Dear Mr. McIntyre,

The Tennessee Department of Transportation, with funding made available by the Federal Highway Administration, is proposing to widen State Route 54 (SR-54) from near Smith Road to near Howard Road in Henry County, north of Paris. An archaeology report will be submitted separately.

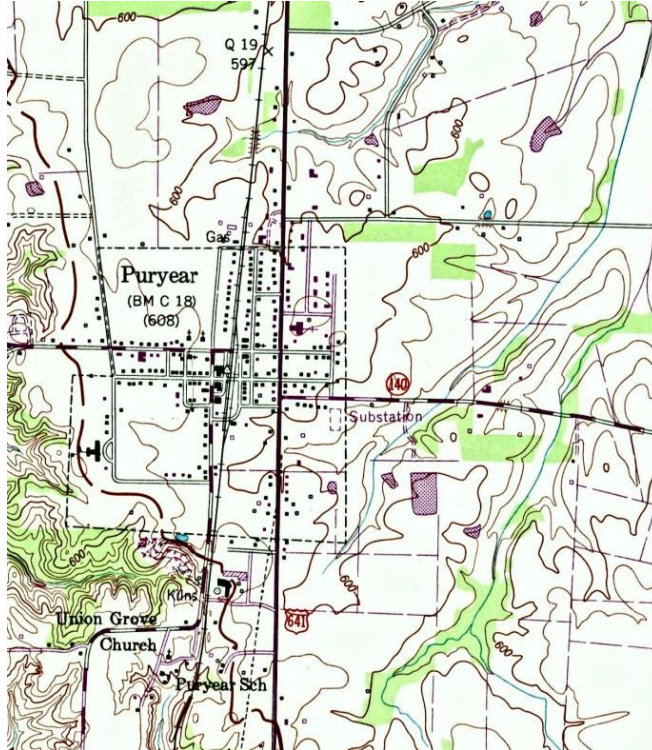
The proposed project area of potential effects (APE) includes the project site, adjacent properties, and properties within view of the State Route. TDOT historians surveyed the project APE in 2003. At that time, there were no historic properties identified in the project's APE. Since 2003, the project has been broken into smaller projects, and due to the passage of time, TDOT hired Thomason and Associates to complete an updated Section 106 Assessment for TDOT. It is the opinion of the consultant that there are no architectural resources listed or eligible for listing in the National Register of Historic Places located in the APE. In addition, the consultant identified a historic district located outside of the APE. It is the opinion of the consultant that the Puryear Commercial Historic District is eligible for listing in the National Register but is located outside of the APE and has no potential to be affected by this undertaking. TDOT historians concur with these opinions.

In compliance with Section 106 of the National Historic Preservation Act (as amended) and implementing regulations 36 CFR 800, please review the enclosed information prepared by the local government and provide me with your comments. If any additional information is needed, please contact Haley Seger at (615) 770-1762. I appreciate your assistance.

Sincerely,

Joseph D. Santangelo

Joseph D. Santangelo
Cultural Resources Manager
Environmental Division
JDS/hms
Enclosure



**HISTORICAL AND ARCHITECTURAL SURVEY
AND DOCUMENTATION FOR EFFECT
UNDER 36 CFR 800 EVALUATION AND 4(f) EVALUATION**

**IMPROVEMENTS TO STATE ROUTE 54 (US 641)
FROM NEAR SMITH ROAD IN PARIS TO
NEAR HOWARD ROAD (NORTH OF PURYEAR)
LM 14.02 TO LM 22.24
HENRY COUNTY, TENNESSEE**

PIN # 101886.02



**THOMASON AND ASSOCIATES
NASHVILLE, TN**

June 2021

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APPENDIX B -	SECTION 106 FACT SHEET
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APPENDIX D -	CRITERIA OF EFFECT
APPENDIX E -	PUBLIC PARTICIPATION LETTERS
APPENDIX F -	STATE HISTORIC PRESERVATION OFFICE LETTERS
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I. MANAGEMENT SUMMARY

This report has been prepared for the Tennessee Department of Transportation (TDOT), which is proposing improvements to a section of State Route 54 (US 641) from near Smith Road in Paris to near Howard Road north of Puryear in Henry County, Tennessee, Log Mile (L.M.) 14.02 to L.M. 22.24. The improvements to State Route (SR) 54 will provide connectivity to the beginning of the project near Smith Road, and the project end terminus is contingent upon the adjacent Kentucky Transportation Cabinet (KYTC) project proposed at the state line. The proposed project was initiated as a result of the Improving Manufacturing, Public Roads and Opportunities for a Vibrant Economy (IMPROVE) Act project delivery commitments.

Due to the involvement of federal funding, compliance is required with Section 106 of the National Historic Preservation Act of 1966, as amended. Appendix B contains a fact sheet about Section 106. Regulations detailing the implementation of this act are codified at 36 CFR 800. This legislation requires federal agencies to identify any properties (either above-ground buildings, structures, objects, or historic sites or below ground archaeological sites) of historic significance. For the purposes of this legislation, historic significance is defined as those properties included in the National Register of Historic Places or properties eligible for inclusion in the National Register. Appendix C contains a copy of the National Register criteria, which are codified at 36 CFR 60.4. Once historic resources are identified, legislation requires these agencies to determine if the proposed project would affect the historic resource. Appendix D contains a copy of the Criteria of Effect as defined in 36 CFR 800.5. If the proposed project would have an adverse effect to a historic property, the legislation requires the Federal agency to provide the Advisory Council on Historic Preservation (an independent federal agency) an opportunity to comment on the effect.

Henry County has not been comprehensively surveyed to date. In 2003, TDOT historians surveyed SR 54 from near Rison Street to the Kentucky State Line. That study area encompasses the current project. Only two properties warranting documentation by TDOT historians in 2003 lie within the current project's Area of Potential Effect (APE). Neither property was assigned a county survey number. Thomason and Associates (Consultant) studied this APE in May and June of 2021, identifying eight properties, including the two previously surveyed properties, which met TN-SHPO survey criteria. The Consultant assigned these properties temporary survey identification (TA-1 through TA-8) in this report.

No property within the project APE is currently listed, or has been previously determined eligible for listing, in the National Register. Based upon the results of the survey, it is the opinion of the Consultant that there is one property within the project APE which meets National Register criteria. State Route 54 was designed and completed through this section of Henry County in 1937. The majority of the properties built along the highway were constructed after this time, primarily in the 1950s and 1960s. Most of these dwellings reflect the Transitional Ranch and Ranch styles of the period and do not possess sufficient architectural significance to meet National Register criteria. The survey

also included an assessment of the properties within the APE in the City of Puryear. Puryear developed as a railroad town and was founded in 1888. Within the project's APE a commercial historic district was identified as meeting National Register criteria. This commercial district along S. Front Street in Puryear contains four buildings which, in the opinion of the Consultant, comprise an eligible historic district. This district is located two blocks west of SR 54 and due to the limited scope of the widening through Puryear there will be no effects to the district resulting from the project. No other National Register-eligible properties were identified within the project's APE.

This document has been prepared in consultation with the TN-SHPO and will be circulated to the TN-SHPO and local historians. Letters gathered during the public participation process are located in Appendix E.

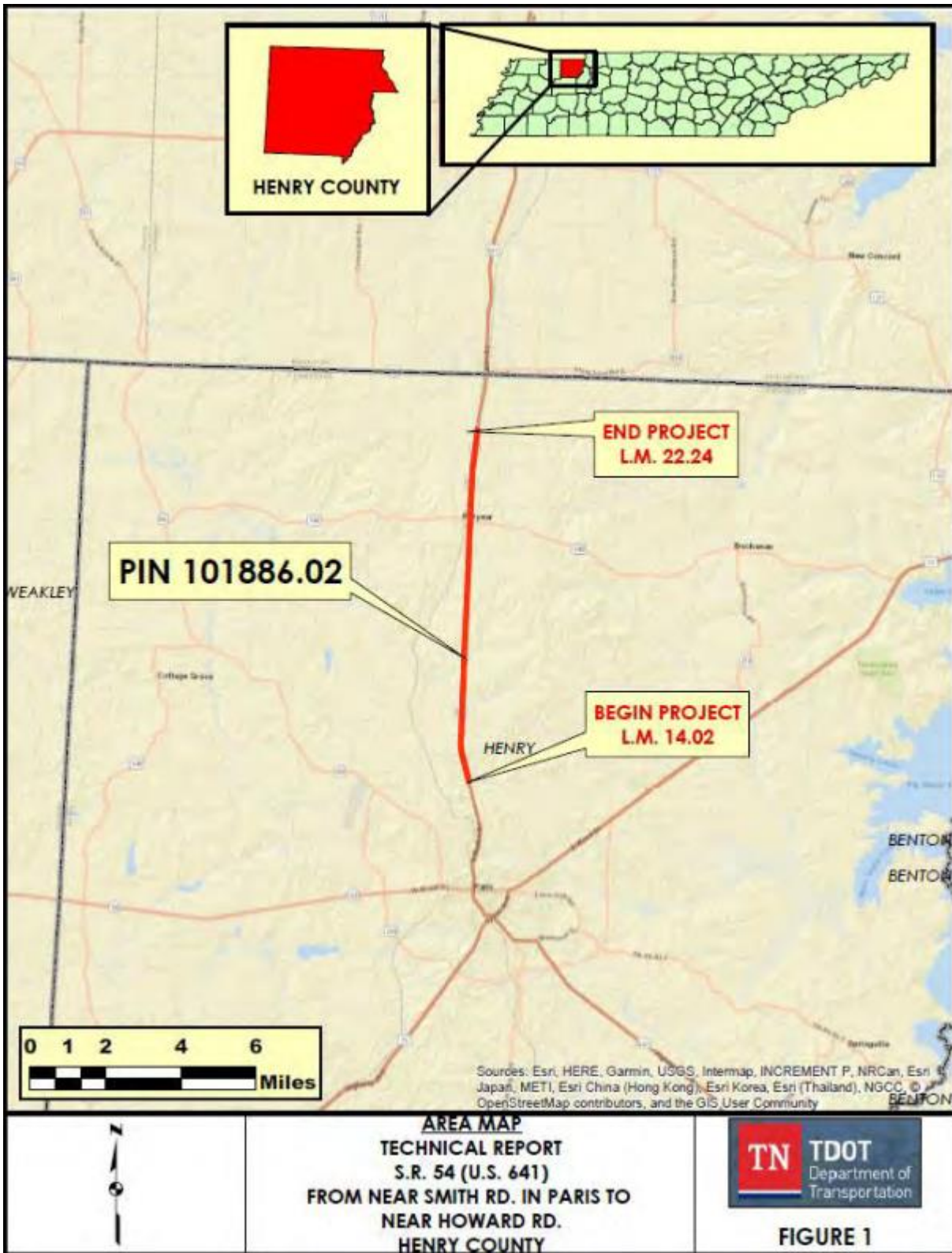


Figure 1: Project location map for the SR 54 Improvements Project north of Paris, Henry County, Tennessee.

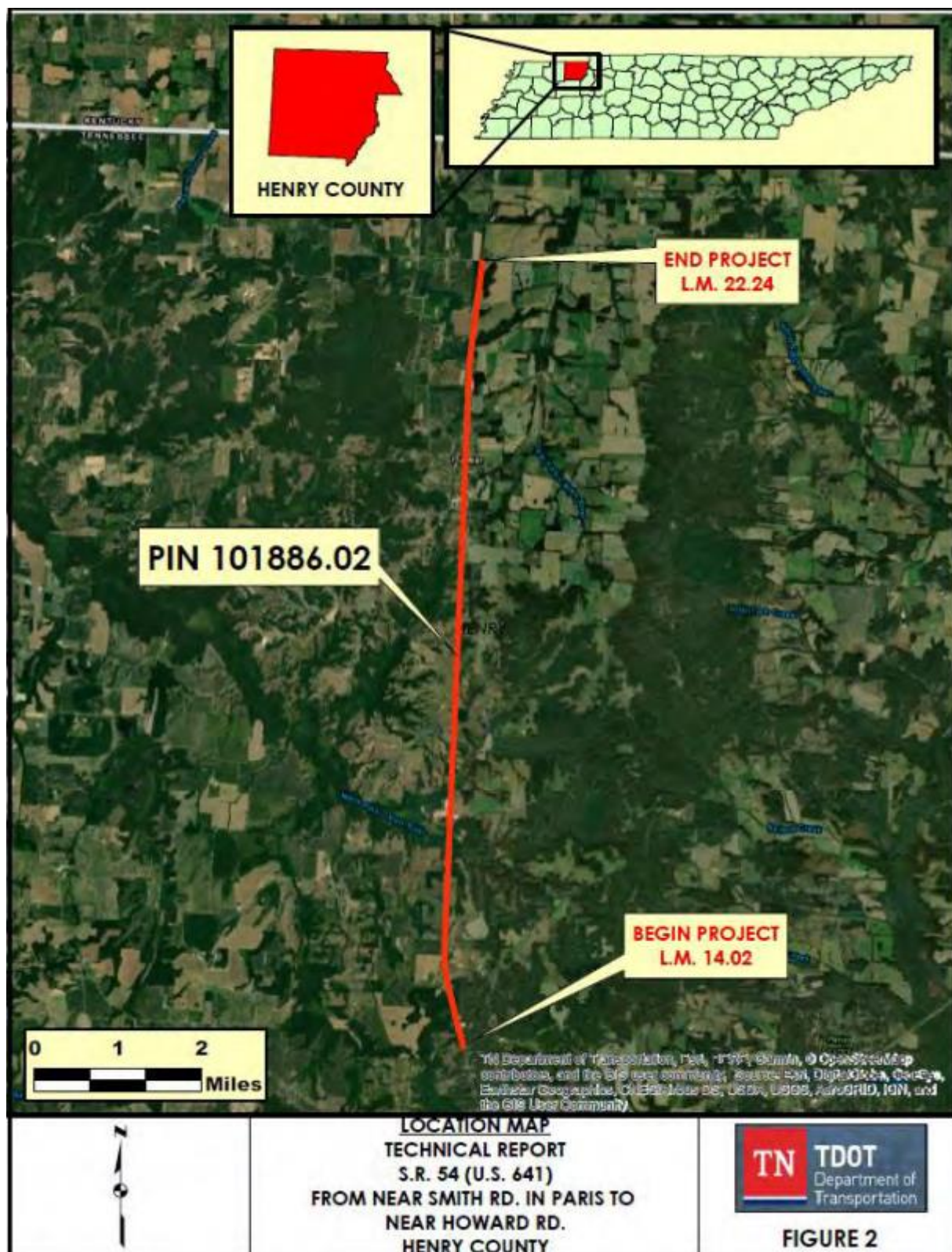


Figure 2: Aerial Map of the SR 54 Improvements Project.

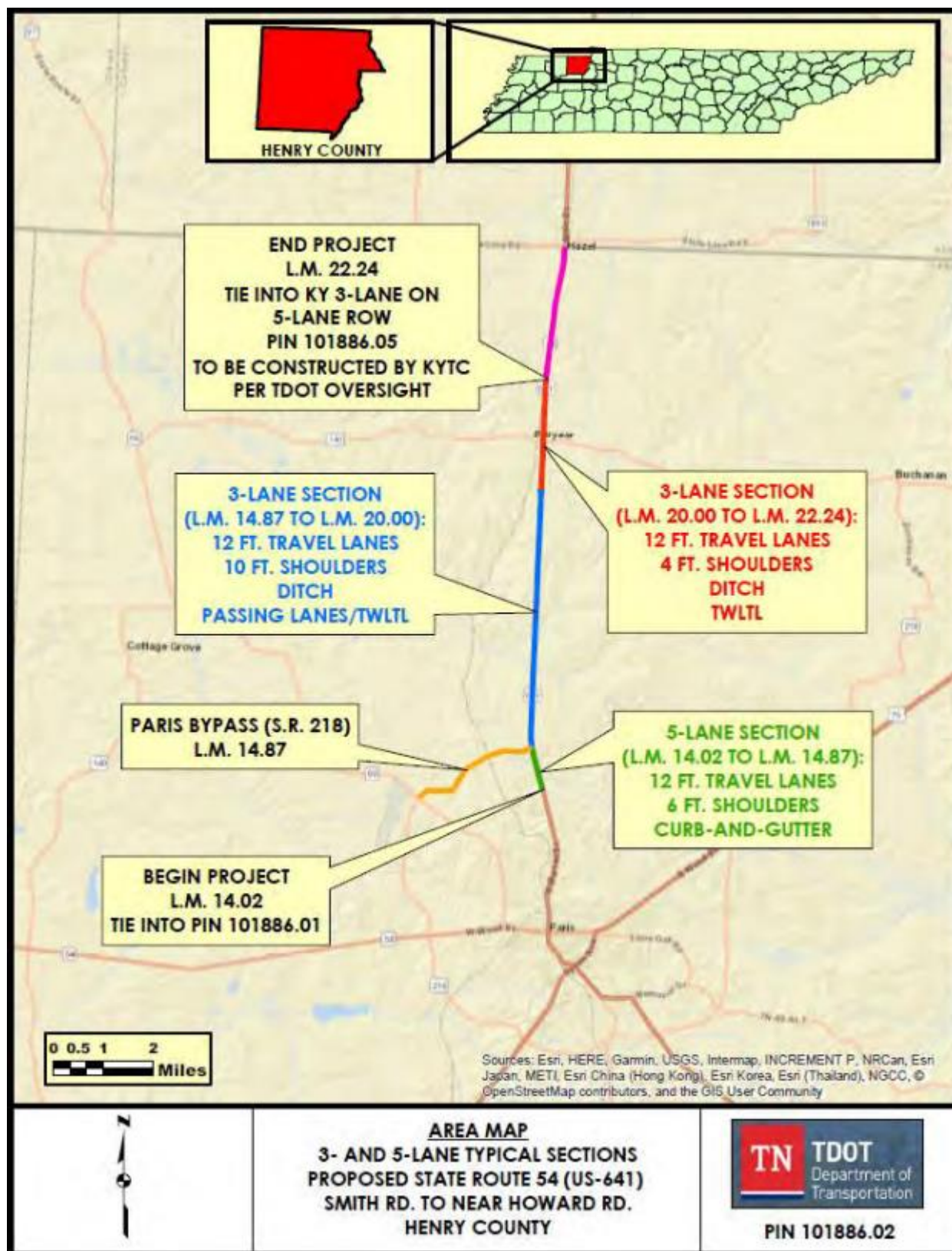


Figure 3: Detailed Project Map of the SR 54 Improvements Project.

II. PROJECT OVERVIEW

A. Project Description

The purpose of the improvements along this 8.22-mile section of SR 54 (US 641) is to provide better safety, operational performance, and comfort to vehicular users. This section of SR 54 is functionally classified as a Rural Other Principal Arterial, and the typical section consists primarily of two (2) twelve- (12-) foot travel lanes in each direction, three- (3-) foot paved outside shoulders within sixty (60) feet of existing Right-of-Way (ROW). The existing roadway is a connector between Paris, Tennessee, and Puryear, Tennessee, to the north at the Tennessee-Kentucky State Line near Hazel, Kentucky. The adjacent land use primarily consists of residential housing, agricultural land use, and some service businesses along the corridor. The posted speed limit is fifty-five (55) miles per hour (MPH), dropping to forty (40) MPH through the community of Puryear. Overall, the route is in rolling terrain. The existing route has narrow shoulders, limited turn lanes, and numerous driveway and local road connections.

After evaluating the safety, operational, environmental, and geometric conditions on existing SR 54 within the study limits, two options were considered to address the deficiencies: The No Build Alternative and Build Alternative. The No Build Alternative denotes that only routine maintenance would be made to the existing corridor. No improvements or substantial modifications would be made with the No Build Alternative. The Build Alternative includes roadway and shoulder widening including a two-way left turn lane (TWLTL) and passing lanes in both the northbound and southbound direction. The options for improvement, as detailed by the following locations, are needed to provide a safer facility for all users and to provide a regional route which fits the needs of the community. Roadway improvements have been identified within this report and are listed as follows:

~ **Near Smith Road to SR 218 (LM 14.02 to LM 14.87)** - Widen existing SR 54 to an improved rural five- (5) lane typical section consisting of four (4) twelve- (12) foot travel lanes, a twelve- (12) foot TWLTL, and six- (6) foot paved shoulders using a design speed of fifty (50) MPH. Curb and gutter are to be constructed on both sides of the roadway. The roadway alignment is shifted to the east from LM 14.70 to LM 15.14 to reduce residential and commercial impact.

~ **From SR 218 to South of Puryear (LM 14.87 to LM 20.00)** - Widen existing SR 54 to an improved rural three (3) lane typical section consisting of two (2) twelve- (12) foot travel lanes, a twelve- (12) foot TWLTL, and ten- (10) foot paved shoulders using a design speed of sixty (60) MPH. The bridge over North Folk Obion River at LM 16.47 and the bridge over Rowe Creek at LM 17.13 are to be widened. These two concrete beam bridges were surveyed by the TDOT in 2001 and determined not to possess architectural or engineering significance. The roadway alignment is shifted to the east from LM 14.70 to LM 15.14 and from LM 16.76 to LM 16.97 to reduce residential and commercial impact.

“ **From South of Puryear to North of Puryear (LM 20.00 to LM 22.24)** - Widen existing SR 54 throughout the City of Puryear to an improved rural three- (3) lane typical section consisting of two (2) twelve- (12) foot travel lanes, a twelve- (12) foot TWLTL, and four- (4) foot paved shoulders using a design speed of forty-five (45) MPH.

“ **LM 17.87 to LM 19.83** - A passing lane in each direction was proposed in order to provide an adequate distance for vehicles, particularly heavy vehicles, to pass slower-moving vehicles. The southbound passing lane is from LM 17.87 to LM 18.84 and the northbound passing lane is from LM 18.93 to LM 19.83. The acceleration lanes are expected to reduce the percent time spent following, therefore, improving travel time along SR 54 and providing a safe option for passing.

It is estimated that ROW is to be acquired and that overhead and underground utilities will need to be relocated. During construction, two (2) lanes, one (1) in each direction, are to be maintained but may require temporary lane closures.

The Area of Potential Effect (APE) of the project is a distance of 0.25 mile from the center line of the road project. Henry County has not been comprehensively surveyed to date. In 2003, TDOT historians surveyed SR 54 from near Rison Street in Paris to the Kentucky State Line. That study area encompasses the current project. Only two properties documented by TDOT historians in 2003 lie within the current project's Area of Potential Effect (APE). Neither of these two properties were identified at that time as National Register-eligible. Thomason and Associates (Consultant) studied this APE in May 2021, identifying six additional properties warranting documentation. The Consultant assigned these properties temporary survey identification (TA-1 through TA-8) in this report.

B. Survey Methodology

Properties were inventoried in accordance with guidelines set forth by the Tennessee Historical Commission (THC) and the Tennessee Department of Transportation (TDOT). The Area of Potential Effect (APE) for this project was defined as a distance of 0.25 mile to either side of the center line of the road improvement project. Within this APE, there are two properties previously documented by TDOT in 2003, but these buildings were not assigned survey numbers. These are the Hosford House at 3965 Highway 641 N. (TA-2) and a gabled ell dwelling at 9940 Highway 641 N. (TA-7).

This project is confined to this immediate area, and no modifications or other changes will occur on any other sections of SR 54. The APE includes residential, agricultural, commercial, religious, and public properties and areas that were developed beginning in the early-to-mid-20th century. The area within the APE was examined to identify any additional properties that may have particular architectural or historical significance. Digital photographs were taken of each surveyed property. All accessible roads within the APE were driven to reach buildings and structures shown on the USGS quad maps and Henry County tax maps. The Consultant attempted to interview occupants at each

surveyed property and if no occupant was present, a questionnaire was left at the property.

C. Historical Data

Various sources were consulted for this study. These included primary and secondary source materials concerning the history of Henry County and Puryear. Sources included a review of relevant documents at the TN-SHPO and the Tennessee State Library and Archives. The Consultant visited the Henry County Archives in Paris in June of 2021 to obtain additional historical information on properties within the APE. These sources are included in the bibliography in this report.

D. National Register-listed and Eligible Properties

No properties within the APE are currently listed, or determined eligible for listing, in the National Register of Historic Places.

E. Public Participation

The Environmental Division of the Tennessee Department of Transportation (TDOT) has prepared a list by counties of historic groups and other such organizations which might be interested in proposed projects. TDOT compiled this list using a variety of sources. TDOT regularly updates and refines the list.

Local Governments and Organizations Contacted:

Henry County Historian
Mr. David Webb
928 Glisson Road
Paris, TN 38242

Preservation Planner
Northwest Tennessee Development District
P.O. Box 963
Martin, TN 38237

Henry County Mayor
John Penn Ridgeway
Henry County Courthouse
101 W. Washington St.
Paris, TN 38242

West Tennessee Historical Society
Ms. Carol Perel, Executive Director
P.O. Box 111045
Memphis, TN 38111

III. HISTORICAL AND ARCHITECTURAL OVERVIEW OF THE PROJECT AREA

A. *Historical Overview*

Originally part of the Chickasaw Nation, Henry County is located in the western division of Tennessee. Anglo-European settlement of present-day Henry County began in 1819. Named in honor of American patriot Patrick Henry, the county was created by the Tennessee General Assembly on November 7, 1821. Henry County is located on a dividing ridge between the Tennessee and Mississippi Rivers. The Big Sandy River is a tributary of the Tennessee River in the county. The county is bordered by Kentucky Lake and Stewart County on the northeast, Benton County on the southeast, Carroll County on the south, Weakley County on the west, Graves County, Kentucky, on the northwest, and Calloway County, Kentucky, on the north.

In 1822, a site was chosen for the Henry County seat and named Paris. The city was incorporated the following year, making it the first incorporated city in west Tennessee, even before Memphis. Henry County became the gateway for the settlement of West Tennessee and beyond. By 1830, the county population was 12,249. In 1835, all lands of Henry County east of the Big Sandy River were taken for the creation of Humphreys County. The generally flat terrain of Henry County and its proximity to the Tennessee River were conducive to growing cotton. Tobacco was also a staple of the agricultural economy of the county.

During the Civil War, Henry County earned the name "Volunteer County" for sending more than 2,500 volunteers to the Confederacy. The Battle of Paris occurred in March 1862 when General Ulysses S. Grant's forces attacked a Confederate encampment of 400 soldiers, then retreated toward Paris Landing on the river. The site was the point of disembarkment of General Nathan Bedford Forrest's Johnsonville campaign in October of 1864. During this engagement Forrest captured four Union gunboats, barges, artillery, \$6,700,000 worth of property, and 150 prisoners.¹

After the war, the Paducah, Tennessee, and Alabama (PT&A) Railroad planned to construct a line through Conyersville, three miles east of present-day Puryear. James Littleton (1830-1909) and Dr. S.H.Caldwell operated tobacco shipping businesses in the area. The men had done business with Col. T. H. Puryear, president of the PT&A, and convinced Puryear that the better route was to the west.² Puryear agreed to re-route the line through the town that Littleton had already laid out on 25 acres of his farm. Littleton and his wife Lucetta donated part of their land for railroad. The new town was originally to be named Littleton, but that name was already in use on the railroad line.³

¹ David W. Webb, "Henry County," at Tennessee Encyclopedia of History and Culture website <https://tennesseeencyclopedia.net/index.php> accessed February 2, 2018.

² E. McLeod Johnson, *A History of Henry County, Tennessee: Descriptive, Pictorial Reproductions of Old Papers and Manuscripts*. vol. 1 (Paris, n.p., 1958), 245.

³ Shirley Crutchfield, *Exploring Henry County, Tennessee* (Paris, Tennessee: Curtis

The town was organized in 1888 as Puryear in honor of the railroad president and the community was incorporated in 1909. James Littleton's son, James Graves Littleton (1860-1962), was elected mayor. By that time, the town was flourishing with several mercantiles, groceries, drug stores, blacksmiths, and feed mills. There was also a cotton gin, tobacco warehouse, and potato house.⁴ The Farmers Bank and Trust had been organized at Puryear in 1907.⁵ On the west side of Front Street facing the railroad were two blocks of brick and frame commercial buildings containing numerous businesses such as Johnson & Brisendine and Crawford & Gatling, mercantile stores.

The town had a population of 254 in 1910. In February of 1913, the Dixie Brick Company opened at Puryear and was in operation making bricks for several decades on the south side of town. In June of 1913, the downtown area suffered a devastating fire. Seven frame buildings on the west side of the tracks north of Main Street were destroyed, as was the railroad depot. Losses amounted to more than \$10,000.⁶

The town of Puryear rebounded, however. The population increased every decade to 430 residents by 1950. Rail traffic declined, with just one small freight train passing through Puryear daily. Construction of the State Route 54, however, increased automobile traffic through Puryear beginning around 1940.

In the early 20th century, Henry County began a Mule Day event to celebrate its agricultural roots and the history of mule trading on the public square. The event evolved in 1953 to incorporate a fish fry, which has continued annually to the present. Henry County enjoys tourism from the 1944 construction of Kentucky Dam, impounding Kentucky Lake. The body of water is the largest man-made lake in the United States and the second largest in the world. Paris Landing State Park was established in 1945, a short drive east of Puryear on SR 140, which bisects SR 54 in town.

Puryear's economy developed with light industrial businesses north of town in the 1970s and 1980s. The town's population increased to 624 by 1980. Puryear had an estimated population 663 in 2019. Today, Henry County continues to have an economy reliant on agriculture and light manufacturing. The estimated population in 2020 was just over 32,000 residents.

B. Architectural Overview of the Project Area

The proposed SR 54 (US 641) improvements project is located north of the Henry County seat of Paris. This section of Henry County remains largely rural and agricultural in character. In the current project APE, a number of pre-1971 rural homes remain along SR 54. Most of these dwellings are mid-20th-century Ranch style houses and

Media, 1994), 116.

⁴ *Henry County, Tennessee: History and Families* (Paducah, KY: Turner Publishing Company, 2001), 30.

⁵ W. O. Inman, *Henry County, Tennessee: A Short History* (Paris: n.p., n.d.), n.p.

⁶ *Henry County, Tennessee: History and Families*, 30.

were built after the highway was completed in 1937. The APE also includes several frame Minimal Traditional style dwellings which date from ca. 1935-1940.

The oldest dwelling inventoried outside the community of Puryear is the Hosford House at 3965 Hwy 641 N., built ca. 1900. The vernacular center-hall plan, frame house dwelling was originally associated with the Dalton-Smith farm. A 1.4-acre parcel remains with the dwelling, surrounded by agricultural tracts. This dwelling is a representative example of a central-hall plan house from this period with an added Bungalow style porch. TDOT inventoried this property in 2003 for the State Route 218 Paris-By Pass project. The property was determined ineligible for listing in the National Register at this time, and the Consultant concurs with this assessment. A vernacular gable front dwelling built ca. 1915 was surveyed at 3285 Hwy. 641 N. (TA-1). This dwelling is one of the oldest along this section of the highway and has been altered with added siding and porch materials.

The APE includes one cemetery, the Rowe Cemetery. The consultant found the site covered in vegetation and inaccessible. According to information at the Findagrave website, this 19th-century cemetery contains 29 identified grave markers. The earliest is that of Mary Sewell Rowe (1802-1857). Her husband, Adam Rowe (1797-1883) is also buried here. Five Rowe children, as well as some of their spouses and children, are also buried in the cemetery. The other family names represented here are Peak and Street.⁷ The cemetery lies 0.1 mile east of SR 54, behind the dwelling at 6540 Hwy. 641 N. (SR 54).

Following the completion of SR 54 in 1937, a number of dwellings were built facing the highway over the next decade. At 4590 Hwy. 641 N. is a one-story frame Tudor Revival style dwelling built ca. 1940 (TA-4). This dwelling retains its prominent brick chimney on the main façade but has been altered with a large lateral wing. Other designs largely reflect simple house forms associated with the Minimal Traditional and Transitional Ranch styles. Minimal Traditional plans were generally rectangular in form and had restrained detailing reflective of the Colonial and Tudor Revival styles. Examples of this house style include the dwelling at 3855 Hwy. 641 N. built in 1954 and the dwelling at 8825 Hwy. 641 N. built in 1945. Both of these examples are of frame construction and have added siding and porch materials.

Between 1950 and 1970 the majority of dwellings along SR 54 were designed in the Transitional Ranch and Ranch styles of the mid-20th century. These terms are derived from the National Cooperative Highway Research Program's report "A Model for Identifying and Evaluating the Historic Significance of Post- World War-II Housing" from 2012. A valuable source for the various Ranch house forms and plans is Virginia McAlester's "A Field Guide to American Houses" updated in 2013.

⁷ "Rowe Century," at Findagrave webpage [Rowe Cemetery in Puryear, Tennessee - Find A Grave Cemetery](#), accessed June 7, 2021.

The Transitional Ranch house shares similarities with Minimal Traditional style houses such as a compact floorplan but has an exterior appearance that resembles the Ranch form, with one-story horizontal massing, a shallow roof pitch, and overhanging eaves.⁸ Examples of Transitional Ranch style houses which were noted in the project's APE include those at 4310 Hwy. 641 N. built in 1947 and 8130 Hwy. 641 N. built in 1958. Both of these properties have added siding materials and other alterations.

Ranch-style dwellings of frame and brick veneer were the most common properties noted in the APE. McAlester defines the Ranch house's identifying features as one-story and having a broad, horizontal form, a low-pitched roof, and moderate-to-wide overhangs. Attached garages and picture windows are also common features.⁹ McAlester further subdivides the Ranch house plan into sub-types such as hipped roof, cross-hipped roof, side-gabled, and cross-gabled.

Most of the Ranch style houses noted for the project are side-gabled plans of brick veneer construction. Representative examples include those at 6620 Hwy. 641 N. from 1969, 8365 Hwy. 641 N. built in 1960 and 9120 Hwy. 641 N. built in 1957. Cross-gabled Ranch style dwellings with projecting gabled bays were also noted along this section of the highway including 6405 Hwy. 641 N. built in 1962 and 6540 Hwy. 641 N. dating from 1966.

A Ranch style dwelling deemed worthy of survey is the side-gabled plan house at 4380 Hwy. 641 N. which was built in 1959 (TA-3). This dwelling was constructed for James B. Hunt, who worked at an industrial plant in Paris. He designed this dwelling with decorative brick quoins at the corners. The house retains its original design and horizontal sash windows. This design served as the influence for several other nearby Ranch style houses with brick quoins along the highway such as at 4470 Hwy. 641 N. built in 1966 and 5080 Hwy. 641 N. constructed in 1966. While representative of this style, it is the opinion of the Consultant that these Ranch style houses do not possess sufficient architectural significance to meet National Register criteria.

The survey of properties within the APE included those in the city limits of Puryear. Puryear developed as a railroad community in the early 1900s and most of the early homes and commercial buildings were constructed to the west of the railroad tracks and are several blocks west of SR 54. On S. Front Street is a row of one- and two-story brick commercial buildings constructed in the 1910s and 1920s. In the opinion of the Consultant, this row meets National Register criteria as a historic district. The buildings are largely unaltered and retain much of their original design.

The streets between the railroad and SR 54 in Puryear are characterized by mixed zoning and uses with dwellings, churches, and light industry. The community also

⁸ National Cooperative Highway Research Program Report 723, "A Model for Identifying and Evaluating the Historic Significance of Post-World War II Housing," (Washington D.C.: Transportation Research Board, 2012), 16.

⁹ Virginia McAlester, "A Field Guide to American Houses," (New York: Alfred A. Knopf, 2013), 597.

includes a municipal water tower and a grain mill with modern silos. The residential properties on W. Chestnut and Main Streets and their cross streets include Minimal Traditional, American Foursquare, Tudor Revival, Bungalow, and gabled ell examples. The residential areas of Puryear have a number of altered houses built in the early 20th century. In many of the blocks are post-1970 dwellings and no National Register-eligible residential district was identified in the community. No property meeting individual National Register criteria was also identified in the APE.

Early homes in Puryear within the APE include the central-hall plan dwelling at 9620 Hwy. 641 N. built ca. 1900. This frame house has been altered through the addition of asbestos shingles, added windows and a rebuilt porch. A one-story, gabled ell dwelling built ca. 1910 is at 9940 Hwy. 641 N. (TA-7). This property was previously surveyed by TDOT in 2003 but was considered ineligible for the National Register due to the extent of alterations.

The majority of the dwellings within the APE in Puryear are Minimal Traditional and Ranch style dwellings built after the highway was completed through the community in 1937. An example of the Minimal Traditional style is the frame house at 10345 Hwy. 641 N. which retains its original windows. At 10255 Hwy. 641 N. is a side-gabled brick veneer Ranch style dwelling with quoins built in 1962. A hipped roof brick veneer Ranch style dwelling built in 1957 is at 10130 Hwy. 641 N.

At 10315 Hwy. 641 N. is a hipped roof Ranch style dwelling with a stone veneer (TA-8). This dwelling was built in 1955 by Buck and Novella Gore and continues to be owned by their son Rex Gore. The house is distinguished by its use of Bedford sandstone and Crab Orchard stone as a slab veneer material. The house retains its original design with horizontal aluminum jalousie windows and attached carport. While representative of stone veneer Ranch dwellings of the period, the property does not possess sufficient architectural significance to meet National Register criteria.

Within the APE in Puryear are several altered early 20th century commercial buildings along SR 54 and the Puryear Baptist Church at 10060 Hwy. 641 N. The church was built in 1964 and is an example of a mid-20th century Neo-classical style religious building. The church was enlarged with a large lateral wing containing a fellowship hall in 1976 and the original stained-glass windows were replaced in 1987.¹⁰ In the opinion of the Consultant, this church lacks sufficient architectural distinction and integrity to meet National Register criteria.

The area north of the city limits to the end of the project APE is characterized by light industry. The buildings here are on large parcels adjacent to the railroad and/or highway. A few buildings date from the mid-20th century and are of brick or concrete block construction but have extensive additions and alterations. Most of these buildings, however, were built after 1971 and are steel truss structures with crimped metal walls.

¹⁰ *Henry County, Tennessee, History and Families*, (Paducah, Kentucky: Turner Publishing Company, 2001), 58.

The following pages provide maps of the project area along with properties noted or surveyed within those sections of the APE.

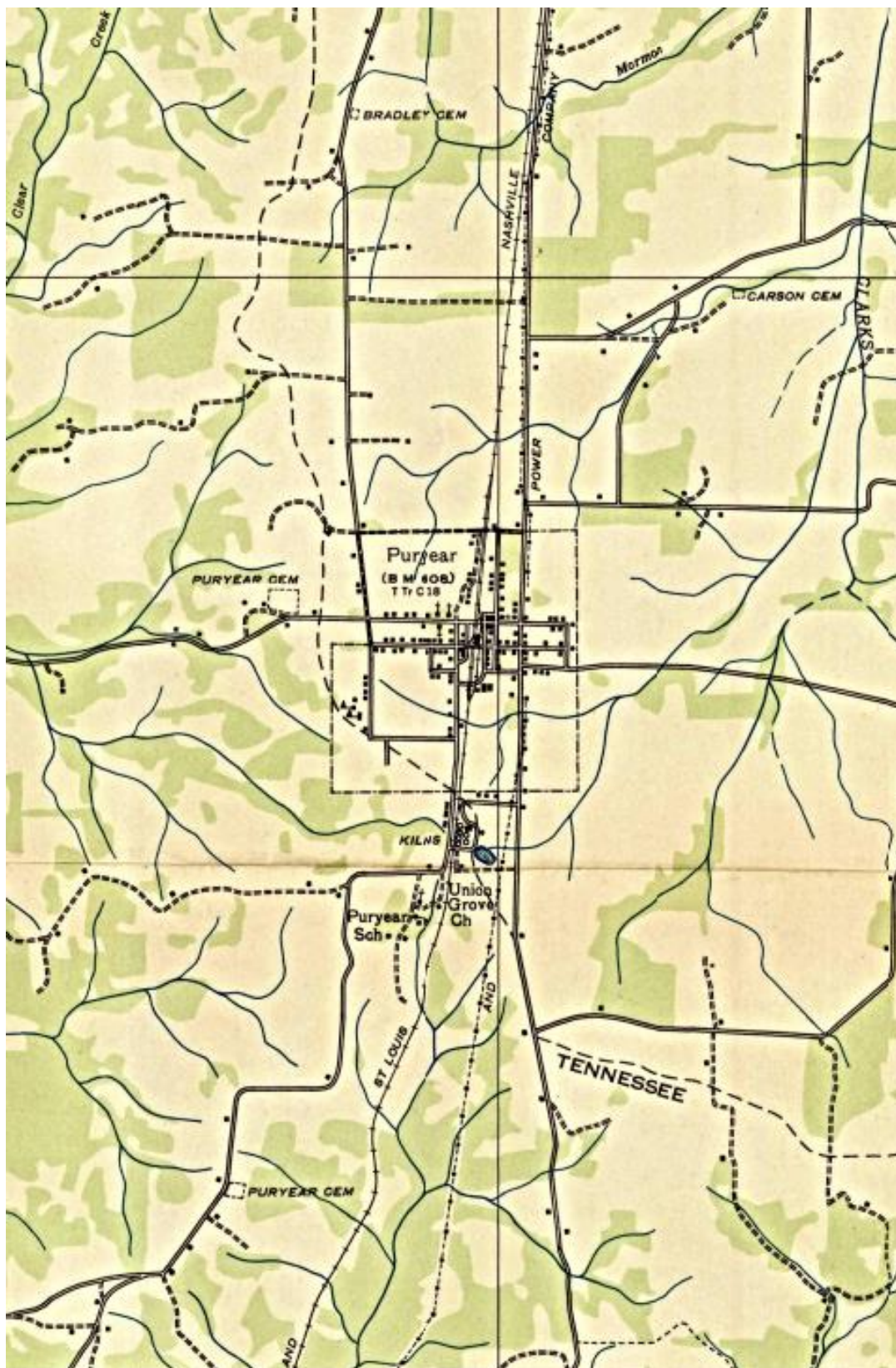


Figure 4: Conyersville, TN, Topographical Quadrangle Map, 1936, showing Puryear and the surrounding area before construction of SR 54.

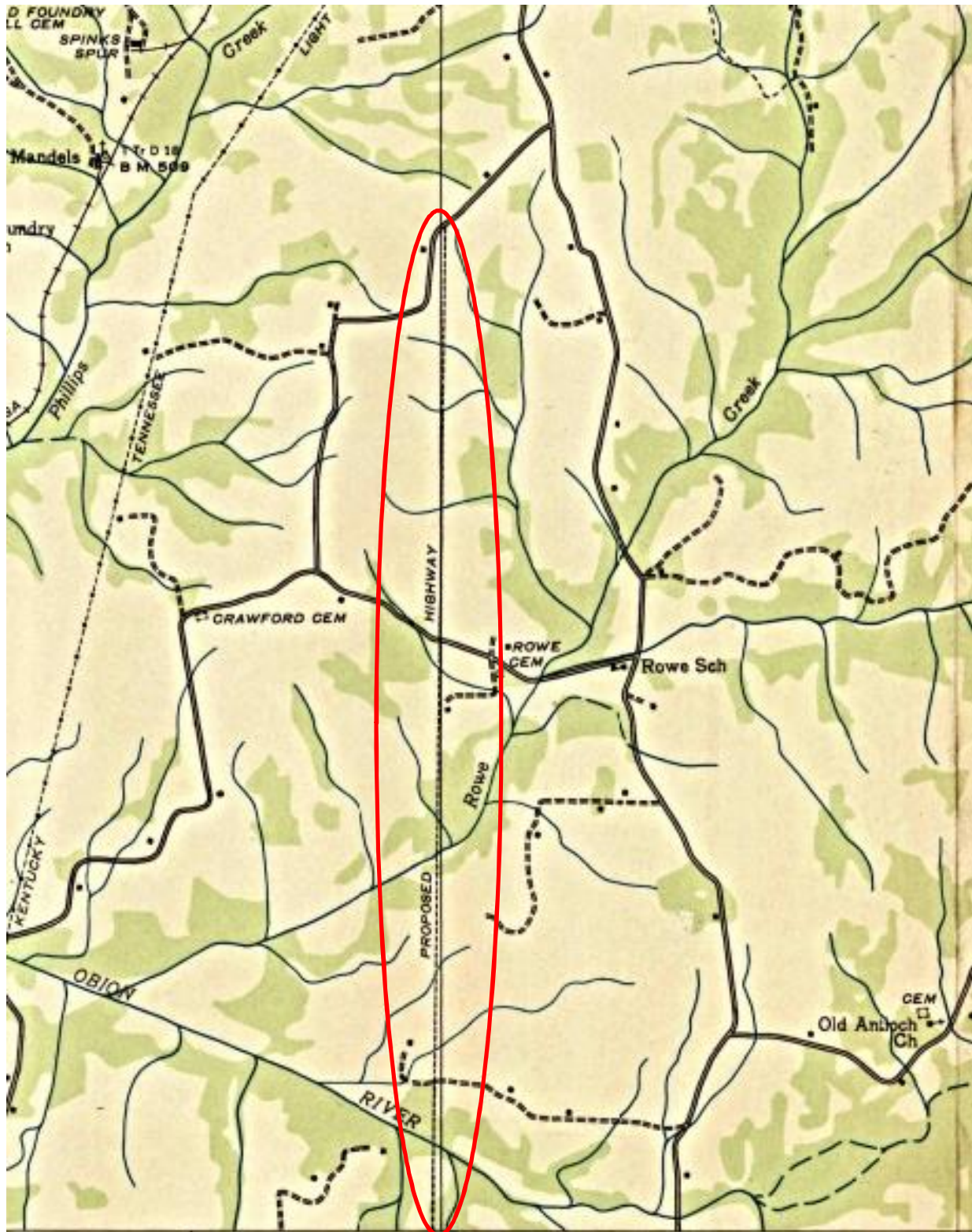


Figure 5: Conyersville, TN, Topographical Quadrangle Map, 1936, with the proposed highway in the sparsely developed area south of Puryear.

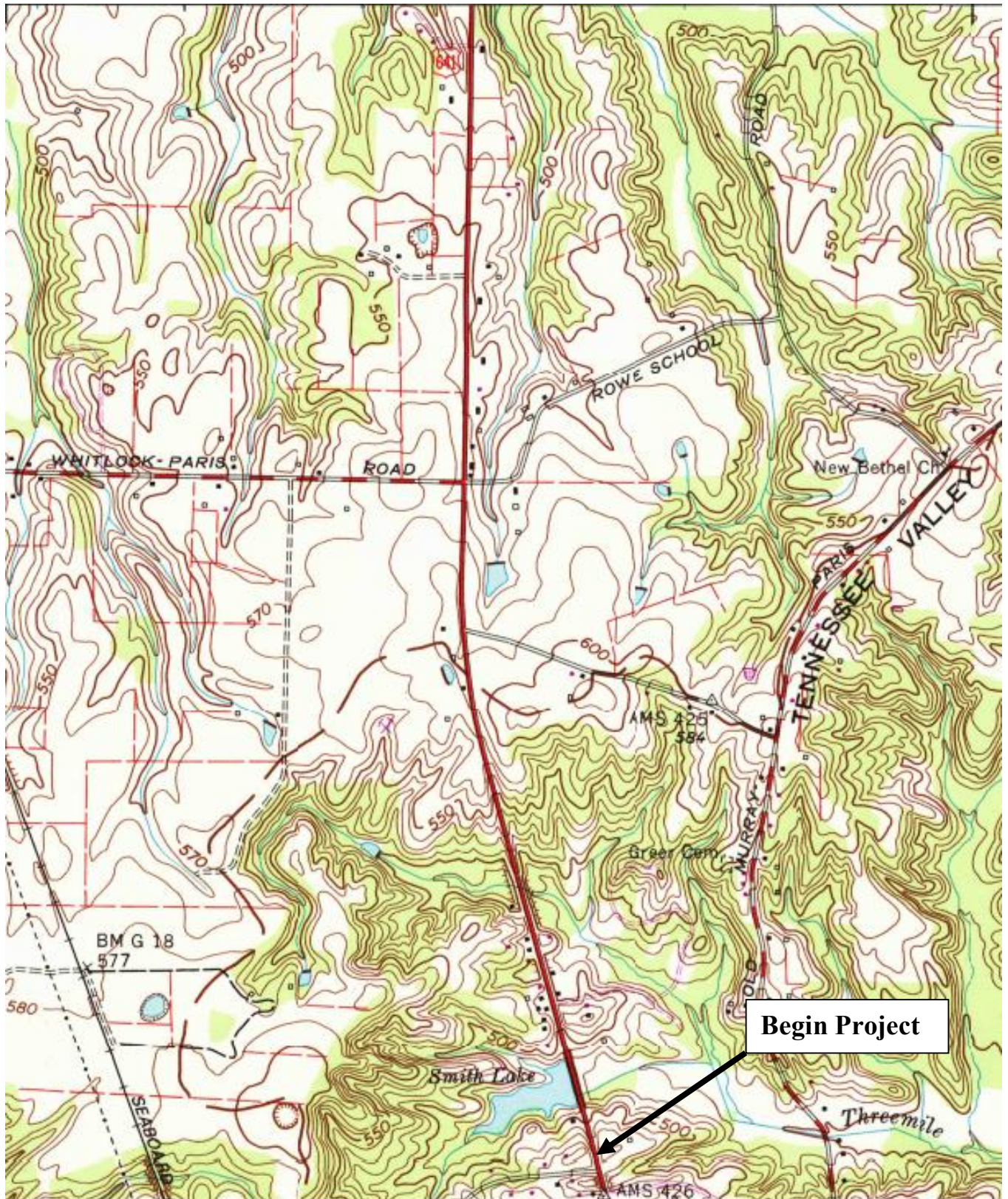


Figure 6: Paris, TN, Topographical Quad Map, 1965 indicating the beginning point of the SR 54 project (Map image 1 of 4 from south to north).

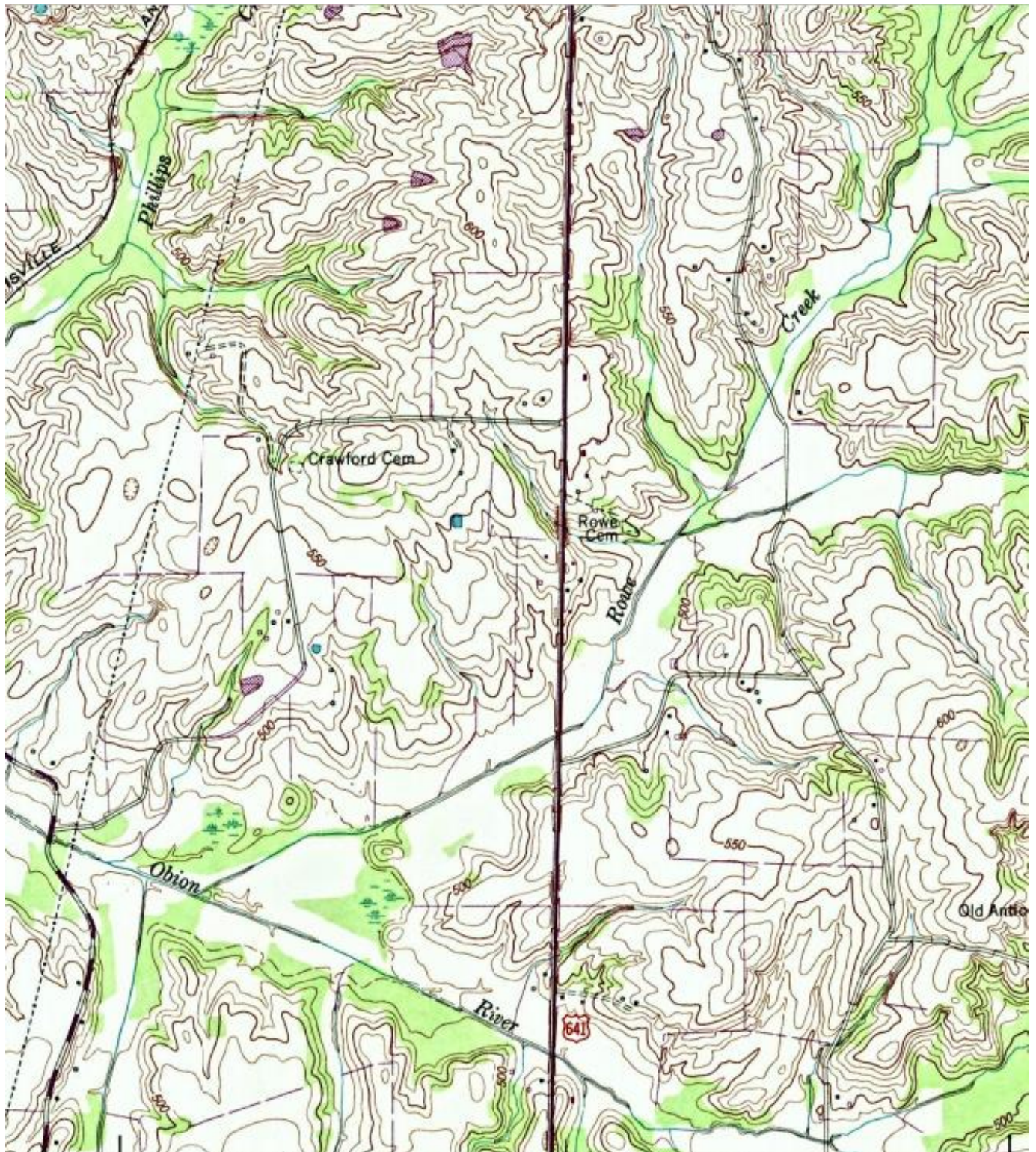


Figure 7: Puryear, Tennessee, Topographical Quadrangle Map, 1950, updated 1971 (Map image 2 of 4 from south to north).

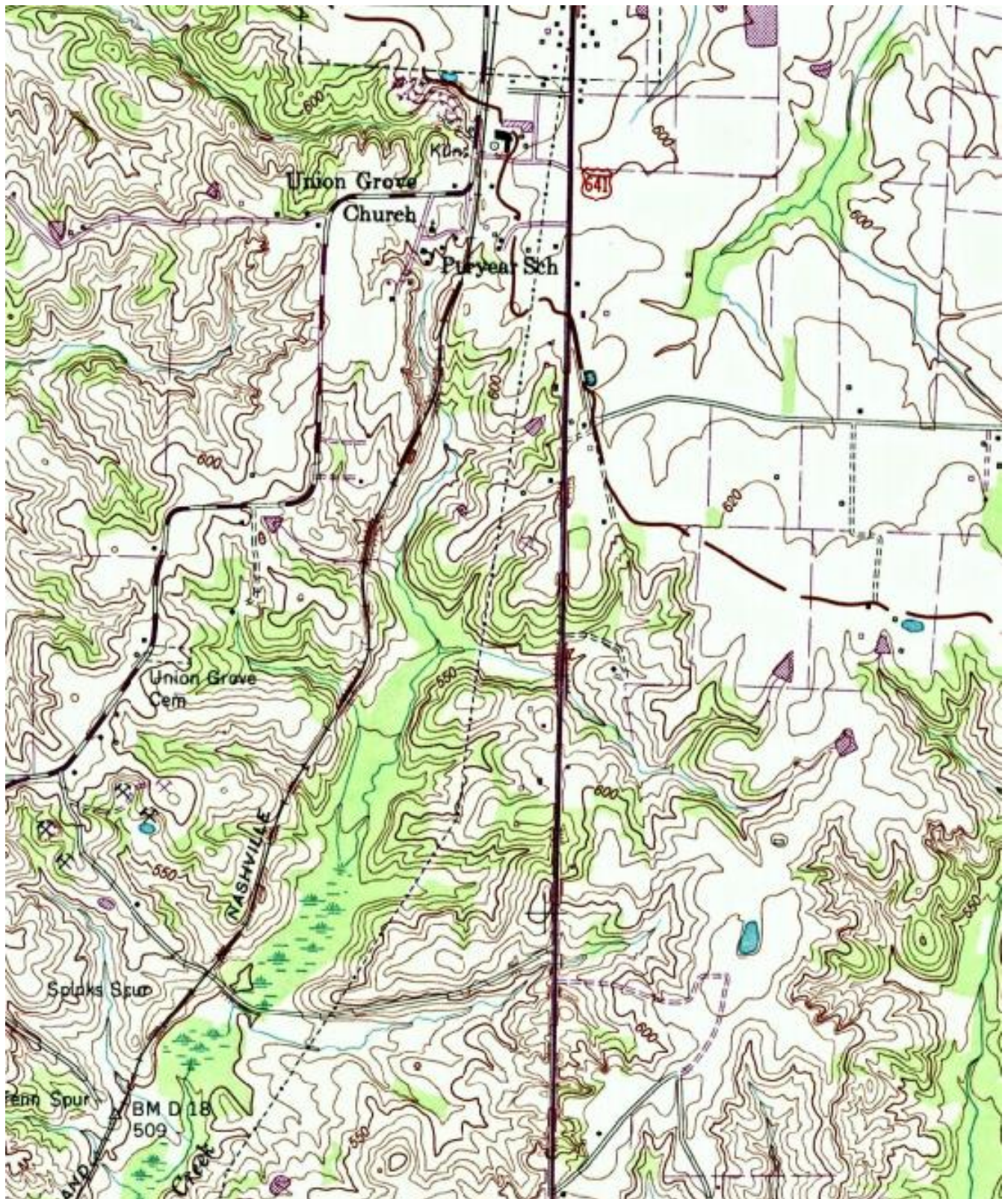


Figure 8: Puryear, Tennessee, Topographical Quadrangle Map, 1950, updated 1971 (Map image 3 of 4 from south to north).

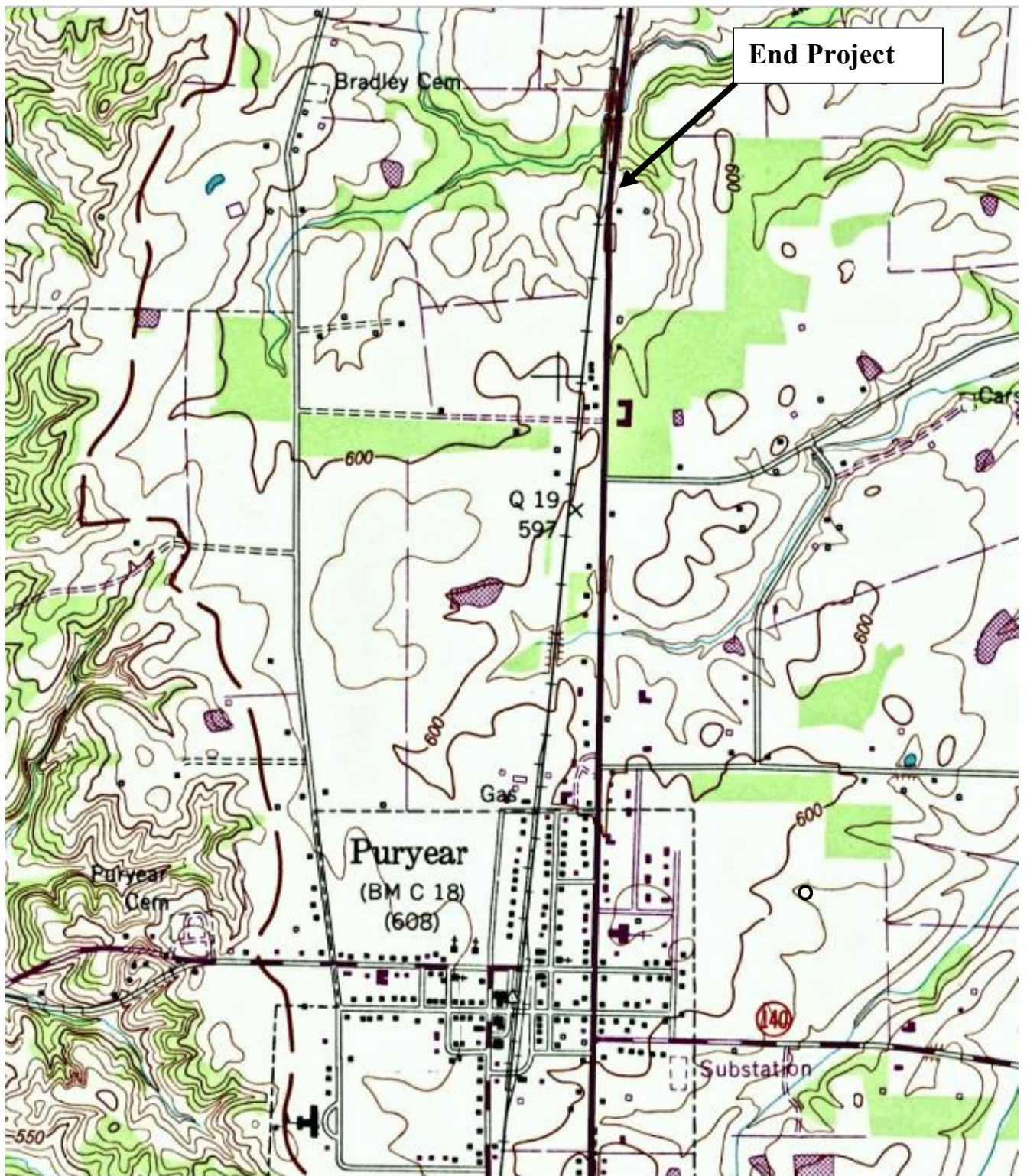


Figure 9: Puryear, Tennessee, Topographical Quadrangle Map, 1950, updated 1971 (Map image 4 of 4 from south to north).

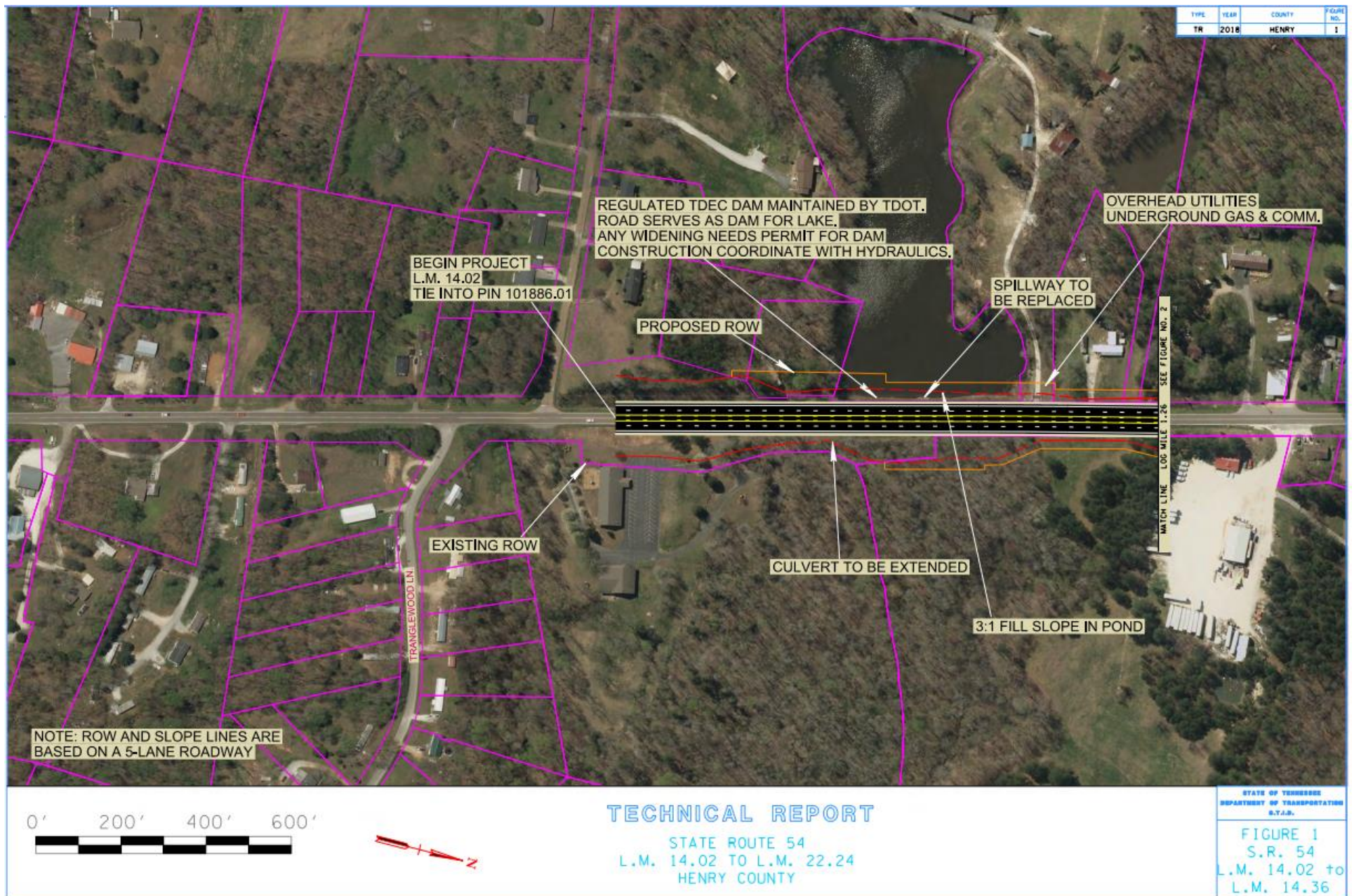


Figure 10: Aerial overview 1 of 19 of SR 54 improvements project at the beginning location, LM 14.02 from south to north.

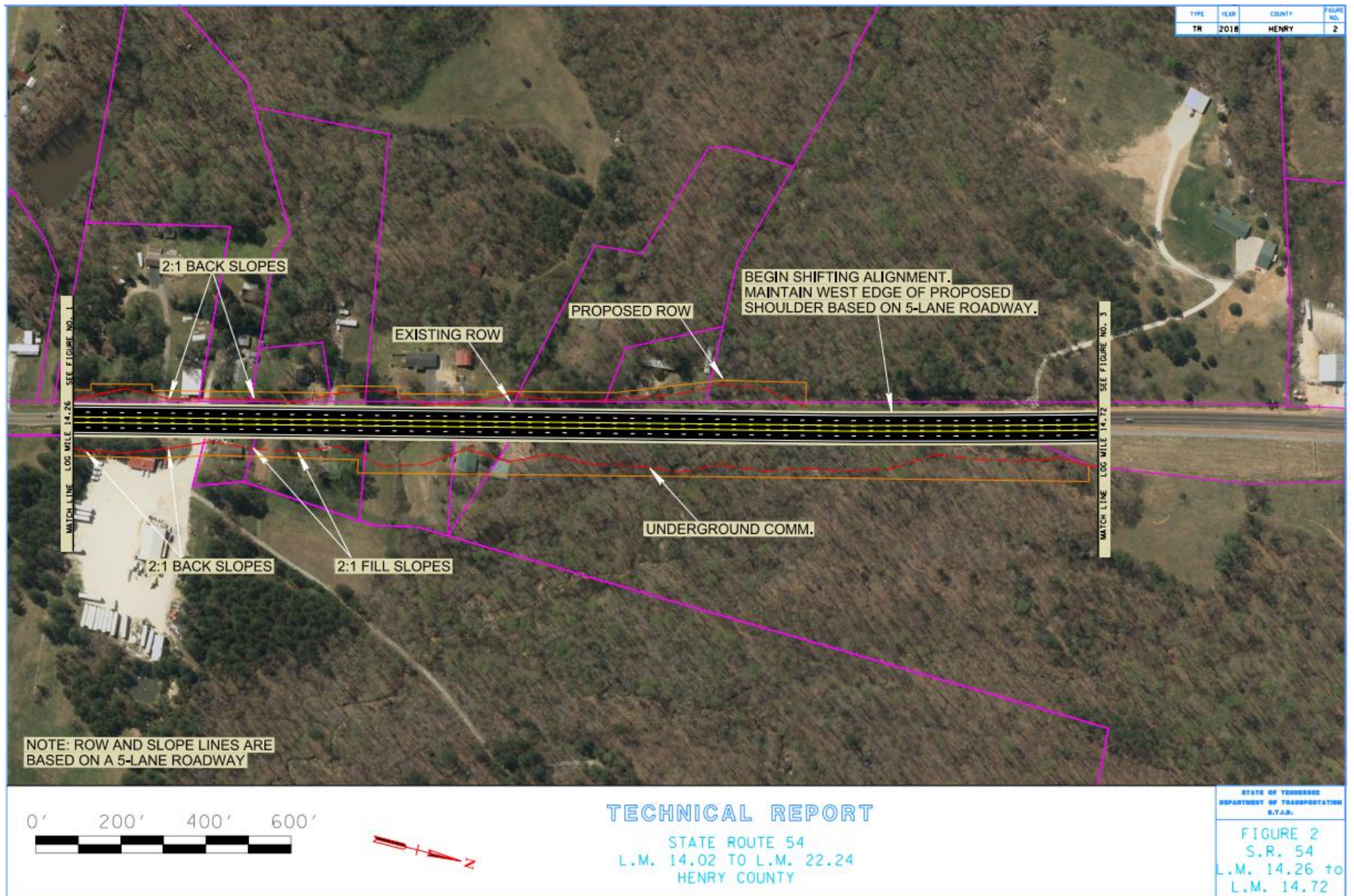


Figure 11: Aerial overview 2 of 19 of the SR 54 improvements project.

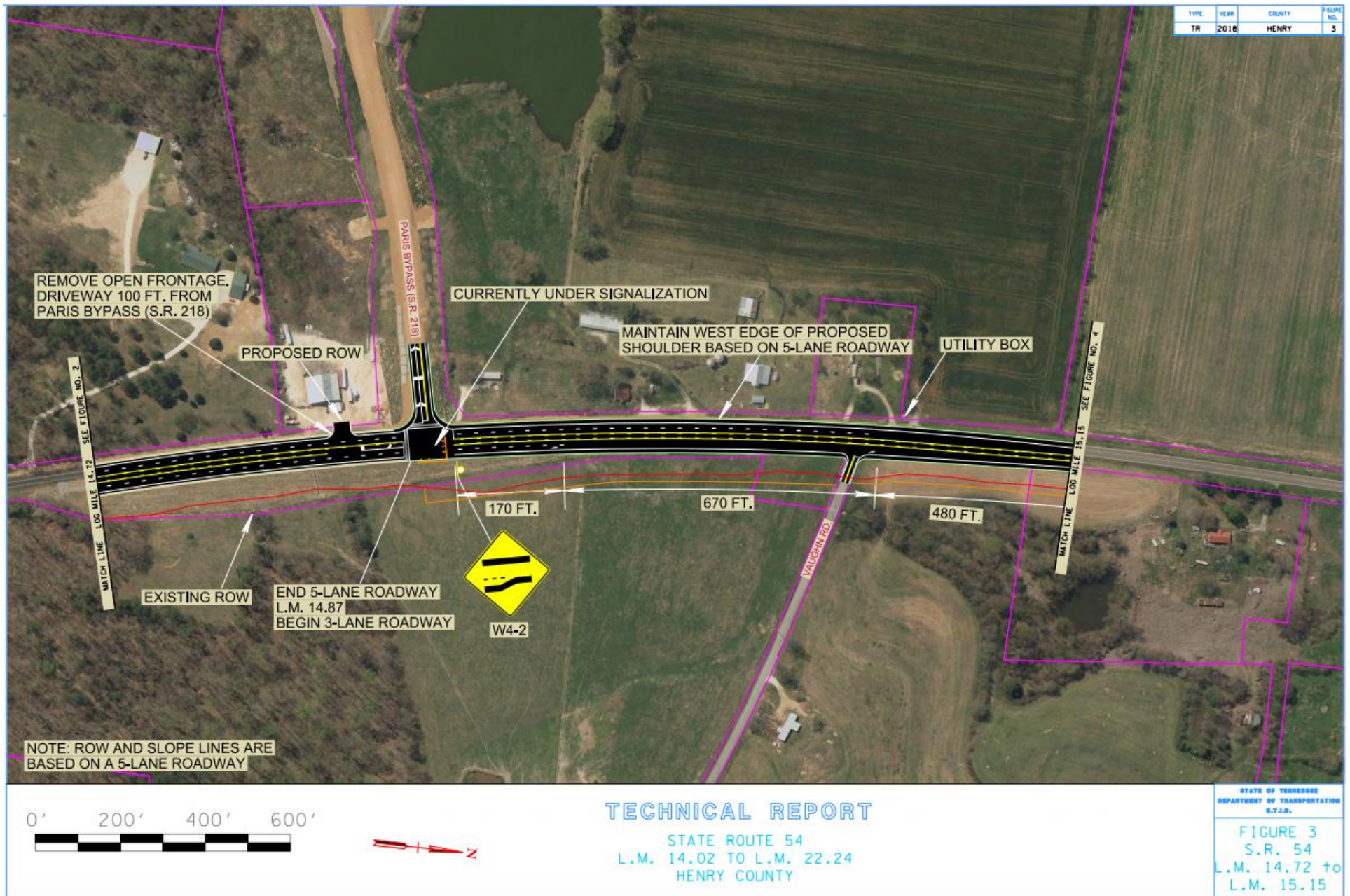


Figure 12: Aerial overview 3 of 19 of the SR 54 improvements project.



Figure 13: View southwest of a 1950 concrete block building at 3205 Hwy. 641 N.



Figure 14: View northwest of a 1965 one-story, frame Transitional Ranch dwelling at 3235 Hwy. 641 N.



Figure 15: View northeast of a 1970 frame Ranch style dwelling at 3240 Hwy. 641 N.



Figure 16: View east of a 1954 Transitional Ranch dwelling at 3280 Hwy 641 N.



Figure 17: View southwest of a 1954 Minimal Traditional dwelling at 3855 Hwy 641 N.

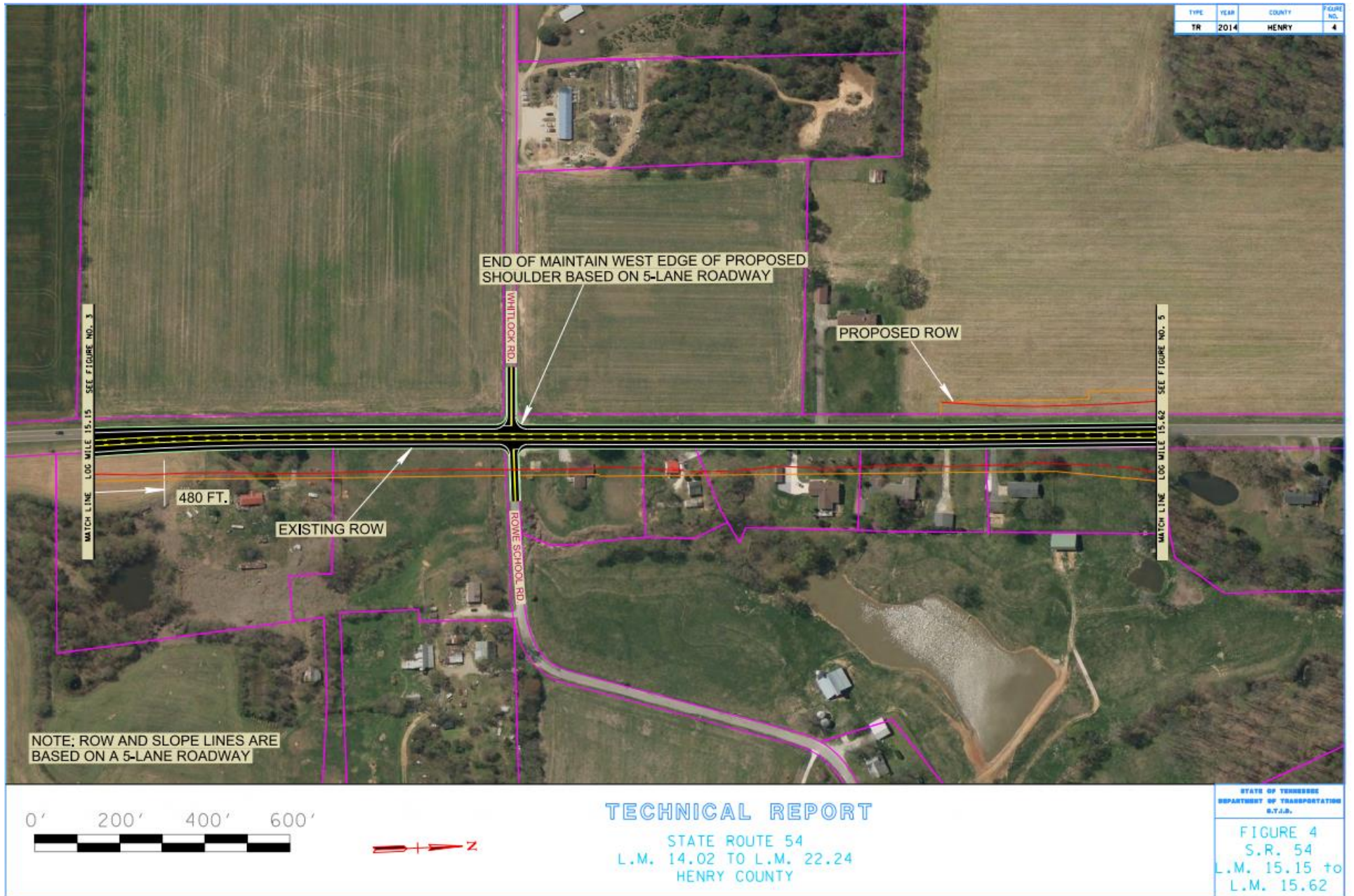


Figure 18: Aerial overview 4 of 19 of the SR 54 improvements project.

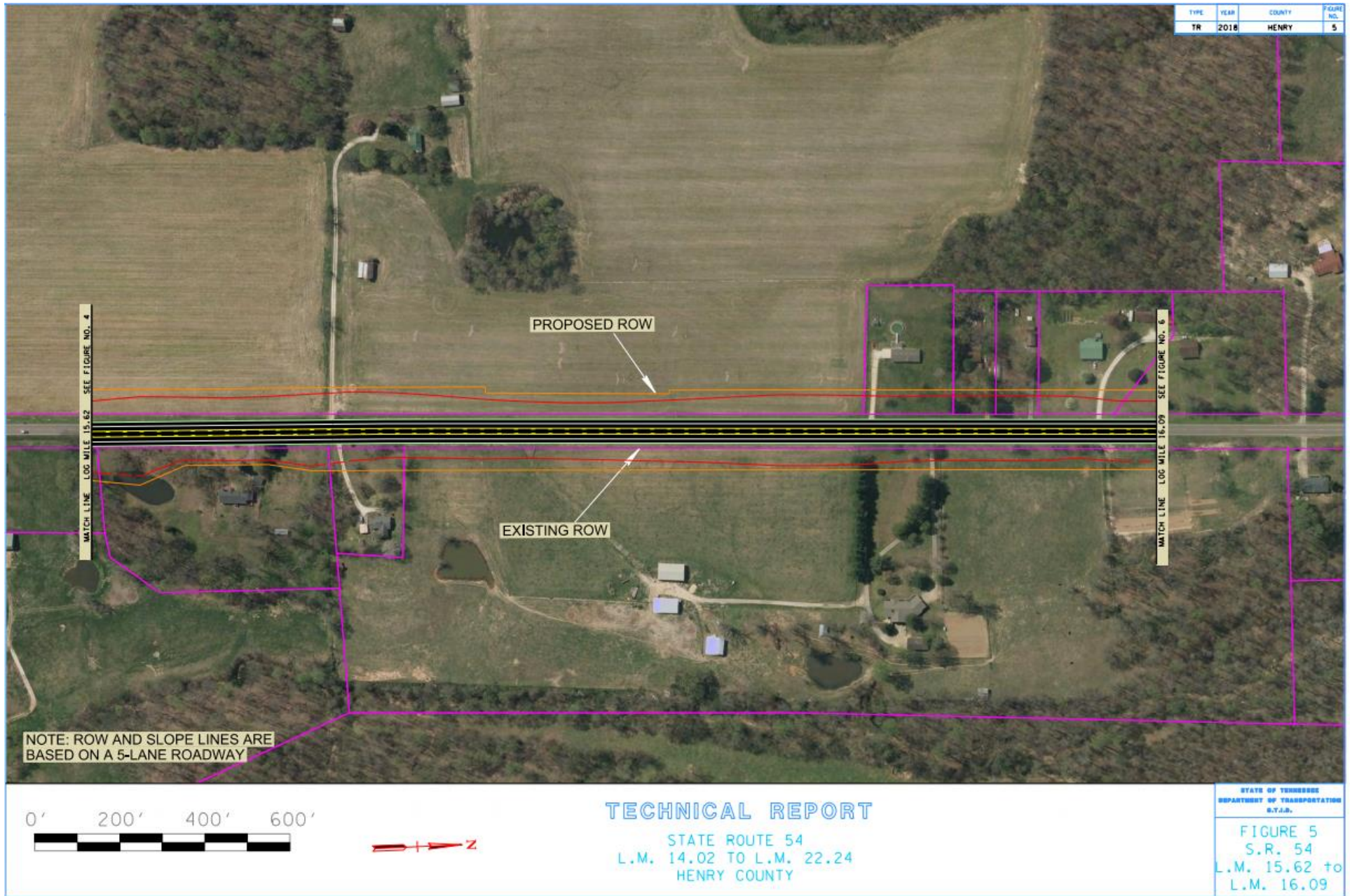


Figure 19: Aerial overview 5 of 19 of SR 54 improvements project.



Figure 20: Aerial overview 6 of 19 of SR 54 improvements project.

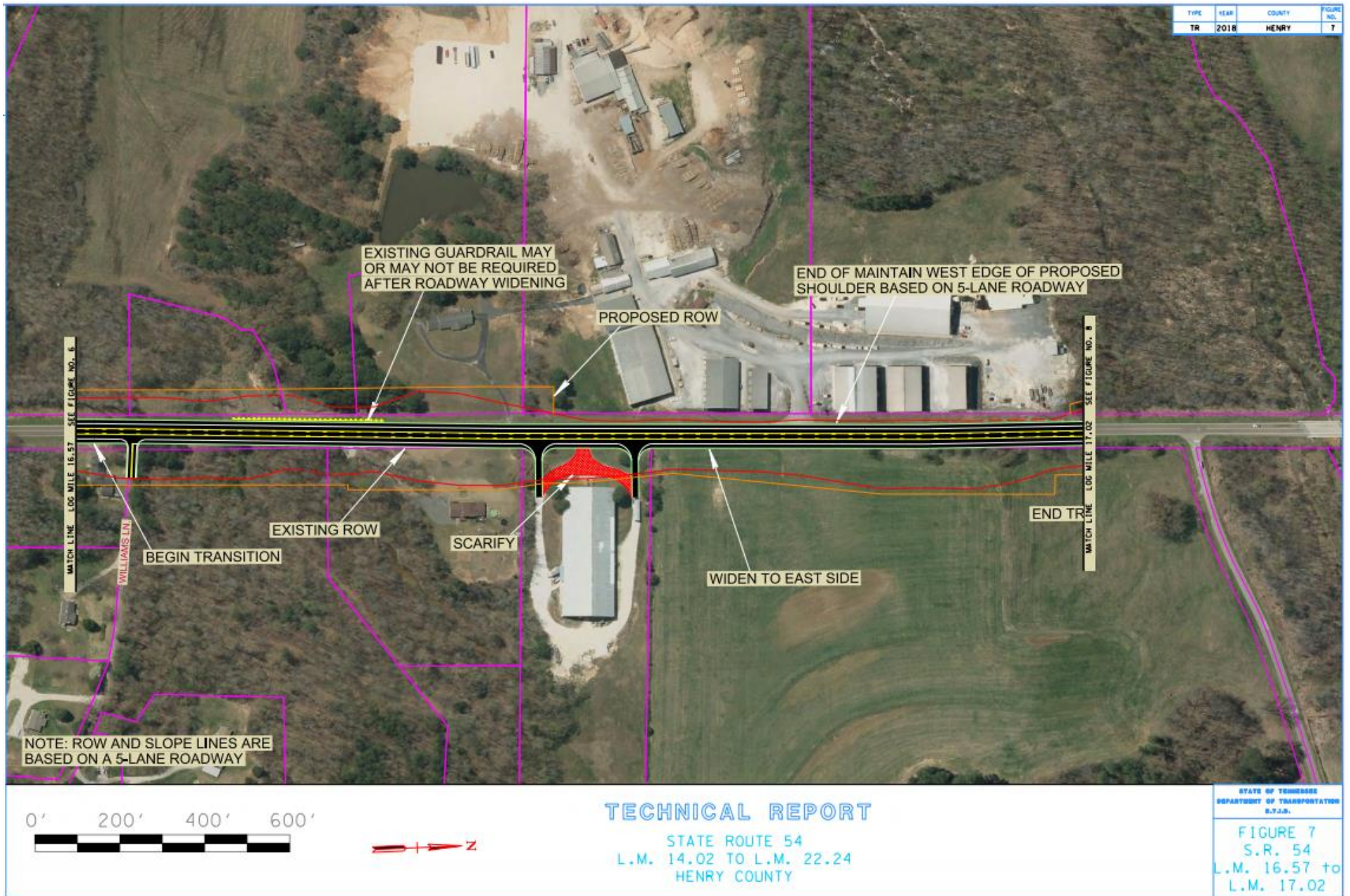


Figure 21: Aerial overview 7 of 19 of SR 54 improvements project.

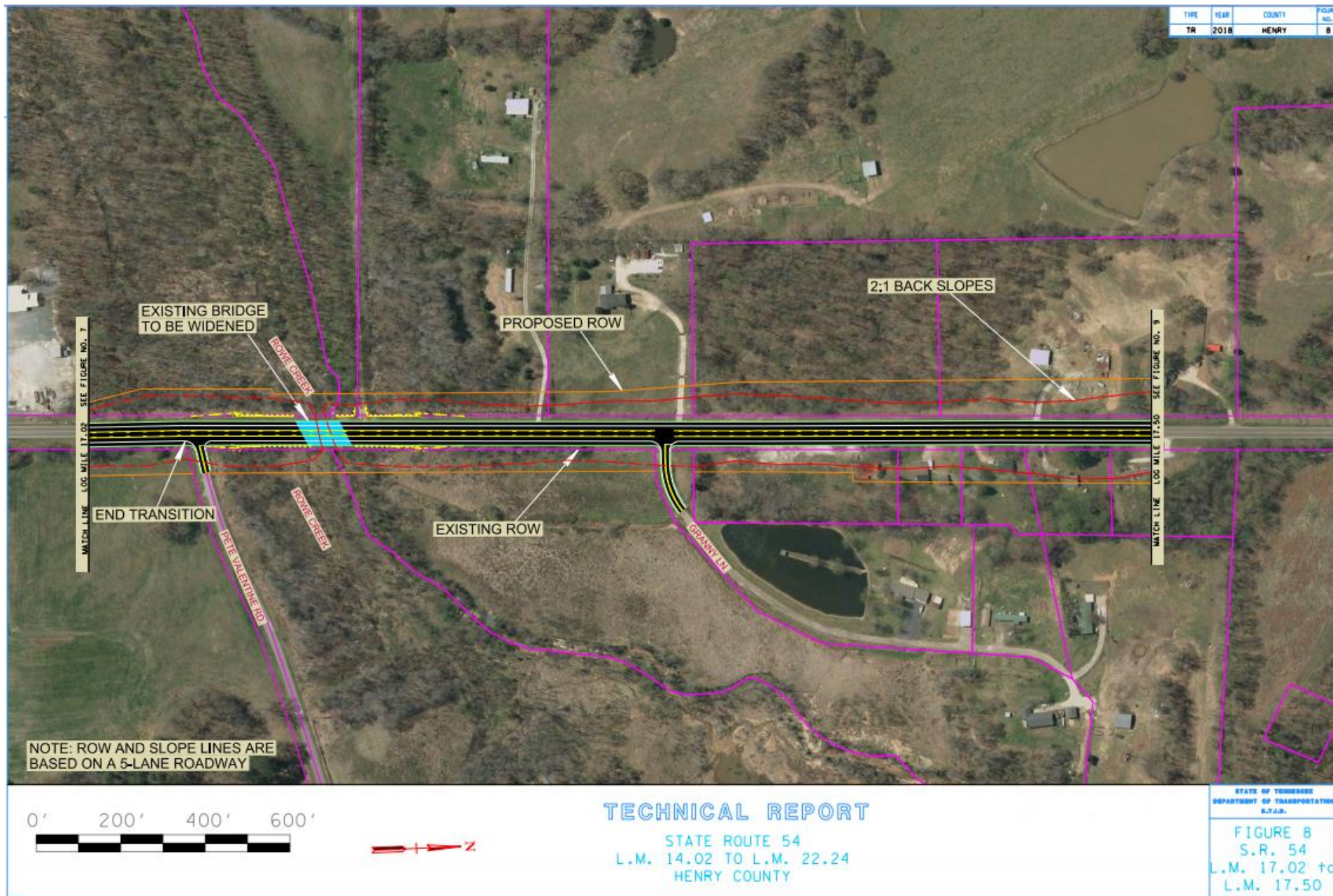


Figure 22: Aerial overview 8 of 19 of SR 54 improvements project.

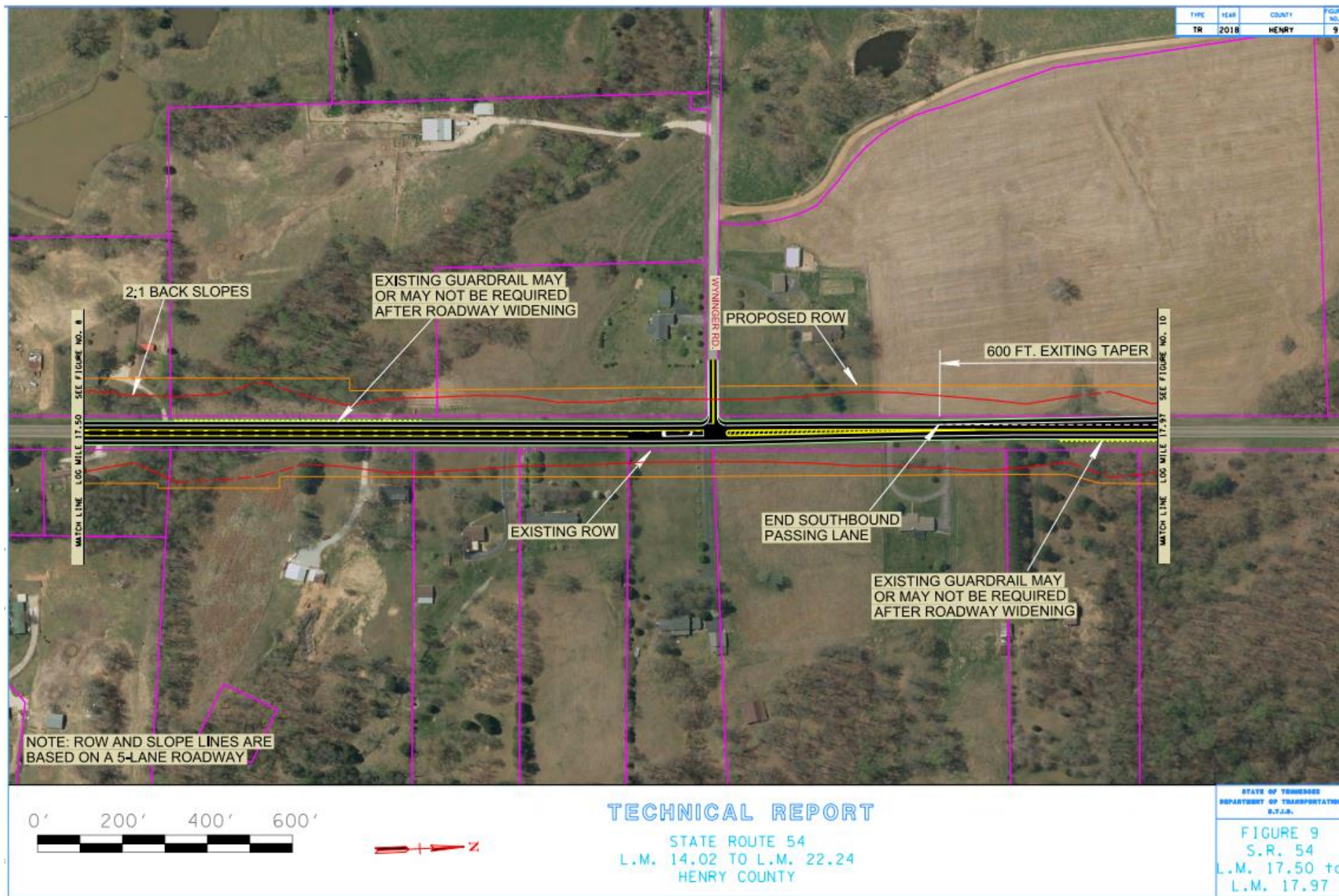


Figure 23: Aerial overview 9 of 19 of SR 54 improvements project.

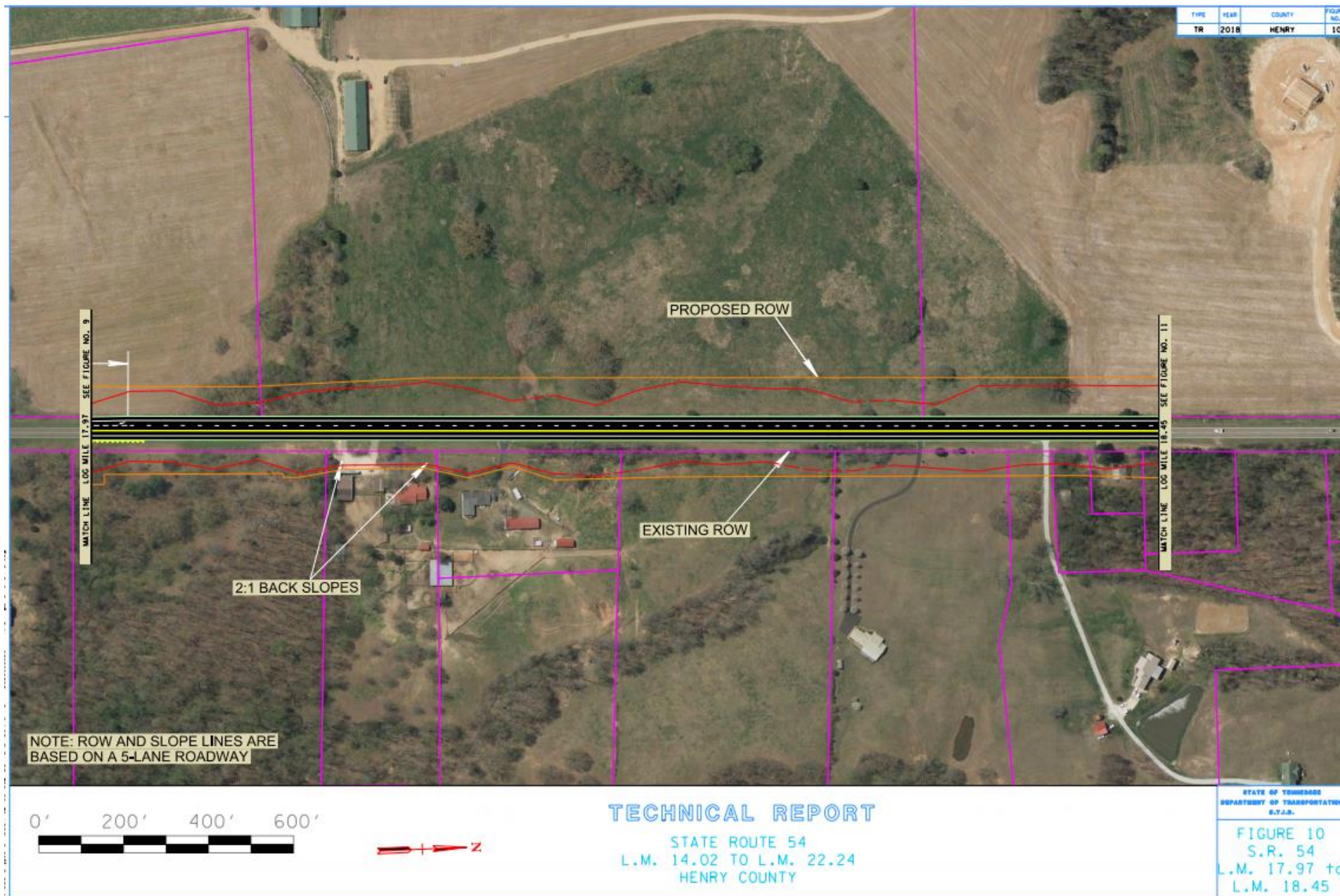


Figure 24: Aerial overview 10 of 19 of SR 54 improvements project.

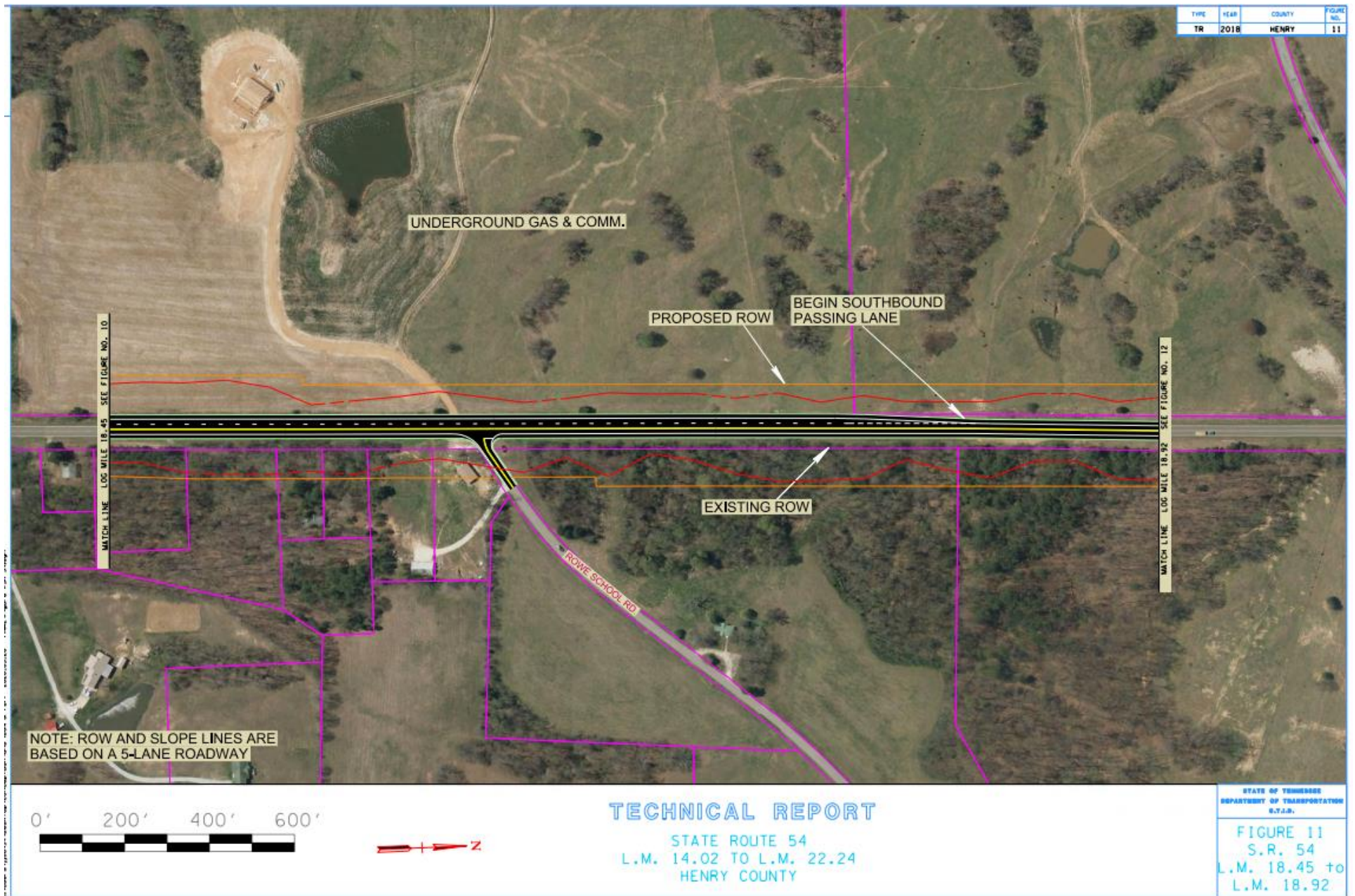


Figure 25: Aerial overview 11 of 19 of SR 54 improvements project.

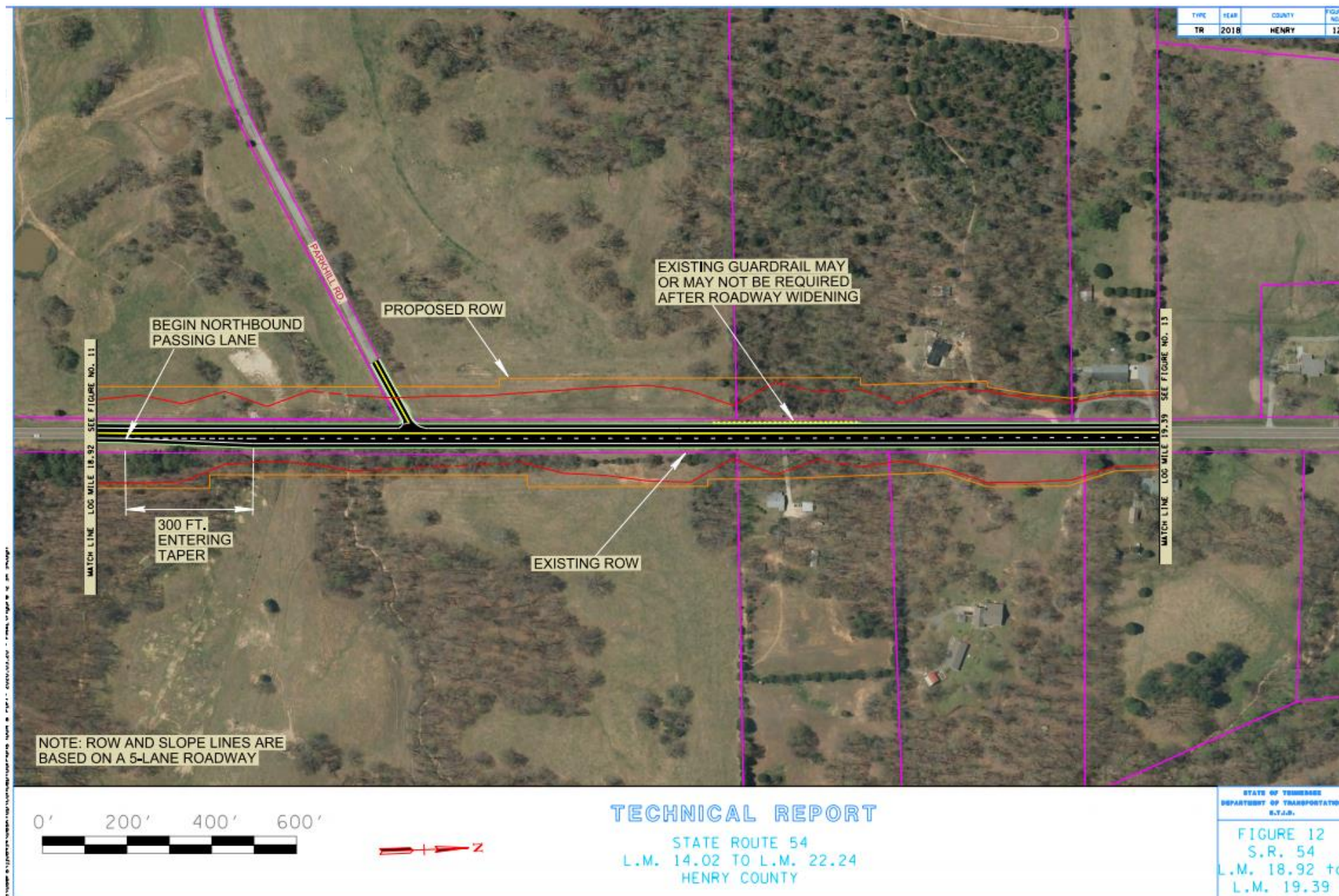


Figure 26: Aerial overview 12 of 19 of SR 54 improvements project.

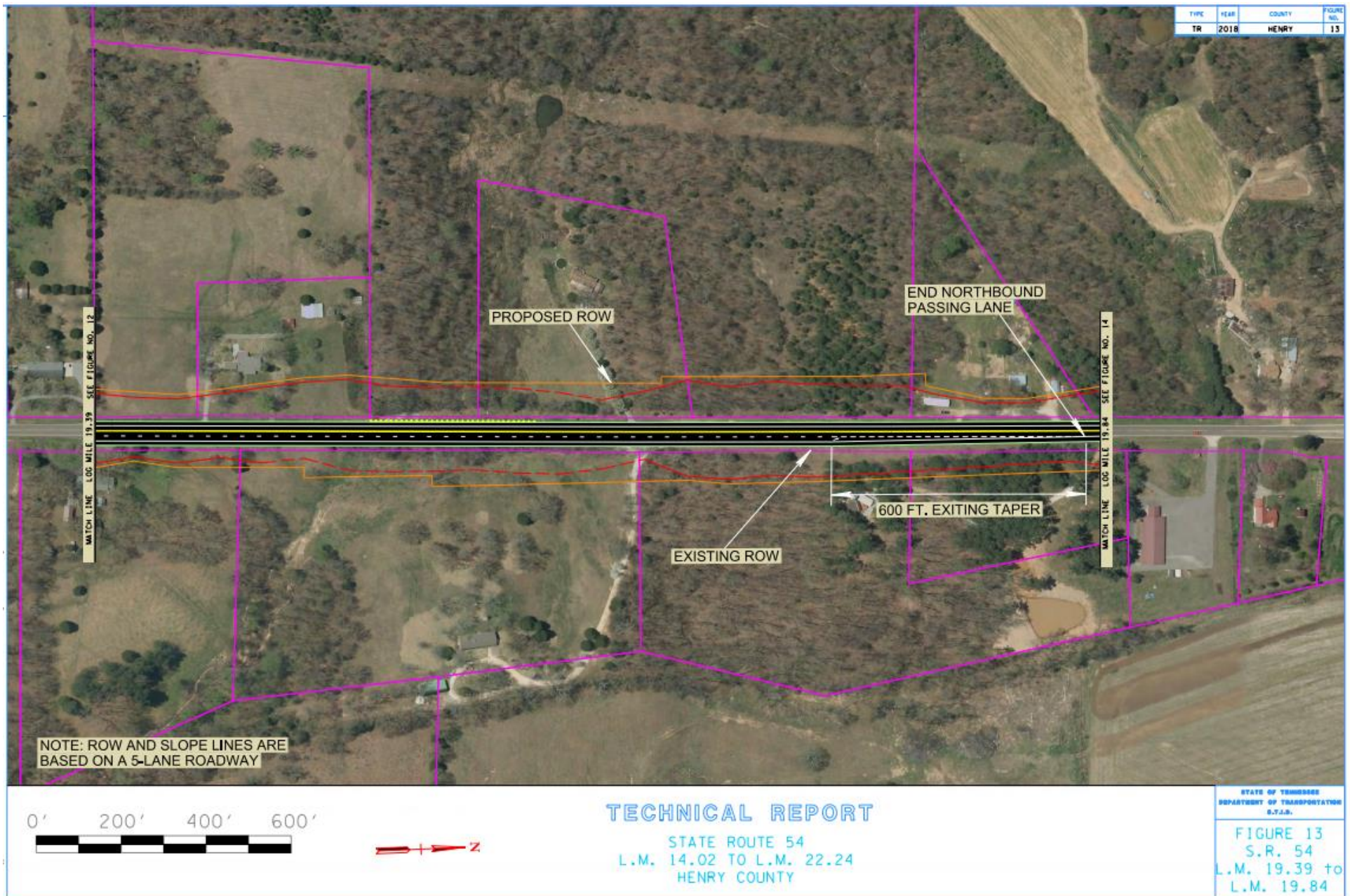


Figure 27: Aerial overview 13 of 19 of SR 54 improvements project.

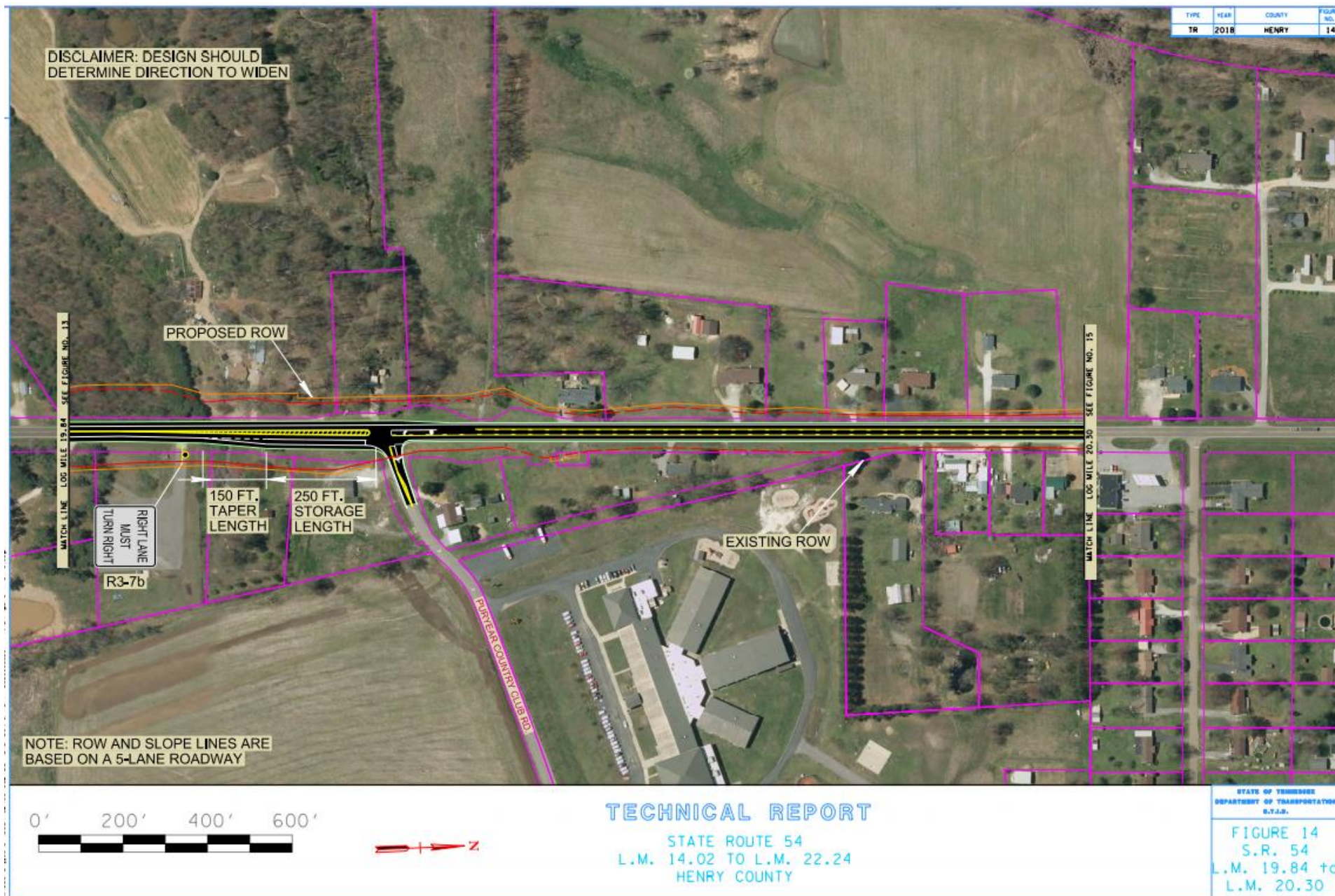


Figure 28: Aerial overview 14 of 19 of SR 54 improvements project.



Figure 29: View southwest of an altered ca. 1945 frame dwelling at 90 Rowe School Road.



Figure 30: View northeast of a 1970 brick veneer Ranch style dwelling at 4270 Hwy. 641 N.



Figure 31: View southeast of a 1947 frame Transitional Ranch style dwelling at 4310 Hwy. 641 N.



Figure 32: View northeast of a 1966 brick veneer Ranch dwelling at 4470 Hwy. 641 N.



Figure 33: View northeast of a 1961 brick veneer Ranch style dwelling 5080 Hwy 641 N.



Figure 34: View southeast of a 1966 frame and brick veneer Ranch style dwelling at 6300 Hwy. 641 N.



Figure 35: View southeast of a 1943 frame Ranch style dwelling at 6340 Hwy. 641 N.



Figure 36: View northwest of a 1962 brick veneer Ranch style dwelling at 6405 Hwy. 641 N.



Figure 37: View southeast of a 1966 brick veneer Ranch style dwelling at 6540 Hwy. 641 N.



Figure 38: View southeast of a 1969 brick veneer Ranch style dwelling at 6580 Hwy. 641 N.



Figure 39: View southeast of a 1969 brick veneer Ranch dwelling at 6620 Hwy. 641 N.



Figure 40: View southeast of a 1965 frame Ranch style dwelling at 7300 Hwy. 641 N.



Figure 41: View northeast of a 1958 frame Transitional Ranch style dwelling at 8130 Hwy. 641 N.



Figure 42: View west of a 1964 brick veneer Ranch style dwelling at 8285 Hwy. 641 N.



Figure 43: View southeast of a 1963 frame Ranch style dwelling at 8310 Hwy. 641 N. This dwelling was altered with lateral additions in the 1970s.



Figure 44: View southwest of a 1966 brick veneer Ranch dwelling at 8365 Hwy. 641 N.



Figure 45: View southwest of a 1945 frame Minimal Traditional style dwelling at 8825 Hwy. 641 N.



Figure 46: View northeast of a 1957 stone and brick veneer Ranch style dwelling at 9120 Hwy. 641 N.



Figure 47: View northwest of an altered 1960 brick veneer Ranch style dwelling at 9245 Hwy. 641 N.

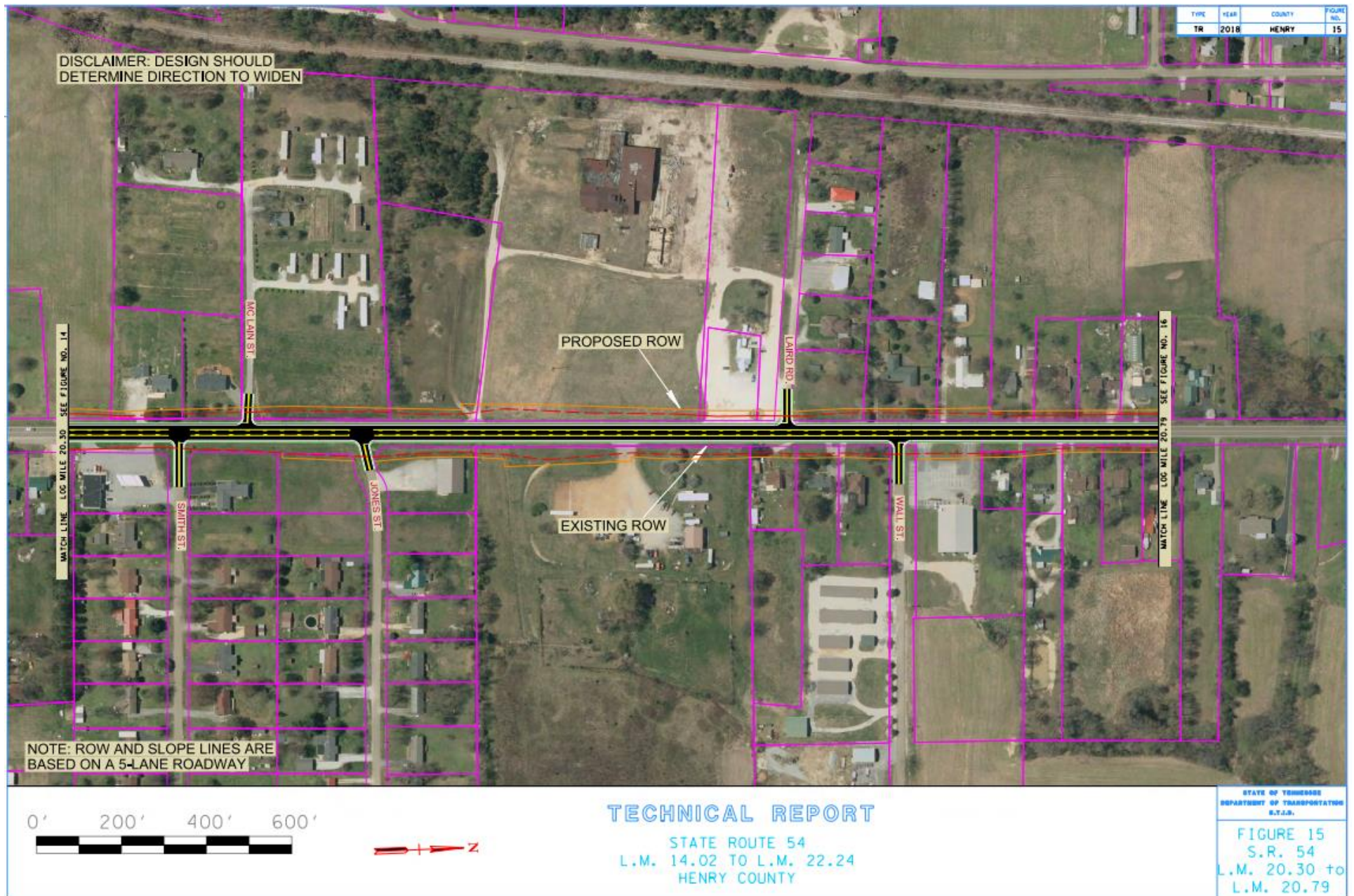


Figure 48: Aerial overview 15 of 19 of the SR 54 improvements project through the city of Puryear.

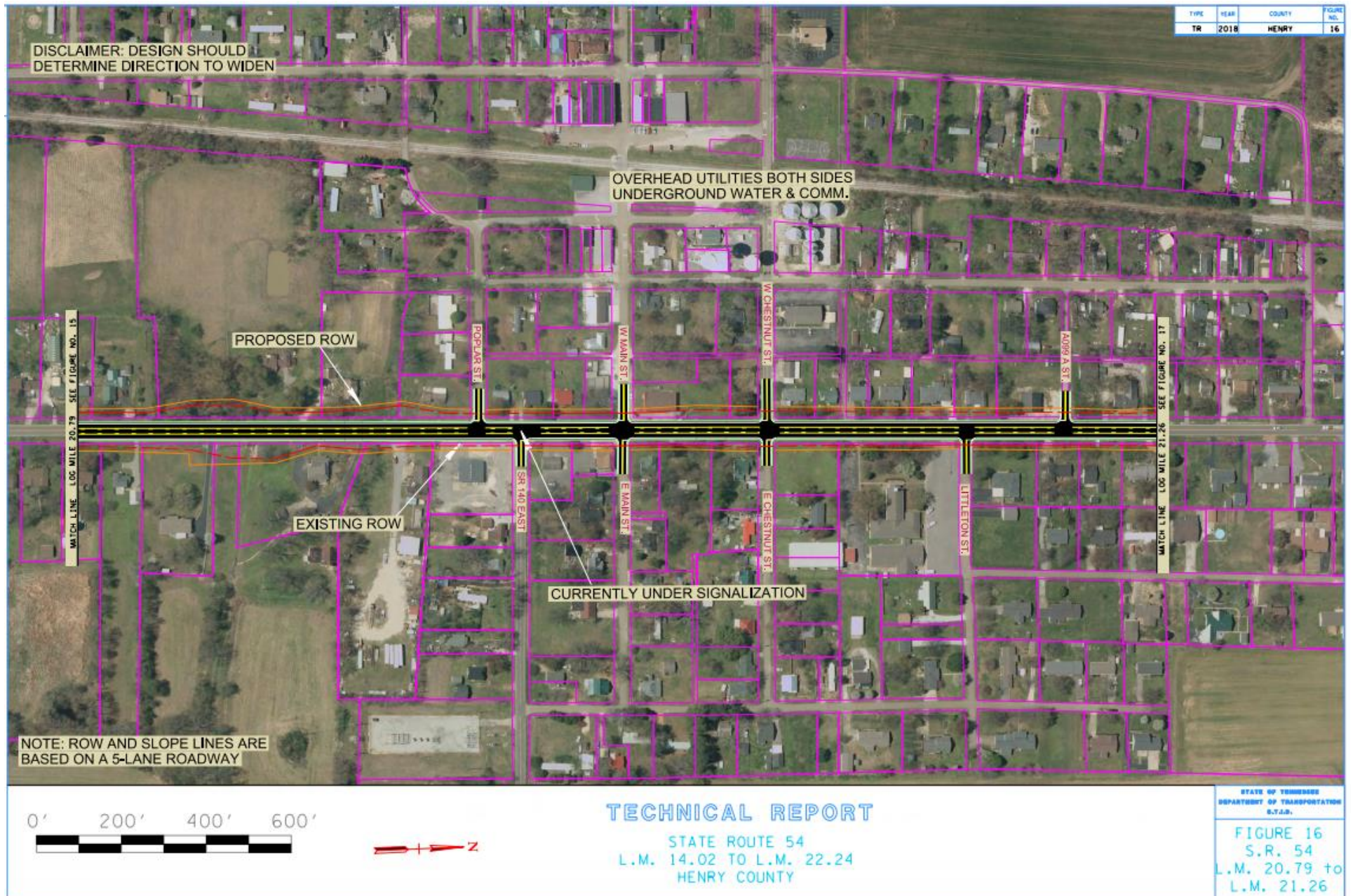


Figure 49: Aerial overview 16 of 19 of the SR 54 improvements project through the city of Puryear.

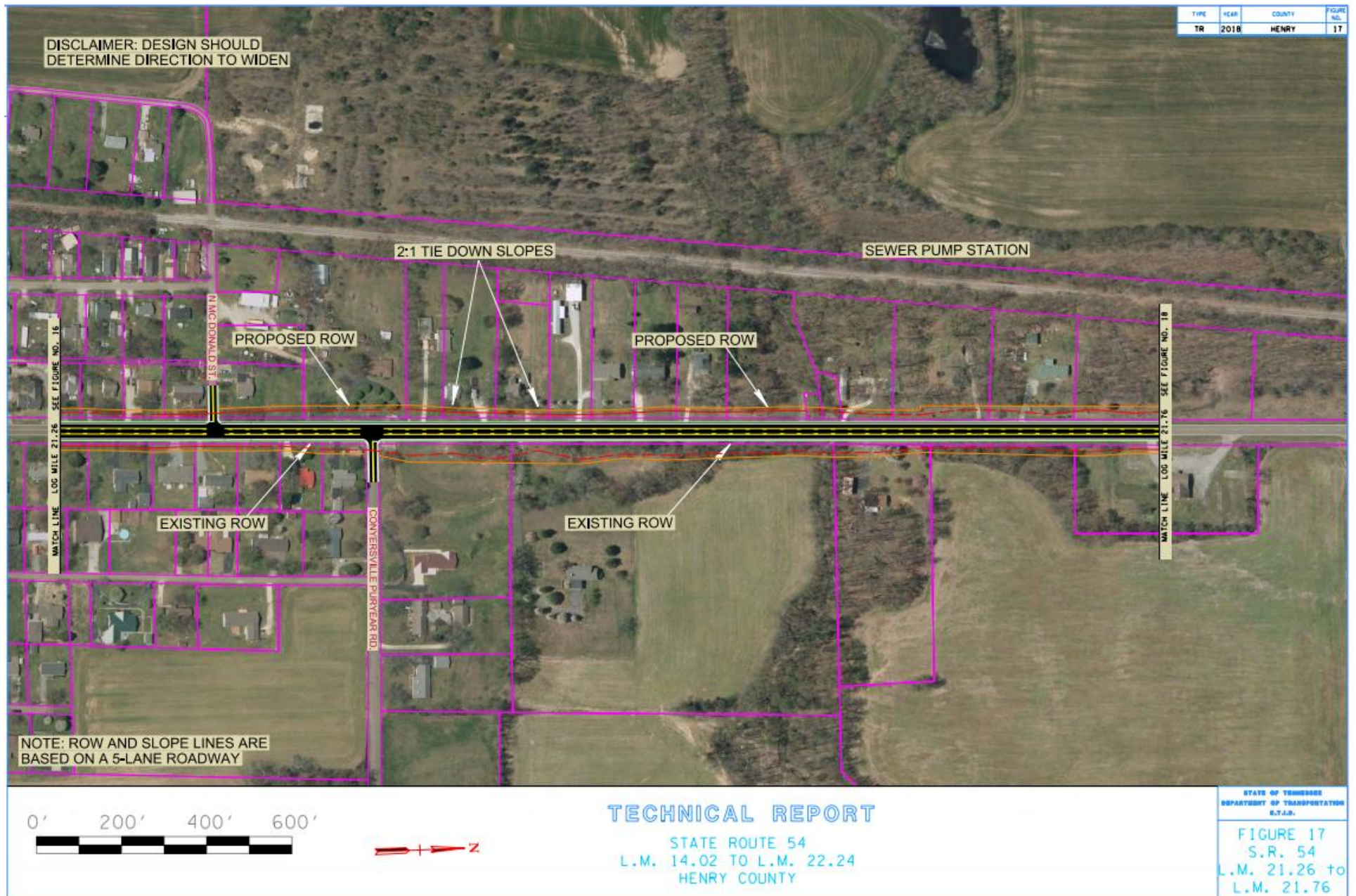


Figure 50: Aerial overview 17 of 19 of the SR 54 improvements project through the city of Puryear.



Figure 51: View southwest in the 9000 block of SR 54 in Puryear.



Figure 52: View northwest in the 9400 block of SR 54 in Puryear.



Figure 53: View southwest in the 10000 block of SR 54 in Puryear.



Figure 54: View northwest in the 10000 block of SR 54 in Puryear.



Figure 55: View northwest in the 10000 block of SR 54 in Puryear.



Figure 56: View northeast in the 10000 block of SR 54 in Puryear.



Figure 57: View southwest in the 100 block of W. Main Street in Puryear.



Figure 58: View southwest in the 100 block of W. Main Street in Puryear.



Figure 59: View southeast of an altered ca. 1900 central-hall plan dwelling at 9620 Hwy. 641 N. in Puryear.



Figure 60: View south of a representative, ca. 1915 altered gabled ell dwelling at 201 W. Main Street in Puryear.



Figure 61: View north of an altered ca. 1925 Bungalow dwelling at 226 W. Main Street in Puryear.



Figure 62: View northwest of a ca. 1925 Bungalow dwelling at 9805 Hwy. 641 N. in Puryear.



Figure 63: View west of an altered ca. 1915 commercial building at 77 W. Main Street in Puryear.



Figure 64: View east of a 1935 Tudor Revival influenced dwelling at 9660 Hwy. 641 N. in Puryear.



Figure 65: View southeast of a 1945 Minimal Traditional style dwelling at 9710 Hwy. 641 N. in Puryear.



Figure 66: View southwest of a 1950 Minimal Traditional style dwelling at 10345 Hwy. 641 N. in Puryear.



Figure 67: View northwest of a 1950 Transitional Ranch style dwelling at 10575 Hwy. 641 N.in Puryear.



Figure 68: View northeast of the Puryear Baptist Church built in 1964 at 10060 Hwy. 641 N. in Puryear.



Figure 69: View northeast of a hipped roof Ranch style dwelling built in 1957 at 10130 Hwy. 641 N. in Puryear.



Figure 70: View southwest of a 1962 brick veneer Ranch style dwelling at 10255 Hwy. 641 N. in Puryear.

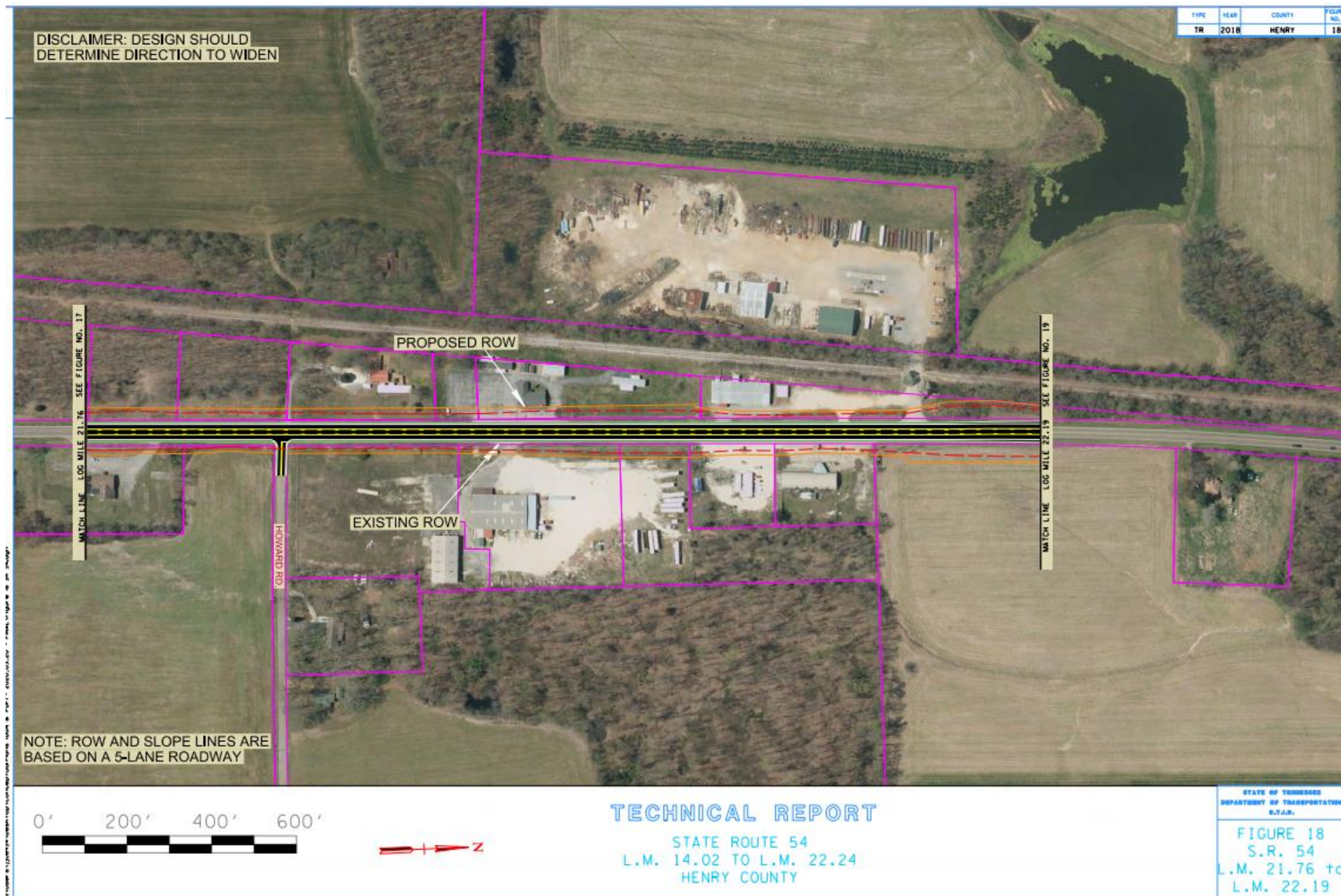


Figure 71: Aerial overview 18 of 19 of the SR 54 improvements project.

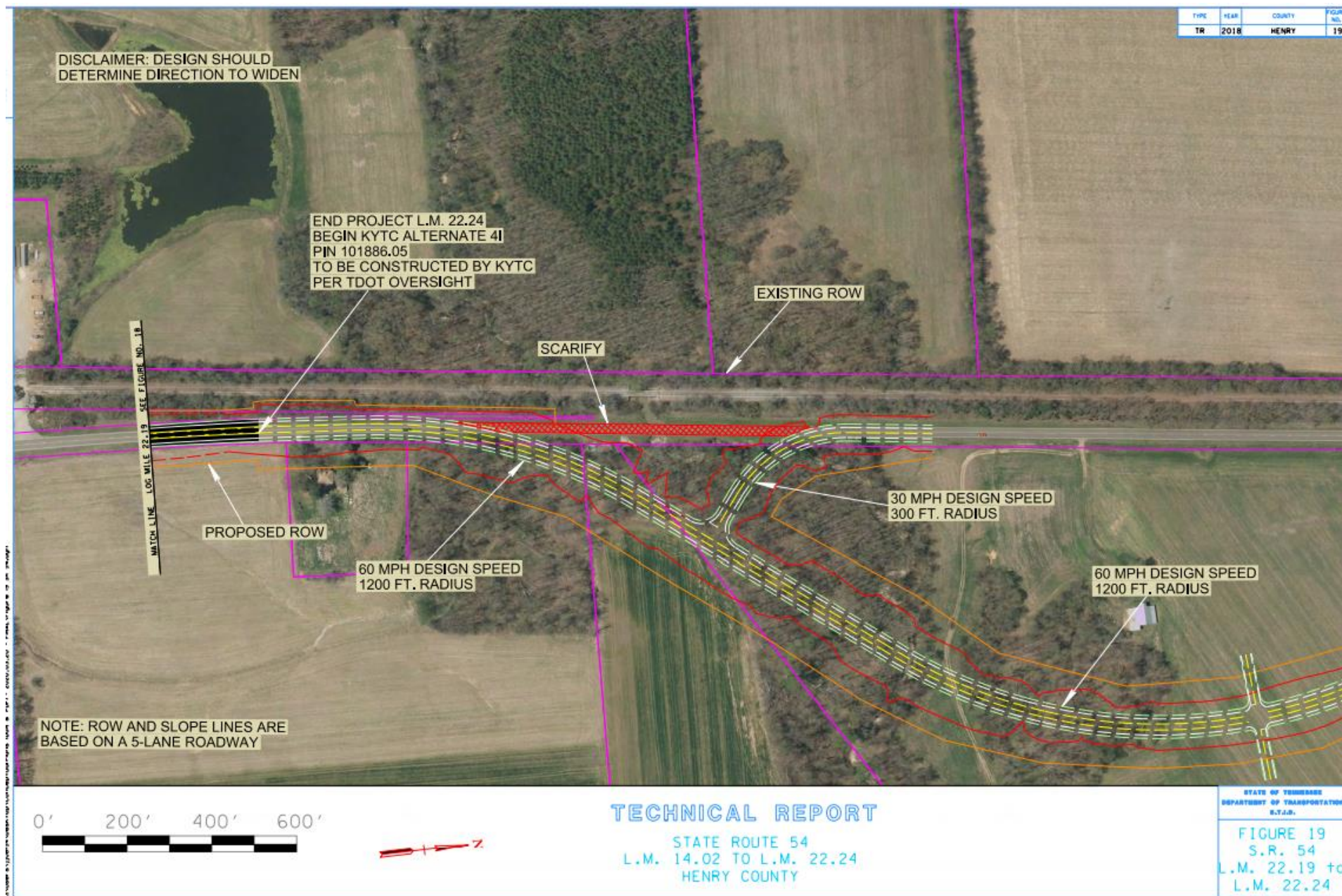


Figure 72: Aerial overview 19 of 19 of the SR 54 improvements project at the end of the project location.



Figure 73: View east of a 1986 warehouse building at 10800 Hwy. 641 N. north of Puryear.



Figure 74: View northwest of 1943 commercial building at 10801 Hwy. 641 N. north of Puryear.

IV. CATALOG OF INVENTORIED PROPERTIES

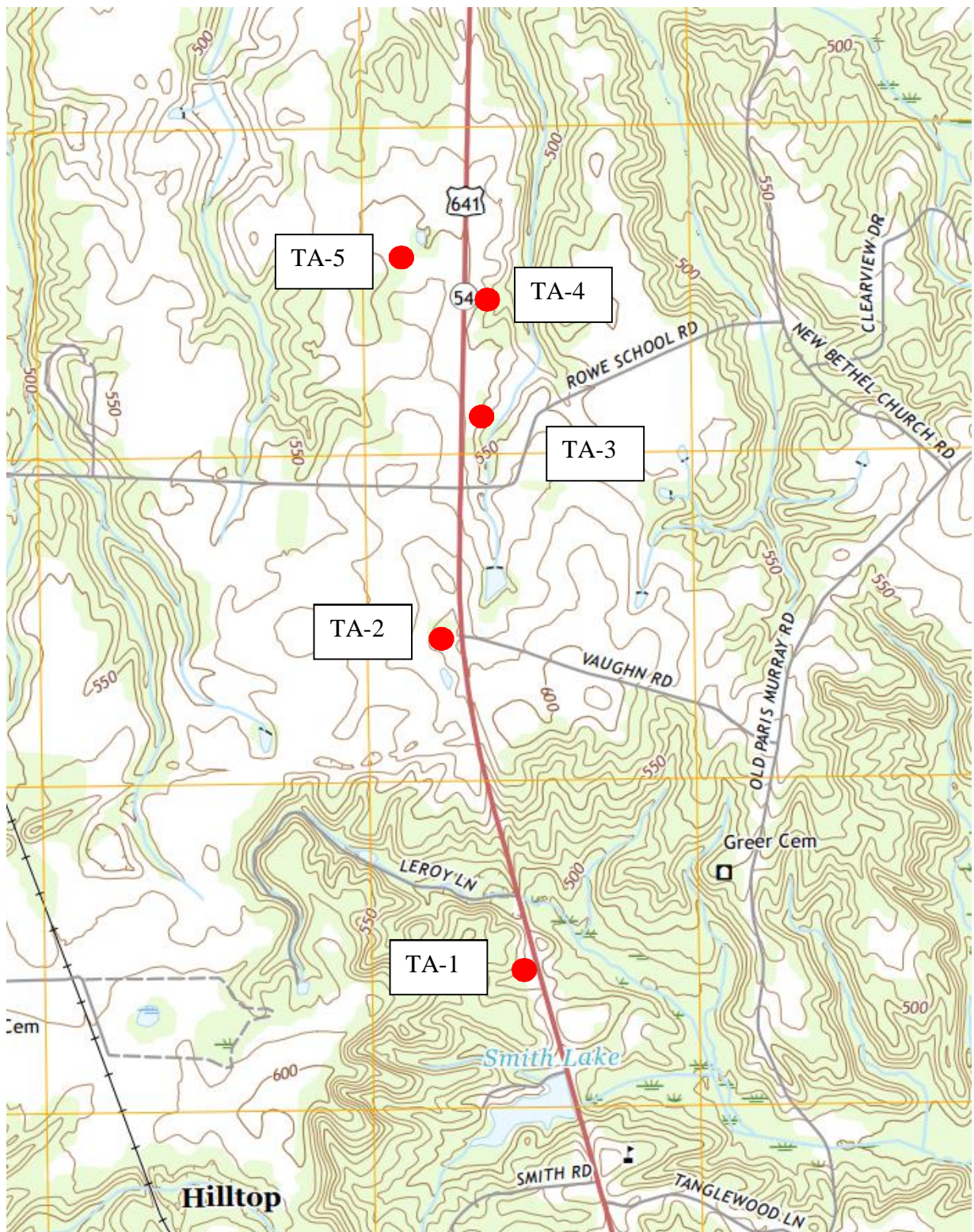


Figure 75: 2019 Paris Quad map with locations of TA-1 through TA-5.

**TA-1, 3285 Highway Hwy. 641 N.
Paris Quad Map**

History: This dwelling appears to have been built ca. 1915. It is presently vacant and attempts to contact the owner were unsuccessful.

Description:

This is a ca. 1915 one-story, gable-front, frame dwelling with a gable-front roof of asphalt shingles, an exterior of vinyl siding, and a concrete block foundation. The façade (E) has an incised, two-bay porch with ca. 1990 square, wood posts. The house has original six-over-six, wood-sash windows and an interior, brick chimney. The north elevation has a recessed shed wing with an original single-light, three-panel wood door and screen door on the façade. There is also a shed wing on the rear elevation.

Assessment: This is a common vernacular form which was widely built in Tennessee in the early 1900s. The dwelling has been altered with vinyl siding and a rebuilt porch. In the opinion of the Consultant, it does not possess sufficient integrity or architectural significance to meet National Register criteria.



Figure 76: TA-1, view northwest.



Figure 77: TA-1, view southeast.



Figure 78: TA-1, view southwest.

**TA-2, 3965 Highway 641 N. (SR 54), Hosford House
Paris Quad Map**

History:

This dwelling was surveyed in 2003 by TDOT. At that time, it was occupied by the owner Barbara Hosford. It was originally owned and occupied by Dalton and Leroy Smith and was part of a large farm. The house was built ca. 1900 according to the owner at that time. The house is currently vacant and a questionnaire left at the property was not returned.

Description:

This is a ca.1900, one-and-one-half-story, frame, central-hall plan dwelling. It has a side-gable roof of ca. 2010 standing-seam metal, an exterior of asbestos shingle siding, and a foundation of brick. The façade (E) has a central entrance with a ca. 1925 Craftsman-light wood door flanked by eight-light sidelights over wood panels. To either side of the entrance are two six-over-six, wood-sash windows. The façade has a full-width, five-bay porch from ca. 1925 with tapered wood posts on brick piers and a poured concrete foundation. The house has one interior, end, brick chimney and a second interior brick chimney. Across the rear elevation is a one-story shed wing joined to one-story ell wing. The shed wing has ca. 1970 multi-light double doors that open onto a wood deck.

The property also has a ca. 1940 concrete block garage with a gable-front roof of asphalt shingles and exposed rafter tails. The garage has side-hinged bay doors of vertical wood boards. There is a six-over-six, wood-sash window on the side elevation.

Assessment:

When TDOT surveyed this property in 2003 it was considered to be a representative, but not outstanding, example of a central-hall plan rural farmhouse and ineligible for National Register listing. Since 2003 the dwelling has not been altered with the exception of a new metal roof. The property is presently vacant and no additional information was obtained. The Consultant concurs with the original assessment that this property does not possess sufficient architectural significance to meet National Register criteria.



Figure 79: TA-2, view west.



Figure 80: TA-2, view northwest.



Figure 81: TA-2, view southwest.



Figure 82: TA-2, view northeast.



Figure 83: TA-2, view east.



Figure 84: TA-2, garage, view southwest.

TA-3, 4380 Highway US 641 N. (SR 54)
Paris Quad Map

History:

Constructed in 1959, this cross-gable Ranch style dwelling was built as the home of James B. Hunt. Hunt worked for Holly Industries in Paris and resided here with his family. His son, James M. Hunt is the current owner. The design of the house with its brick quoins was used as the model for several other houses along US 641 to the north.

Description:

This is a cross-gable Ranch style dwelling built in 1959. It has a side-gable roof of asphalt shingles, an exterior of brick veneer, and a slab concrete foundation. The dwelling displays original two-over-two, horizontal, wood-sash windows, and an interior, brick chimney. The façade (W) has a central, recessed entrance bay beside a gable-front projecting bay with a picture window flanked by original two-over-two, horizontal, wood-sash windows. At each corner of the dwelling there are light-colored brick quoins. The house has a two-bay integral garage with ca. 2000 two-light overhead-track doors on the south elevation and a large rear T wing with a screened porch.

The property also has a three-bay detached garage built in 2016 with vinyl siding and a side-gable roof of asphalt shingles.

Assessment:

This Ranch style dwelling is representative of cross-gable plans of the 1950s. This type of dwelling was widely built throughout Tennessee during the 1950s and 1960s. The dwelling retains much of its original design including its defining brick quoin accents. In the opinion of the Consultant, this dwelling does not possess sufficient architectural or historical distinction to meet National Register criteria.



Figure 85: TA-3, view northeast.



Figure 86: TA-3, view southeast.



Figure 87: TA-3, view north.



Figure 88: TA-3 garage, view south.

TA-4, 4590 Highway 641 N. (SR 54)
Paris Quad Map

History:

This dwelling was built in ca. 1945 and was remodeled with a lateral addition ca. 1990. Attempts to contact the owner were unsuccessful and the questionnaire left at the property was not returned.

Description:

This is a ca. 1945 one-story, frame, Tudor Revival-influence dwelling with a ca. 1990 addition. The house has a side-gable roof of asphalt shingles, an exterior, of vinyl siding, and a brick foundation. The façade (W) has an exterior wall brick chimney with a curved shoulder and random decorative stone accents. Next to the chimney, the main entrance has an original arched, four-light glass and wood door within an arched brick surround with stone accents. To the north of the entrance is a gable-front projecting bay with a group of three, six-over-six vinyl-sash windows flanked by decorative shutter-motif, wood lattice panels. A single similar window with the same lattice panels is to the south of the chimney. To the north of the gable-front projecting bay is a ca. 1990 addition with a pair of smaller six-over-six vinyl-sash windows flanked by decorative shutter-motif, wood lattice, a recessed bay with a nine-light door, and a gable-front garage bay.

The property also has a ca. 1990 outbuilding with a shed roof and exterior walls of metal.

Assessment:

This dwelling was built ca. 1945 with influences of the Tudor Revival style. The house was expanded into its present form ca. 1990 with a large lateral wing. In the opinion of the Consultant, this dwelling does not possess sufficient architectural significance or integrity to meet National Register criteria.



Figure 89: TA-4, view northeast.



Figure 90: TA-4, view northwest.



Figure 91: TA-4, view south.



Figure 92: TA-4, view southeast.



Figure 93: TA-4 outbuilding, view east.

TA-5, 4675 Highway 641 N. (SR 54)
Paris Quad Map

History:

This dwelling was built ca. 1940 and for many years was part of a farm owned by Ray and Sara Champine in the late 20th century. Ray Champine passed away in 2015 and his widow resides in Puryear and continues to own the property. Attempts to contact Sara Champine were not successful. The house appears to have been vacant for some time.

Description:

This is ca. 1940 one-story, frame gabled ell variation dwelling with a gable roof of asphalt shingles, and exterior of vinyl siding. The house has original three-over-one, wood-sash windows, and an interior brick chimney. The façade (S) has a central porch with a shed roof and wrought iron posts. The main entrance has an original six-light wood-panel door. The porch is flanked by gable-front projecting bays.

The property has two ca. 1940 frame barns with wood siding and metal roofs. The barn to the west of the house has a gable roof, central runway and weatherboard siding. The second barn is east of the house and is a stock barn with a central runway, side shed wing and hay loft. Adjacent to the house is an original single-bay garage with wood siding and a gable metal roof. At the rear of the house is a frame smokehouse or shed with Masonite siding and a gable metal roof..

Assessment:

Built ca. 1940, this dwelling has two projecting bays on the main façade divided by an incised porch. This is a variation of a vernacular gabled ell dwelling of the early 20th century. The house has added vinyl siding but retains other features. No historical information was obtained for this property but it appears to have been part of a farm which presently consists of 132 acres. The outbuildings associated with the dwelling are common forms of the mid-20th century. In the opinion of the Consultant, this property does not possess sufficient historical or architectural significance to meet National Register criteria.



Figure 94: TA-5, view north.



Figure 95: TA-5, view southeast.



Figure 96: TA-5, barn 1, view west.



Figure 97: TA-5, barn 2, view northwest.



Figure 98: TA-5, garage 1, view north.



Figure 99: TA-5, smokehouse, view northeast.

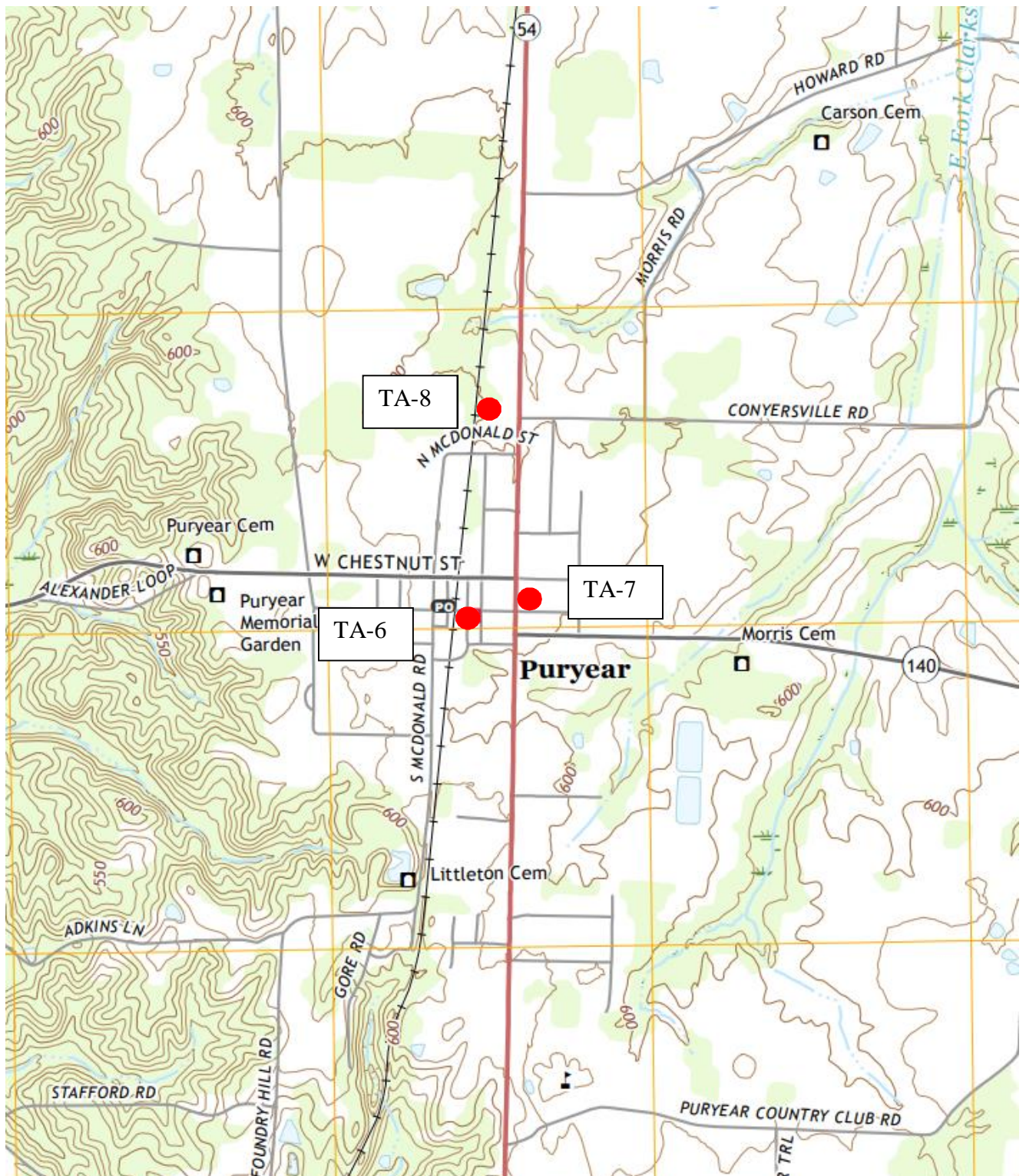


Figure 100: 2019 Puryear Quad map with locations of TA-6 through TA-8.

TA-6, 107 S. Front Street
Puryear Quad Map

History:

Constructed ca. 1910, this was a commercial building built during the early prosperous years of Puryear. The building faces the railroad tracks and was near where the original station was located. The building appears to have been vacant for many years and attempts to contact the owner were unsuccessful.

Description:

This is a ca. 1910 one-part commercial block building of brick construction. It has a symmetrical three-bay façade divided by fluted cast iron pilasters. The central entrance has a pair of single-light, single-wood panel doors. The entrance is flanked by four-light display windows on frame bulkheads with diagonal wood slats. The storefront has a shed canopy of frame construction with a ca. 2000 metal roof. All of the glass in the display windows and doors has been removed and plywood panels added. The upper façade has three rectangular insets. Below the roofline is a course of decorative brick corbelling.

Assessment:

Built ca. 1910, this is the only early 20th century commercial building surviving on the east side of the railroad tracks in Puryear. It retains much of its original design but the glass in the storefront has been removed and replaced with plywood. In the opinion of the Consultant, the building lacks sufficient architectural significance and integrity to be National Register-eligible. The building is separated from the potentially eligible Puryear Commercial Historic District due to the intervening railroad tracks and distance.



Figure 101: TA-6, view southeast.



Figure 102: TA-6, view northeast.



Figure 103: TA-6, storefront.

TA-7, 9940 Highway 641 N. (SR 54)
Puryear Quad Map

History:

This dwelling was built ca. 1910 and is one of the older homes remaining in Puryear. The property was surveyed in 2003 by TDOT and that time it was owned by the Holland family. The owner did not have any historical information concerning the property. The dwelling continues to be owned and occupied by the Holland family.

Description:

This is a ca. 1910 one-and-one-half-story, frame, Folk Victorian dwelling with a gable and hip roof of asphalt shingles, an exterior of vinyl siding, and a concrete block foundation. The plan is asymmetrical, consisting of a hipped-roof center with projecting gabled wings to the south and west. The main entrance is in the middle section and has an original single-light, single-panel, wood door. A curved porch spans between the two gabled wings and has two ca. 2010 fluted aluminum posts. Original one-over-one, wood-sash windows flank the door. There is a diamond-light, fixed window in the side wall of each gabled wing. On the dominant elevation of each a gabled wing there is a one-over-one, wood-sash window on the ground floor and the upper half floor. The dwelling has interior, brick chimneys. On the east elevation of the dwelling there is a one-story hipped-roof wing with three small, six-over-six, wood-sash windows and a secondary entrance with a nine-light wood door. Over the door is a frame canopy with knee brace brackets.

The property also has a single-bay frame garage with a gable-front roof siding, a metal roof and side-hinged garage doors.

Assessment:

When this property was assessed in 2003 the TDOT determined that the property did not possess sufficient architectural significance and integrity to meet National Register criteria. Since the original survey the original wood porch columns have been replaced with aluminum posts. The Consultant concurs with the original assessment of non-eligibility for this property.



Figure 104: TA-7, view north.



Figure 105: TA-7, view northeast.



Figure 106: TA-7, view northwest.



Figure 107: TA-7, view southeast.



Figure 108: TA-7 garage, view north.

**TA-8, 10315 Highway 641 N. (SR 54)
Puryear Quad Map**

History:

Built in 1955, this was originally the home of Buck and Novella Gore. Gore was a businessman and operated a sawmill for a period while his wife worked for Holly Industries in Paris. They resided in Puryear for many years and the house is now owned Buck Gore's son Rex Gore and his wife Scarlett. Rex Gore is a retired truck driver.

Description:

This is a cross-hipped Ranch-style dwelling with a three-part hip roof of asphalt shingles, an exterior of stone veneer, and a slab concrete foundation. The exterior of the dwelling has a chimney of Bedford limestone and an overall veneer of Crab Orchard stone. The façade (E) is asymmetrical with an integral carport at the south bay and a slightly projecting central section with three fixed, single-light, vertical, wood windows. At the entrance is an incised entry porch with a wrought iron column. The façade has a prominent exterior wall stone chimney, and a projecting bay at the north elevation. Windows are original tri-part horizontal jalousie aluminum design. The rear elevation has similar windows.

The property has two frame outbuildings with metal roofs; a ca. 1955 wood shed with weatherboard siding and a ca. 1990 metal shed.



Figure 109: TA-8, view northwest.



Figure 110: TA-8, view southwest.



Figure 111: TA-8, view west.



Figure 112: TA-8, view southeast.



Figure 113: TA-8 outbuildings, view south.

V. NATIONAL REGISTER ASSESSMENT AND EFFECTS

A. Overview of National Register Eligibility

No National Register-listed or previously determined -eligible properties are located within the project's APE. The Consultant identified eight (8) properties within the project area that warranted TN-SHPO survey. Two of these properties, TA-2 and TA-7, were previously documented by TDOT in other road project studies, but neither property was determined eligible.

In the opinion of the Consultant there are no National Register-eligible properties within the APE directly affected by the proposed SR 54 improvements. However, in the opinion of the Consultant, a National Register-eligible commercial district exists along S. Front Street in Puryear. This is a row of four contiguous buildings constructed between ca. 1900 and 1923 facing the railroad tracks. The four buildings retain most elements of their original storefronts and overall integrity. The proposed district is located two blocks 0.14 mile west of the SR 54 (US 641) corridor, and no effects to the district are anticipated as a result of the improvements project.

The Puryear Commercial Historic District is eligible under criterion C for its intact architectural design. The four buildings in the proposed district all contain the majority of their original storefront elements including cast iron pilasters and glass and wood display windows, transoms and doors. Several of the buildings continue to display the original business names in the storefront sills and concrete sidewalk. The Farmers Bank at 110 S. Front Street displays the influence of the Neo-classical style in its modest front with Doric pilasters. While the upper façade windows have been replaced with vinyl sash, the overall integrity of this block of buildings is largely intact. The boundary for the historic district is drawn to exclude the block of buildings on N. Front Street. This block burned in 1913 and was replaced with one-story brick buildings, the majority of which have been altered and do not retain integrity.

This commercial block represents the mercantile and railroad heritage of the community. The town was organized in 1888 as Puryear in honor of the railroad president and the community was incorporated in 1909. By that time Puryear contained several mercantile stores, grocery stores and feed mills. There was also a cotton gin, tobacco warehouse, and potato house.¹¹ The Farmers Bank and Trust had been organized at Puryear in 1907 and built a new bank building on Front Street in 1923.¹² On the west side of Front Street facing the railroad were two blocks of brick and frame commercial buildings containing numerous businesses such as Johnson & Brisendine and Crawford & Gatling, mercantile stores.

In June of 1913, a fire destroyed seven frame buildings facing the railroad north of Main

¹¹ *Henry County, Tennessee: History and Families* (Paducah, KY: Turner Publishing Company, 2001), 30.

¹² W. O. Inman, *Henry County, Tennessee: A Short History* (Paris: n.p., n.d.), n.p.

Street. These were gradually replaced with one-story brick buildings in the following decades. Like in many small Tennessee railroad communities, passenger and freight service ceased in the mid-20th century. The growth and development of commercial businesses in nearby Paris also led to a decline in economic activity in Puryear and gradually most of the businesses closed their doors. Today, Puryear has a population of 670 residents. The commercial district no longer has its passenger or freight stations but the 100 block of S. Front Street contains four buildings which represent the business heritage of the community.

The proposed district is composed of four buildings with the following descriptions:

102-106 S. Front Street: Two-Part Commercial Block building with three storefronts built ca. 1905. The three storefronts are largely original with original cast iron sills, recessed entrances with glass and wood doors, glass and wood display windows, frame bulkheads and cast-iron pilasters manufactured by the Jackson Company of Paducah, Kentucky. The 102 S. Front Street storefront has a ca. 2000 glass and wood door but is otherwise original. Some glass has been covered with plywood. Across the width of the storefront is an original wood canopy with a ca. 2000 metal surface. The upper façade has three window bays with ca. 2000 one-over-one vinyl sash windows. At the roofline is a corbelled brick cornice. In the concrete sidewalk in front of the building is the inscription %S. Calhoon & Co.+

The 104 S. Front Street storefront has an original single-light glass and wood door, transoms, four-light display windows and cast-iron pilasters manufactured by the Jackson Company of Paducah, Kentucky. The cast iron sill is inscribed %Crawford & Gatling.+Across the width of the storefront is an original wood canopy with a ca. 2000 metal surface. The upper façade has three window bays with ca. 2000 one-over-one vinyl sash windows. At the roofline is a corbelled brick cornice.

The 106 S. Front Street storefront has an original single-light glass and wood door, transoms, four-light display windows and cast-iron pilasters manufactured by the Jackson Company of Paducah, Kentucky. The cast iron sill is inscribed %Crawford & Gatling.+Across the width of the storefront is an original wood canopy with a ca. 2000 metal surface. The upper façade has two window bays with ca. 2000 one-over-one vinyl sash windows. At the roofline is a corbelled brick cornice.

108 S. Front Street: One-Part Commercial Block building built ca. 1905. The storefront has an original single-light glass and wood door, transoms, two-light display windows and cast-iron pilasters manufactured by the Jackson Company of Paducah, Kentucky. The cast-iron sill is inscribed %Johnson & Brisendine.+Across the width of the storefront is an original wood canopy with a ca. 2000 metal surface. At the roofline is a corbelled brick cornice.

110 S. Front Street: One-Part Commercial Block building designed with Neo-classical influences and built in 1923 as the Farmers Bank. The storefront has a ca. 1970 aluminum and glass door, original sixteen-light display windows, and brick bulkheads. The door and window bays are divided by brick pilasters with concrete Doric capitals. The upper façade has a corbelled brick panels and a stepped parapet at the roofline. Across the width of the storefront is a ca. 1960 metal canopy.

112 S. Front Street: One-Part Commercial Block building built in 1923. The storefront has a ca. 1970 aluminum and glass door flanked by original sixteen-light display windows which rest on brick bulkheads. The doors and windows are set within two-course brick arches. Across the width of the storefront is a ca. 1960 metal canopy. The upper façade has three recessed panels divided by brick pilasters. The panels have corbelled brick and at the roofline is a flat parapet.



Figure 114: Puryear Commercial Historic District, view NW.



Figure 115: Puryear Commercial Historic District, view SW.



Figure 116: 102-106 S. Front Street, view SW.



Figure 117: 102-106 S. Front Street, view NW.



Figure 118: 104 S. Front Street, Storefront.



Figure 119: 108 S. Front Street, view W.



Figure 120: 110 S. Front Street, view W.



Figure 121: 112 S. Front Street, view W.



Figure 122: 100 block of N. Front Street which has ca. 1915-1930 buildings with storefront alterations, view NW.

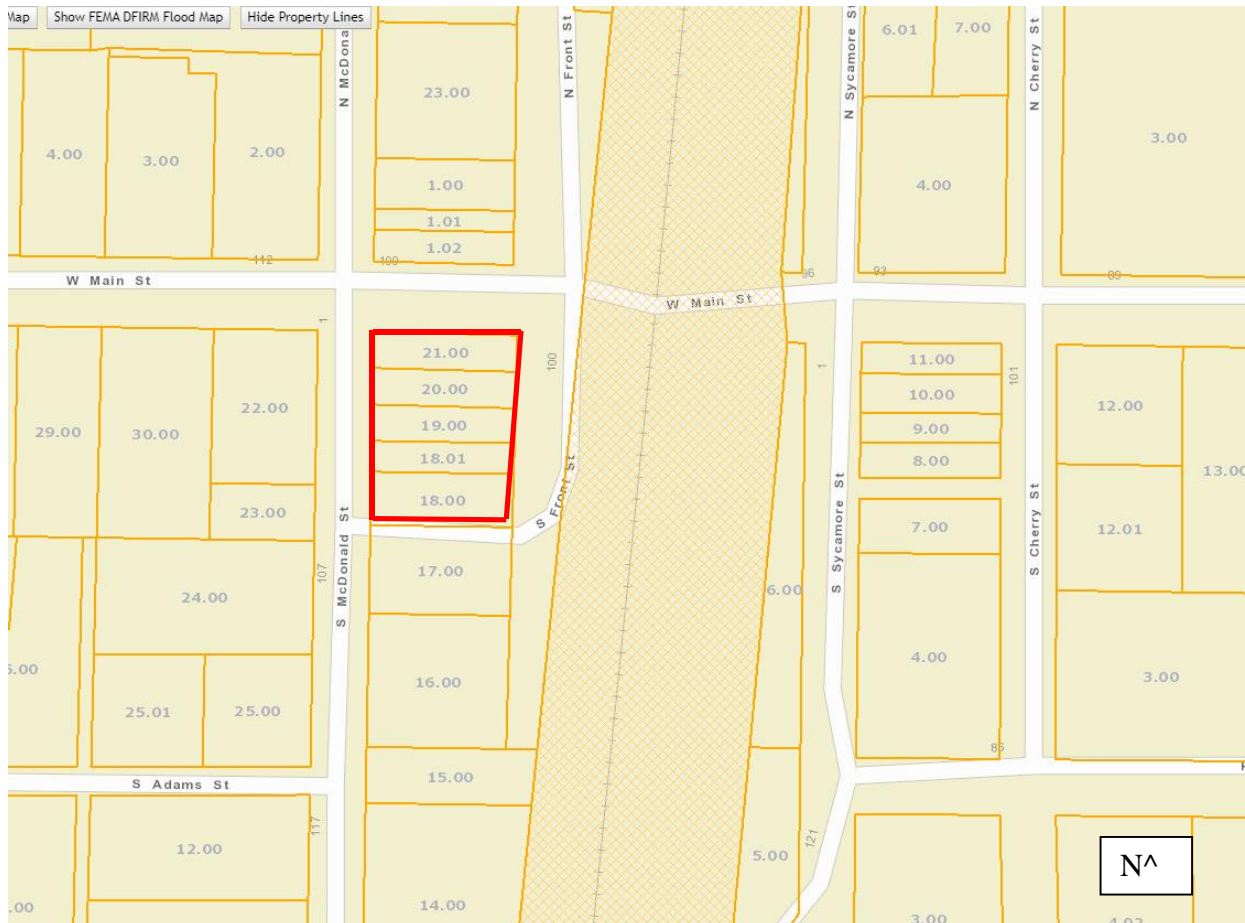


Figure 123: Boundary of the proposed Puryear Commercial Historic District.

Pursuant to 36 CFR 800.4, which requires that the TDOT and the FHWA identify historic resources near its proposed projects, the project area of potential effect (APE) was surveyed in 2021 to identify any National Register listed or eligible properties. The proposed SR 54 road project in Henry County would involve the widening of the highway along an 8.2-mile section that passes through the town of Puryear. The National Register-eligible Puryear Commercial historic District is within the SR 54 project APE.

As a result of the survey for this project, it is the opinion of the Consultant that no additional properties within the APE meet the criteria of the National Register for architectural or historic significance. Based on this evaluation it is the opinion of the Consultant that the only National Register-listed or -eligible properties within the APE is the Puryear Commercial Historic District.

B. What are the Effects to Historic Properties?

Regulations codified at 36 CFR 800 require Federal agencies to assess their impacts to historic resources. The regulations provide specific criteria for determining whether an action will have an effect, and whether that effect will be adverse. These criteria are given below.

36 CFR 800.5 Assessment of Adverse Effects

(a) Apply Criteria of Adverse Effect. In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the Agency Official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The Agency Official shall consider any views concerning such effects which have been provided by consulting parties and the public.

(1) Criteria of adverse effect. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) Examples of adverse effects. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines;

- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

C. Effects to the National Register-Listed and -Eligible Properties

Summary of Effects

In the opinion of the Consultant the proposed SR 54 improvements would have No Adverse Effect to the potentially eligible Puryear Commercial Historic District. The project will take place within the proposed revised right-of-way of SR 54 and will not impact any contributing resources in the National Register-eligible district. There will be no introduction of elements that would impair or obstruct views of the historic district along Front Street, 0.14 mile to the west.

Applying the criteria of CFR 800.9 (b) to the Puryear Commercial Historic District

In the opinion of the Consultant, construction of the project would have NO ADVERSE EFFECT under the following criteria of CFR 800.9 (b):

- (i) Physical destruction of or damage to all or part of the property;

There would be no physical destruction or damage to any of the buildings, structures, or sites in the National Register-eligible Puryear Commercial Historic District. The project involves a widening of SR 54 within an expanded right-of-way two blocks to the east of the district.

- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines;

This criterion does not apply because no alterations would occur to the potential Puryear Commercial Historic District or any of its historic resources as a result of this project.

(iii) Removal of the property from its historic location;

This criterion does not apply because the location of the property would be unchanged.

(iv) Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;

Use: The project would not change the use of the property. The eligible Puryear Commercial Historic District continues to be used for commercial purposes.

Physical Features: Project implementation would not result in a change in the character of the property's physical features within the property's setting that contribute to its historic significance. There would be no physical impacts to the potential Puryear Commercial Historic District.

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

Visual: The widening of SR 54 to the east of the Puryear Commercial Historic District would not result in any adverse effects impairing the views to and from the closest contributing resource, 0.14 mile away. The distance between the project and the Puryear Commercial Historic District is an urban setting with intervening buildings and structures that will continue to buffer views between SR 54 and the historic district.

Atmospheric: The road widening project would not introduce any additional atmospheric effects out of keeping with the current context of the Puryear Commercial Historic District. The project will not include any uses out of keeping with the current atmospheric character of the property.

Noise: Project implementation would not introduce any additional audible elements inconsistent with the Puryear Commercial Historic District's historic features or setting.

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization;

This criterion does not apply.

(vii) Transfer, lease or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

This criterion does not apply.

Applicability of Section 4(f)

The proposed SR 54 improvements project would not incorporate any land from the historic boundary of the Puryear Commercial Historic District into a transportation facility nor would it adversely affect it. The proposed project would not substantially impair any activities, features, or attributes that qualify the historic property as eligible for the National Register. Under the Section 106 process, the proposed project would have an effect that is not adverse to the historic property. For these reasons, it is the opinion of the Consultant that the proposed project would not have a Section 4(f) use of the historic property.

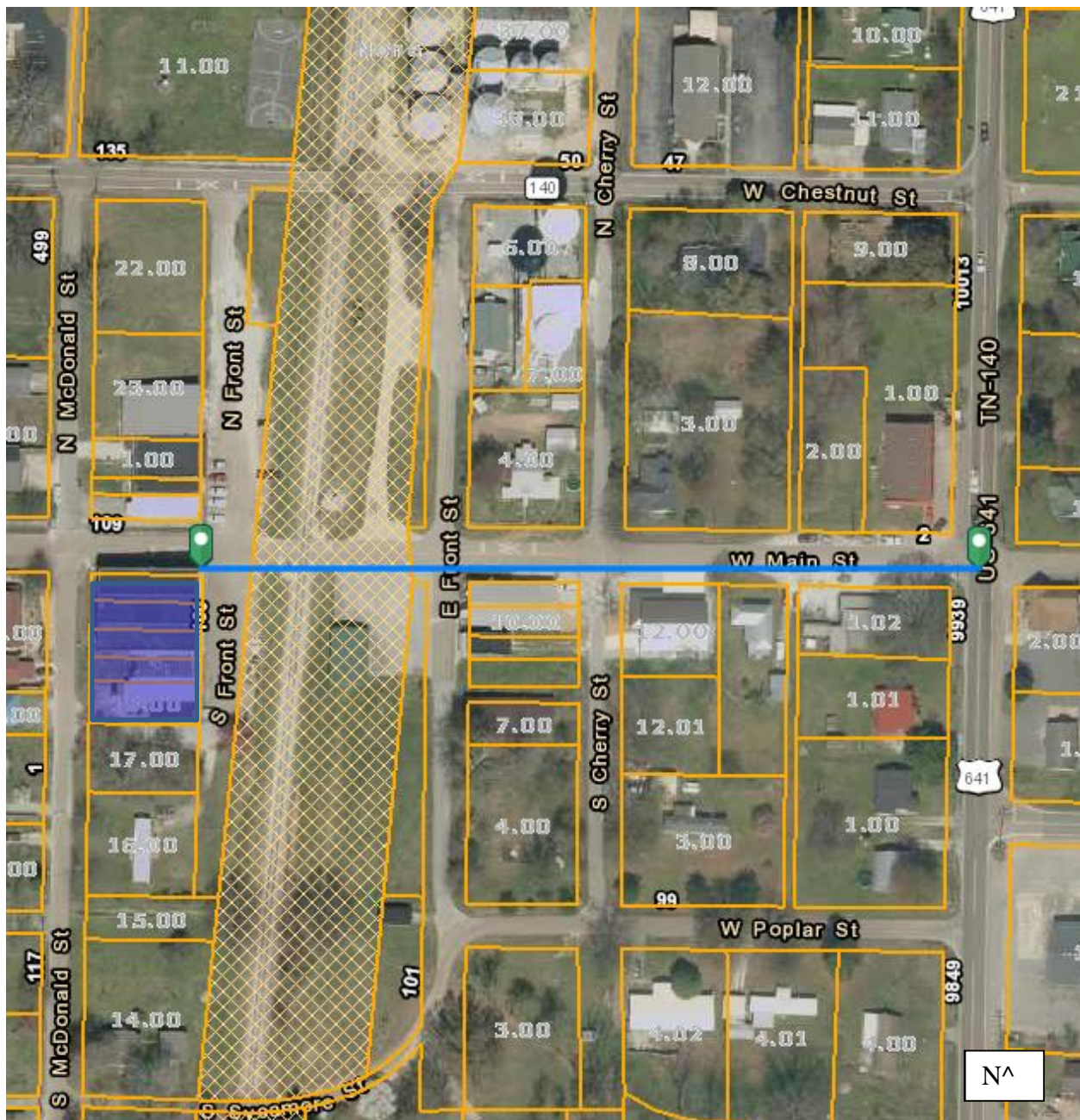


Figure 124: Henry County GIS map depicting to the proposed Puryear Commercial Historic District 0.14 mile from the center line of SR 54.

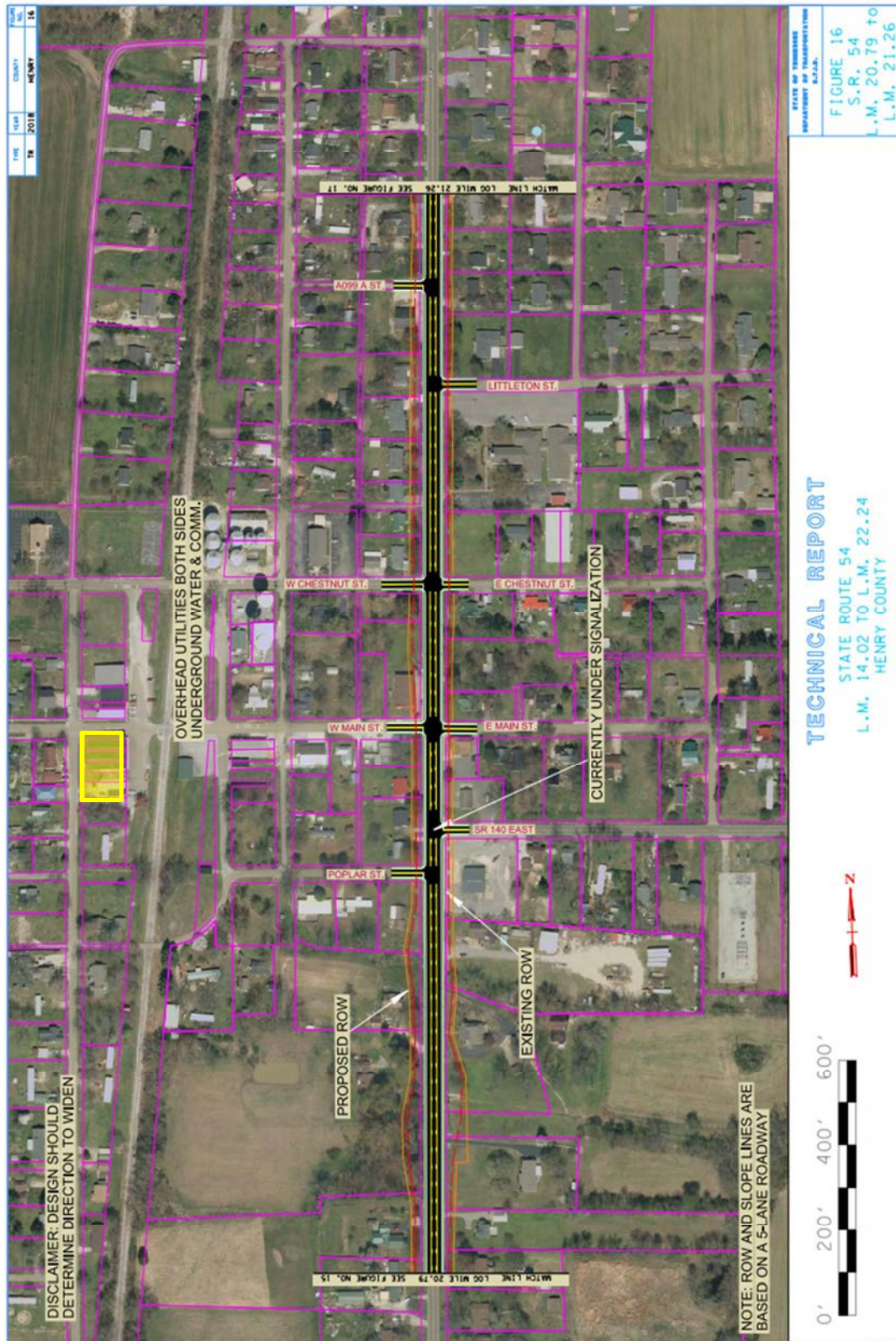


Figure 125: TDOT design map with proposed road improvements in relation to the potential historic district.

VI. SUMMARY

This report has been prepared for the Tennessee Department of Transportation (TDOT), which is proposing improvements to a section of State Route 54 (US 641) from near Smith Road in Paris to near Howard Road north of Puryear in Henry County, Tennessee, Log Mile (L.M.) 14.02 to L.M. 22.24. The improvements to State Route (SR) 54 will provide connectivity to the beginning of the project near Smith Road, and the project end terminus is contingent upon the adjacent Kentucky Transportation Cabinet (KYTC) project proposed at the state line.

Due to the involvement of federal funding, compliance is required with Section 106 of the National Historic Preservation Act of 1966, as amended. This legislation requires federal agencies to identify any properties (either above-ground buildings, structures, objects, or historic sites or below ground archaeological sites) of historic significance. For the purposes of this legislation, historic significance is defined as those properties included in the National Register of Historic Places or properties eligible for inclusion in the National Register. Once historic resources are identified, legislation requires these agencies to determine if the proposed project would affect the historic resource. If the proposed project would have an adverse effect to a historic property, the legislation requires the Federal agency to provide the Advisory Council on Historic Preservation (an independent federal agency) an opportunity to comment on the effect.

Henry County has not been comprehensively surveyed to date. In 2003, TDOT historians surveyed SR 54 from near Rison Street to the Kentucky State Line. That study area encompasses the current project. Only two properties warranting documentation by TDOT historians in 2003 lie within the current project's Area of Potential Effect (APE). Neither property was assigned a county survey number. Thomason and Associates (Consultant) studied this APE in May and June of 2021, identifying eight properties, including the two previously surveyed properties, which met TN-SHPO survey criteria. The Consultant assigned these properties temporary survey identification (TA-1 through TA-8) in this report.

State Route 54 was designed and completed through this section of Henry County in 1937. The majority of the properties built along the highway were constructed after this time, primarily in the 1950s and 1960s. Most of these dwellings reflect the Transitional Ranch and Ranch styles of the period and do not possess sufficient architectural significance to meet National Register criteria. The survey also included an assessment of the properties within the APE in the City of Puryear. Puryear developed as a railroad town and was founded in 1888. Within the project's APE a commercial historic district was identified as meeting National Register criteria. This commercial district along S. Front Street in Puryear contains four buildings which, in the opinion of the Consultant, comprise an eligible historic district. This district is located two blocks west of SR 54 and due to the limited scope of the widening through Puryear there will be no adverse effects to the district resulting from the project. No other National Register-eligible properties were identified within the project's APE.

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APPENDICES

APPENDIX A - RESUME OF PRINCIPAL INVESTIGATOR

APPENDIX B - SECTION 106 FACT SHEET

APPENDIX C - NATIONAL REGISTER CRITERIA

APPENDIX D - CRITERIA OF EFFECT

APPENDIX E - PUBLIC PARTICIPATION LETTERS

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APPENDIX A
RESUME OF PRINCIPAL INVESTIGATOR



PHILIP J.M. THOMASON
PRINCIPAL/THOMASON AND ASSOCIATES

EXPERIENCE

1982 – 2021 Historic Preservation Consultant - Thomason and Associates, Nashville, Tennessee

Historic Preservation Plans, Ordinances and Design Review Guidelines

Authored plans, ordinances and design review guidelines for fifty communities throughout the country including Pittsburgh, Cary, North Carolina, Little Rock, Arkansas, New Britain, Connecticut and Salt Lake City.

Tax Certification Consultant

Provided assistance, research and consultation necessary for projects utilizing the 20% Investment Tax Credit. This included involvement in the certification of fifty historic projects throughout the country.

Military Installation Cultural Resource Consultant

Responsible for the analysis and evaluation of cultural resources at fifteen military bases. Evaluation includes the preparation of preservation plans, National Register nominations, and Programmatic Agreements. Consulting services provided to the US Navy at Memphis NAS and Corpus Christi NAS; US Air Force at Randolph AFB, Scott AFB, and Warner Robins AFB; and US Army at Fort Benning and Fort McPherson.

National Register Nominations

Author of National Register Nominations in 26 states across the country. Nominations have included individual properties, historic districts and Multiple Property Documentation Forms for Route 66 and the Trail of Tears. Nominations prepared have resulted in over 12,000 structures placed on the National Register.

Cultural Resource Surveys

Directed surveys of historic buildings in cities such as Centralia, Washington; Oak Park, Illinois and; Miami, Florida. Inventoried Properties total over 30,000 structures.

Historic Structure Reports

Authored or co-authored historic structure reports recommending proper restoration techniques. Properties include the Benham Theatre, Benham, Kentucky; Christian County Courthouse, Hopkinsville, Kentucky, and; Sapphire Inn, Sapphire Valley, North Carolina.

Historic Survey Publications

Responsible for writing, research and layout for historic survey publications. These include survey publications for Hardin and Pulaski Counties, Kentucky; McCormick, Greenville and Spartanburg, South Carolina.

Section 106 Review and Mitigation

Conducted research and report writing for Section 106 mitigation including the Burkville Plantation Historic District, Lowdes County, Alabama, for the U.S. Army Corps of Engineers; Kentucky River Survey and Analysis for the Tennessee Valley Authority; Memphis I-40/240 Interchange and Route 840 for the Tennessee Department of Transportation.

1980-1982, Preservation Planner - Building Conservation Technology, Inc., Nashville, Tennessee.

Projects included:

Historian, Columbia Reservoir Historic Resources Survey
Author, Murfreesboro, Tennessee--Plan for Revitalization
Historian/Principle Author, Rugby Master Plan for the U.S. Army Corps of Engineers.

MEMBERSHIP

Board of Directors, Preservation Action, 1991-2008
Board of Directors, Tennessee Heritage Alliance, 1983-1993.
Board of Directors, Historic Nashville, Inc. 1982-1987/1992-1993.
National Trust for Historic Preservation

EDUCATION

Bachelor of Arts - Knox College, Galesburg, Illinois, 1975
Master of Arts - History, Emphasis on Historic Preservation, Middle Tennessee State University, 1981

AWARDS

First Award for Urban Planning and Design for contributions to the Rugby Master Plan. Awarded by
Progressive Architecture, 1986
Certificate of Merit - Historic Nashville Inc., 1986
Certificates of Merit - Tennessee Historical Commission, 1988, 1990
•Achievement in Comprehensive Planning Award• ó Fort Smith, Arkansas Citywide Historic Preservation Plan.
Awarded by the Arkansas Chapter, American Planning Association, 2009
•Special Citation for Achievement in Public Policy• - Little Rock Citywide Preservation Plan. Awarded by the Historic
Preservation Alliance of Arkansas, 2011
•Honorable Mention, Comprehensive Planning• ó Cary, North Carolina Historic Preservation Master Plan. Awarded
by the North Carolina Chapter of the American Planning Association, 2011

APPENDIX B
SECTION 106 FACT SHEET

SECTION 106 REVIEW, NATIONAL HISTORIC PRESERVATION ACT OF 1966

Section 106 of the *National Historic Preservation Act* requires that Federal agencies consider what effects their actions and/or actions they may assist, permit, or license, may have on historic properties, and that they give *the Advisory Council on Historic Preservation (Council)* a "reasonable opportunity to comment" on such actions. The Council is an independent Federal agency. Its role in the review of actions under Section 106 is to encourage agencies to consider, and where feasible, adopt measures that will preserve historic properties that would otherwise be damaged or destroyed. The Council's regulations, entitled "Protection of Historic Properties" (36 CFR Part 800) govern the Section 106 process. The Council does not have the authority to require agencies to halt or abandon projects that will affect historic properties.

Section 106 applies to properties that have been listed in the *National Register of Historic Places (NRHP)*, properties that have been determined to be eligible for inclusion in the NRHP, and properties that may be eligible but have not yet been evaluated. If a property has not yet been nominated to the NRHP or determined eligible for inclusion, it is the responsibility of the Federal agency involved to ascertain its eligibility.

The Council's regulations are set forth in a process consisting of four basic steps which are as follows:

1. Initiate Section 106 Process: The Federal agency responsible for the action establishes the undertaking, determines whether the undertaking has the potential to affect historic properties (i.e., properties listed in or eligible for listing in the National Register of Historic Places), and identifies the appropriate State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO). At this time, the agency plans to involve the public and identify other consulting parties.

2. Identify Historic Properties: If the agency's undertaking has the potential to affect historic properties, the agency determines the scope of appropriate identification efforts and proceeds to identify historic properties within the area of potential effects. Identification involves assessing the adequacy of existing survey data, inventories, and other information on the area's historic properties. This process may also include conducting further studies as necessary and consulting with the SHPO/THPO, consulting parties, local governments, and other interested parties. If properties are discovered that may be eligible for the National Register, but have not been listed or determined eligible for listing, the agency consults with the SHPO/THPO and, if needed, the Keeper of the National Register to determine the eligibility status of the property.

3. Assess Adverse Effects: The agency, in consultation with the SHPO/THPO, assesses the potential effects to historic properties affected by the undertaking. The agency at this time will determine that the action will have "no adverse effect" or an "adverse effect" on historic properties. Consulting parties and interested members of the public are informed of these findings.

The regulations provide specific criteria for determining whether an action will have an effect, and whether that effect will be adverse. Generally, if the action may alter the characteristics that make a property eligible for the National Register, it is recognized that the undertaking will have an effect. If those alterations may be detrimental to the property's characteristics, including relevant qualities of the property's environment or use, the effects are recognized as "adverse".

4. Resolve Adverse Effects: The agency consults with the SHPO/THPO and others, including consulting parties and members of the public. The Council may choose to participate in consultation, particularly under circumstances where there are substantial impacts to historic properties, when a case presents important questions about interpretation, or if there is the potential for procedural problems. Consultation usually results in a Memorandum of Agreement (MOA).

If agreement cannot be reached, the agency, SHPO/THPO, or Council may terminate consultation. If the SHPO/THPO terminates consultation, the agency and the Council may conclude the MOA without SHPO/THPO involvement. If the SHPO/THPO terminates consultation and the undertaking is on or affecting historic properties on tribal lands, the Council must provide formal comments. The agency must request Council comments if no agreement can be reached.

APPENDIX C
NATIONAL REGISTER CRITERIA

NATIONAL REGISTER OF HISTORIC PLACES

SUMMARY SHEET PREPARED BY TDOT

What is the National Register of Historic Places?

The National Register, maintained by the Keeper of the Register within the National Park Service, Department of the Interior, is the nation's official list of districts, buildings, sites, structures, and objects significant in American history, architecture, archeology, engineering, and culture.

What are the benefits and restrictions of listing?

In addition to honorific recognition, listing in the National Register results in the following benefits for historic properties:

- Section 106 provides for consideration of National Register listed or eligible properties in planning for Federal, federally licensed, and federally assisted projects;

- Eligibility for certain tax provisions for the certified rehabilitation of income-producing National Register structures such as commercial, industrial, or rental residential buildings;

- Consideration of historic values in the decision to issue a surface mining permit where coal is located in accordance with the Surface Mining Control Act of 1977; and

- Qualification of Federal grants for historic preservation, when funds are available.

Does National Register designation place any additional burdens or obligations on the property owner?

Owners of private property listed in the National Register are free to maintain, manage, or dispose of their property as they choose, provided that no Federal moneys are involved.

How is a property nominated to the National Register?

The first step is for the owner to contact the Tennessee State Historic Preservation Office (TN-SHPO), Clover Bottom Mansion, 2941 Lebanon Road, Nashville, TN 37243-0442; 615-532-1558. Ordinarily, private individuals (or paid consultants) prepare nomination forms. The TN-SHPO submits these nominations to a State Review Board, which meets three times a year. This body reviews the nominations and votes to recommend or deny National Register listing. If approved, the TN-SHPO submits the nomination to the Keeper of the Register in Washington, D.C. for consideration for listing. The Keeper's Office has 45 days to review the nomination, and its decision regarding National Register listing is final.

How long does the nomination process take?

The process varies but typically takes between eight and twelve months.

***ELIGIBILITY CRITERIA OF THE
NATIONAL REGISTER OF HISTORIC PLACES
AS SET FORTH AT 36 CFR 60.4***

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

CRITERION A. that are associated with events that have made a significant contribution to the broad patterns of our history (history); or

CRITERION B. that are associated with the lives of persons significant in our past (person); or

CRITERION C. that embody the distinctive characteristic of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that components may lack individual distinction (architecture); or

CRITERION D. that have yielded, or may be likely to yield, information important in prehistory or history (archaeology).

Ordinarily, cemeteries; birthplaces or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years are not considered eligible for the National Register of Historic Places; however, such properties will qualify if they are integral parts of historic districts that do meet the criteria or if they fall within the following categories:

EXCEPTION A. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or

EXCEPTION B. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

EXCEPTION C. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or

EXCEPTION D. a cemetery which derives its primary significance from graves or persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

EXCEPTION E. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

EXCEPTION F. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or

EXCEPTION G. a property achieving significance within the past 50 years if it is of exceptional importance.

APPENDIX D

CRITERIA OF EFFECT

CRITERIA OF ADVERSE EFFECT

Regulations codified at 36 CFR 800 require Federal agencies to assess their impacts to historic resources. The regulations provide specific criteria for determining whether an action will have an effect, and whether that effect will be adverse. These criteria are given below.

36 CFR 800.5 Assessment of Adverse Effects

(a) *Apply Criteria of Adverse Effect.* In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the Agency Official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The Agency Official shall consider any views concerning such effects which have been provided by consulting parties and the public.

(1) *Criteria of adverse effect.* An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) *Examples of adverse effects.* Adverse effects on historic properties include, but are not limited to:

- (i) Physical destruction of or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines;
- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

APPENDIX E
PUBLIC PARTICIPATION LETTERS

APPENDIX F
STATE HISTORIC PRESERVATION OFFICE LETTERS

APPENDIX G
SECTION 4(f) FACT SHEET

Section 4(f) Fact Sheet

What is Section 4(f)? Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966 which established the requirement for consideration of park and recreational lands, wildlife and waterfowl refuges, and historic sites in transportation project development. The law, now codified in 49 U.S.C. §303 and 23 U.S.C. §138, is implemented by the Federal Highway Administration (FHWA) through the regulation 23 CFR 774.

When does Section 4(f) apply? Section 4(f) applies to projects that receive funding from or require approval by an agency of the U.S. Department of Transportation. Section 4(f) is considered by many to be a complex law.

What does Section 4(f) require? Before approving a project that uses Section 4(f) property, FHWA must either (1) determine that the impacts are *de minimis* (see discussion below), or (2) undertake a Section 4(f) Evaluation. If the Section 4(f) Evaluation identifies a feasible and prudent alternative that completely avoids Section 4(f) properties, it must be selected. If there is no feasible and prudent alternative that avoids all Section 4(f) properties, FHWA has some discretion in selecting the alternative that causes the least overall harm (see discussion below). FHWA must also find that all possible planning to minimize harm to the Section 4(f) property has occurred.

What are Section 4(f) properties? Section 4(f) properties include publicly owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places.

What is a use? Use of a Section 4(f) property occurs: (1) when land is permanently incorporated into a transportation facility; or (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose; or (3) when there is a constructive use (a project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired). The regulation lists various exceptions and limitations applicable to this general definition.

What is a *de minimis* impact? For publicly owned public parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the activities, features, or attributes of the property. For historic sites, a *de minimis* impact means that FHWA has determined (in accordance with 36 CFR Part 800) that either no historic property is affected by the project or that the project will have "no adverse effect" on the historic property. A *de minimis* impact determination does not require analysis to determine if avoidance alternatives are feasible and prudent, but consideration of avoidance, minimization, mitigation or enhancement measures should occur. There are certain minimum coordination steps that are also necessary.

What is feasible? An alternative is feasible if it can be constructed as a matter of sound engineering. Typically, alternatives that are studied in a draft environmental impact statement or environmental assessment are feasible; otherwise they would not have been carried forward for detailed study.

What is prudent? An alternative is prudent if it meets the test in 23 CFR 774.17, which includes factors assessing safety or operational problems; how well project purpose and need are met; the severity of social, economic, or environmental impacts; and the severity of impacts to environmental resources protected under other Federal statutes. FHWA's evaluation of these factors begins with a "thumb on the scale" in favor of protecting Section 4(f) property, and takes the relative value of the Section 4(f) property into account.

What is least overall harm? If the analysis of avoidance alternatives concludes that there is no feasible and prudent avoidance alternative, then the FHWA may only approve the alternative that causes the least overall harm to the Section 4(f) property. 23 CFR 774.3(c) includes a list of factors to consider in making this determination of least overall harm. These factors include the ability to mitigate adverse impacts to Section 4(f) property; the relative severity of remaining harm, after mitigation, to Section 4(f) property; and the relative significance of each Section 4(f) property. For instance, will the project alternatives result in edge takes of a park or will they cut through the middle? How will activities, features, or attributes of the 4(f) property be affected by various alternatives and to what degree? If alternatives are determined to cause "substantially equal" harm to Section 4(f) property, then FHWA may choose any one.

Does Section 106 of the National Historic Preservation Act duplicate Section 4(f)? Though enacted by Congress on the same day in 1966, they are two different requirements. There is some overlap when historic properties are involved. A key difference is Section 106 is essentially a consultative procedural requirement, while Section 4(f) precludes project approval if the specific findings cannot be made.

Who makes the 4(f) decision for highway projects? The FHWA is ultimately responsible for making all decisions related to Section 4(f) compliance. These include whether Section 4(f) applies to a property, whether a use will occur, whether a *de minimis* impact determination may be made, assessment of each alternative's impacts to Section 4(f) properties, and determining whether the law allows the selection of a particular alternative after consulting with the appropriate officials with jurisdiction.

APPENDIX H
PURPOSE AND NEED LETTER

Environmental Studies

Archaeology

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Environmental Study

Technical Section

Section: Archaeology

Study Results

Based on the plans dated 4/2/2020 the SHPO letter dated February 25, 2008 remains valid.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

No

Certification

Responder: Sarah Kate McKinney

Title: TESS Archaeology

Signature: Sarah Kate
McKinney

Digitally signed by
Sarah Kate McKinney
Date: 2020.07.06
10:42:39 -05'00'



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

February 25, 2008

Mr. Gerald Kline
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

RE: FHWA, ARCHAEOLOGICAL ASSESSMENT, SR-54 - KY ST. LN/40HY150/40HY153,
UNINCORPORATED, HENRY COUNTY, TN

Dear Mr. Kline:

At your request, our office has reviewed the above-referenced archaeological testing report and previous consultation documentation in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, we find that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places. Archaeological sites 40HY150, 40HY152 and 40HY153 do not warrant additional archaeological investigation.

If project plans are changed or archaeological remains are discovered during construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

Environmental Studies

Native American Coordination

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Environmental Study

Technical Section

Section: Native American Coordination

Study Results

An invitation to participate in the Section 106 process was sent on July 7, 2020 to all federally recognized Native American tribes with interests in the subject county.

The Chickasaw Nation responded and accepted the invitation to be a consulting party on July 9, 2020. Reports were sent to this consulting party on November 9, 2021.

To date, no other responses have been received.

TDOT will re-initiate consultation if additional cultural resources studies are required or if archaeological materials or human remains are discovered during construction.

(Following guidance issued on April 8, 2020 by the Advisory Council on Historic Preservation (ACHP) in response to the COVID-19 outbreak, federal agencies are to remain flexible regarding federally recognized Native American tribes' Section 106 review responsibilities. The ACHP's guidance furthermore indicates that federal agencies may not foreclose on the statutory rights afforded to federally recognized Native American tribes under the National Historic Preservation Act and regulations implementing Section 106 of the Act. As several federally recognized Native American tribes with interests in Tennessee have indicated that their ability to carry out their Section 106 review responsibilities is diminished or otherwise limited, it should be expected that tribal responses for the subject project may be received subsequent to the date of this ESR and that any such response may require additional information, fieldwork, or coordination with any or all tribes and, perhaps, the SHPO and/or ACHP. An updated ESR will be provided in the event that any additional responses are received, along with updated Section 106 documentation, if any.)

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

Yes

Type: Native American Coordination

Location: Email Attachment

Certification

Responder: Drew Mahan
Title: Native American Coordination

Signature: Drew Mahan
Digitally signed by Drew Mahan
Date: 2021.11.09 13:21:06 -06'00'

Section 106 Early Coordination

PROJECT INFORMATION

PIN 101886.02

DATE 07/07/20	SOURCE OF FUNDING FUNDING - FEDERAL	PROJECT, PROGRAM, OR REVIEW Widen
------------------	--	--------------------------------------

TDOT REGION REGION 4	COUNTY Henry	ROUTE TYPE STATE ROUTE	ROUTE NUMBER/NAME 54
-------------------------	-----------------	---------------------------	-------------------------

TERMINI

From Near Smith Road in Paris to Near Howard Road (North of Puryear) (IA)

RIGHT-OF-WAY New ROW and/or Easements	ROW AMOUNT undetermined	GROUND DISTURBANCE Yes	PROJECT LENGTH 8.22 miles
--	----------------------------	---------------------------	------------------------------

DESCRIPTION

This project will improve safety and operations by:

- Providing sufficient shoulder width along the corridor by widening the shoulder from three (3) feet to four (4) feet, six (6) feet, and ten (10) feet throughout the project limits.
- Providing passing lanes in both the northbound and southbound direction, with the northbound passing lane ending as a right turn lane at the intersection with Puryear Country Club Road.
- Providing increased capacity along S.R. 54 for future traffic demand.

GEOGRAPHIC INFORMATION

PURYEAR	8-NE	-88.33293885	36.42159298
---------	------	--------------	-------------

USGS QUAD NAME USGS QUAD NUMBER LONGITUDE LATITUDE

Datum: NAD_1983_StatePlane_Tennessee_FIPS_4100_Feet

The Trail of Tears, as recorded by the NPS-NHT, is not located within 1000' of this project.

PROXIMITY TO THE TRAIL OF TEARS

*NPS-NHT = National Park Service - National Historic Trails

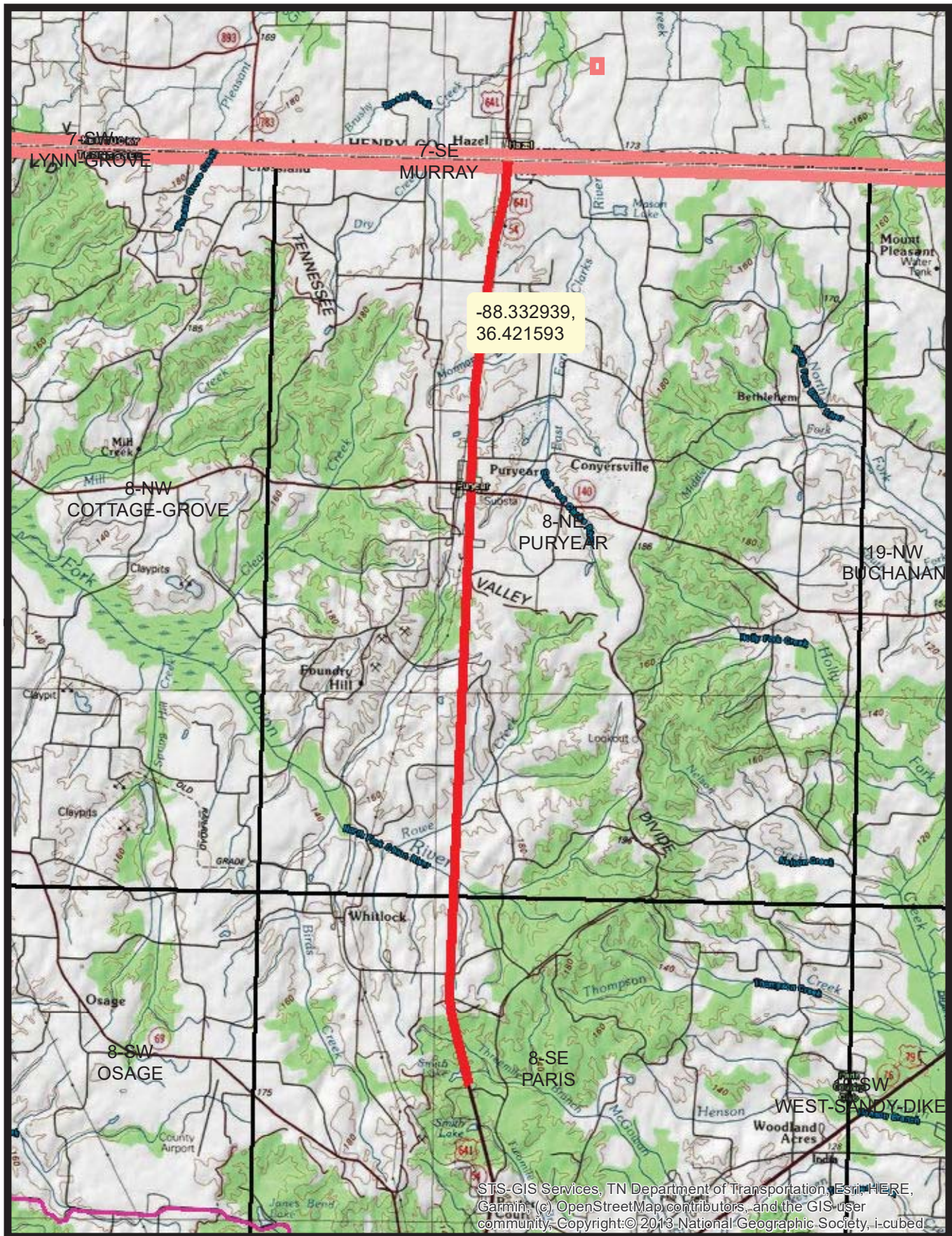
TRIBAL COORDINATION

THIS UNDERTAKING IS BEING COORDINATED WITH THE FOLLOWING FEDERALLY RECOGNIZED AMERICAN INDIAN TRIBES:

Absentee-Shawnee Tribe of Indians in Oklahoma	Shawnee Tribe
Cherokee Nation	Thlopthlocco Tribal Town
The Chickasaw Nation	United Keetoowah Band of Cherokee Indians in
Eastern Shawnee Tribe of Oklahoma	Oklahoma

Project Location:USGS TOPO

TDOT PIN: 101886.02



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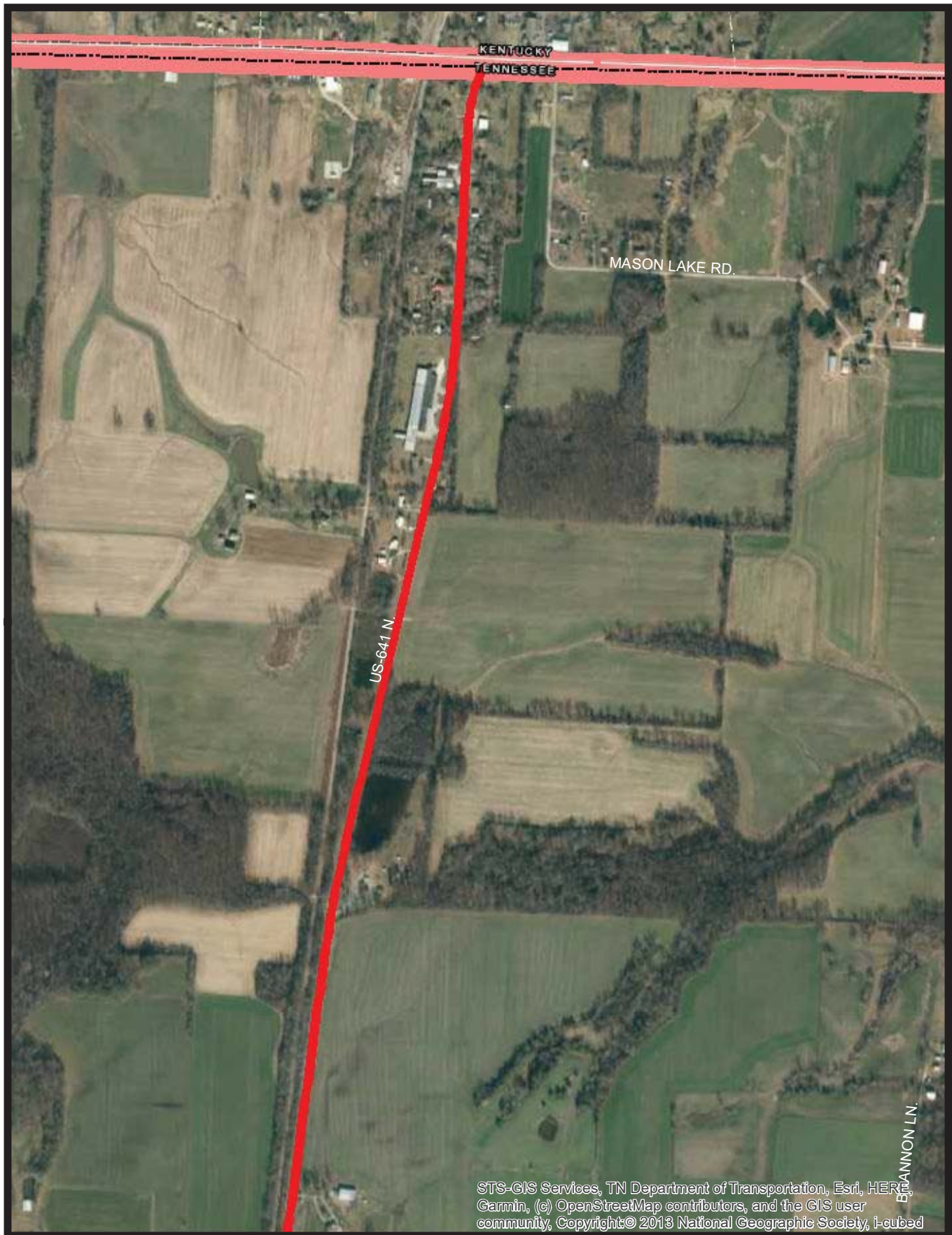
1:100,000

Miles

Trail of Tears

Project Location: Aerial View

TDOT PIN: 101886.02



0

1

N

Miles

1:10,000



Project Location: Aerial View

TDOT PIN: 101886.02



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1

N

Miles

1:10,000



Project Location: Aerial View

TDOT PIN: 101886.02



0

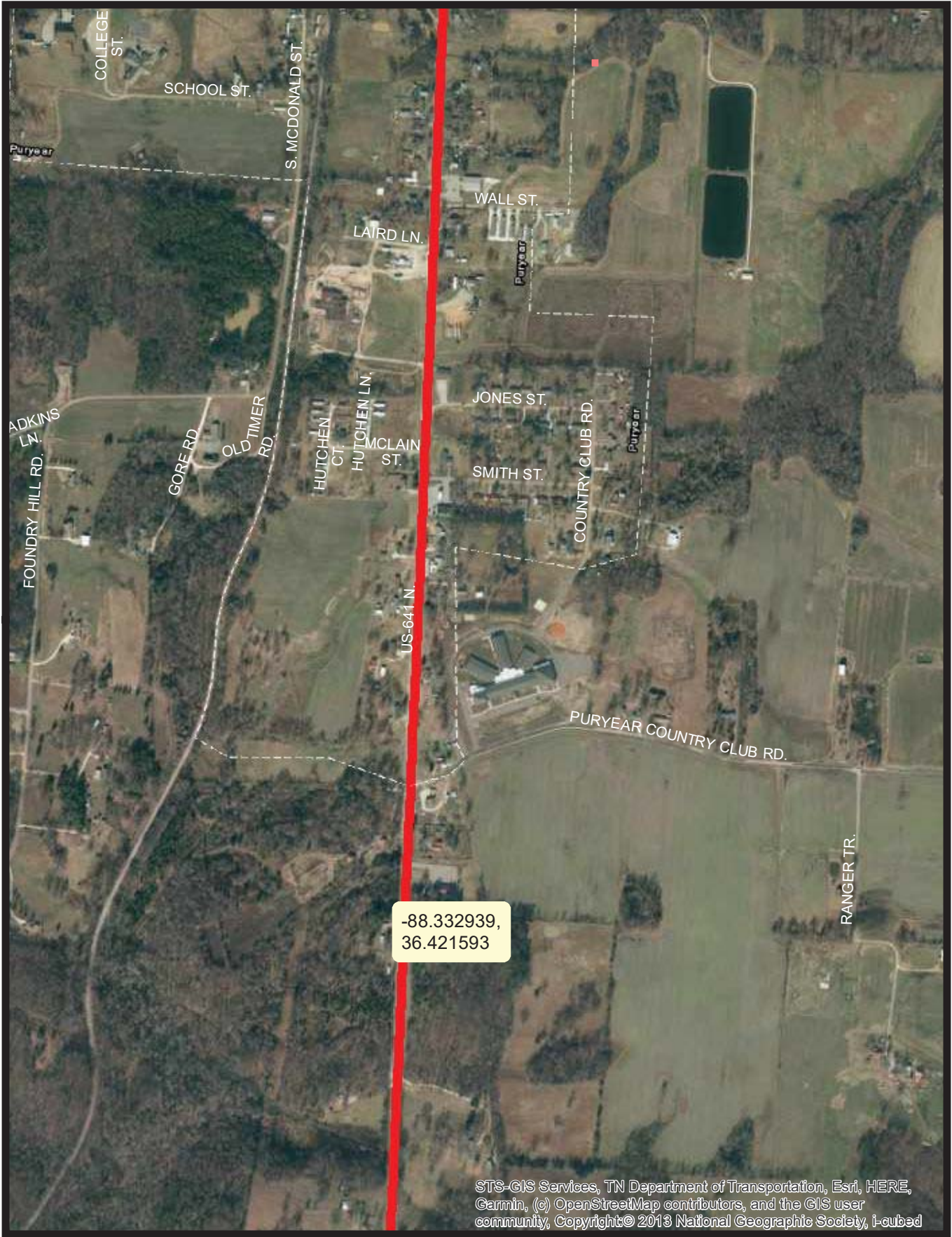
1

Miles

1:10,000



Project Location: Aerial View
TDOT PIN: 101886.02



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Miles

1:10,000

Project Location: Aerial View

TDOT PIN: 101886.02



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Miles

1:10,000

Project Location: Aerial View

TDOT PIN: 101886.02



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Project Location: Aerial View

TDOT PIN: 101886.02



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1

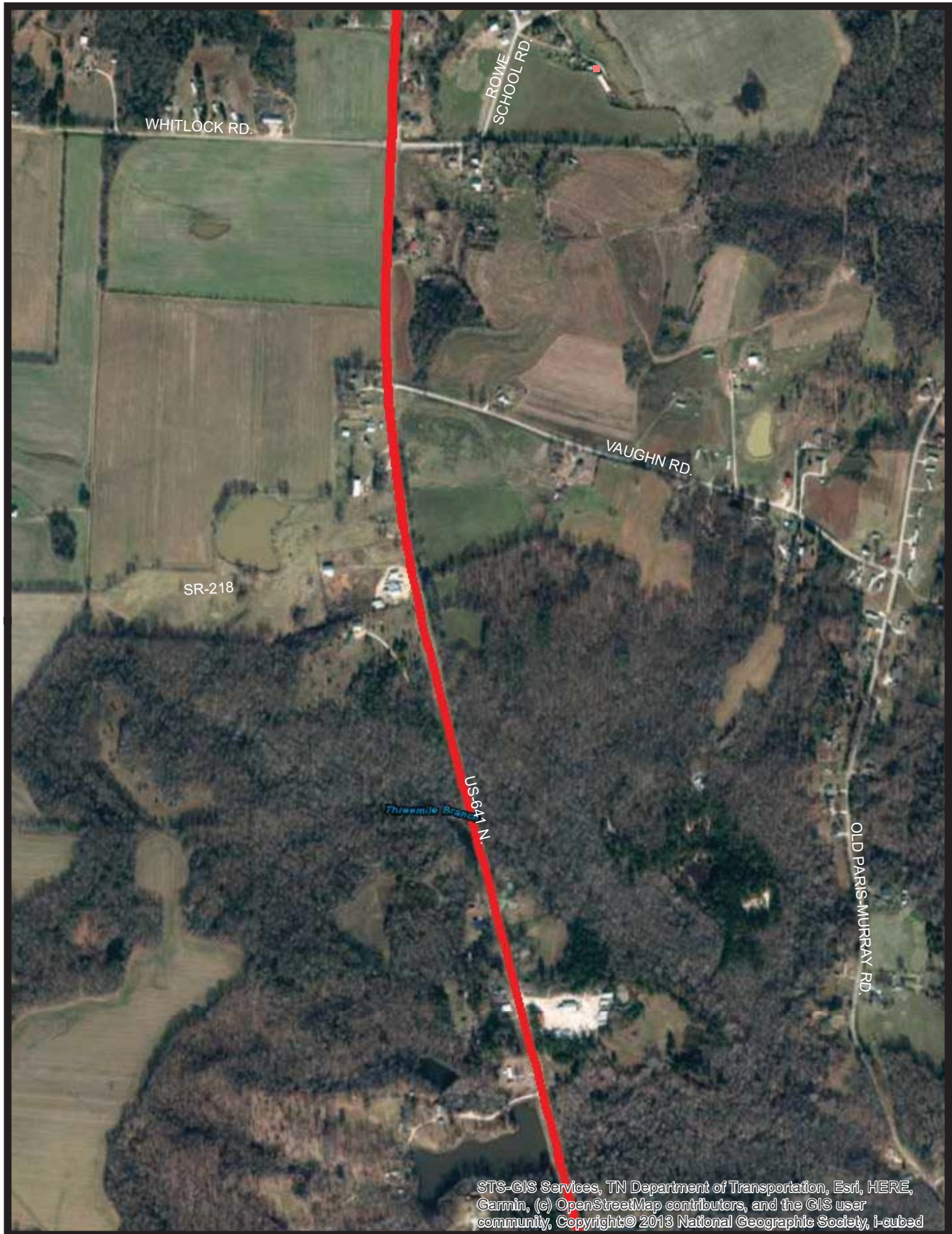
N

Miles

1:10,000

Project Location: Aerial View

TDOT PIN: 101886.02



STS-GIS Services, TN Department of Transportation, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Copyright© 2013 National Geographic Society, i-cubed

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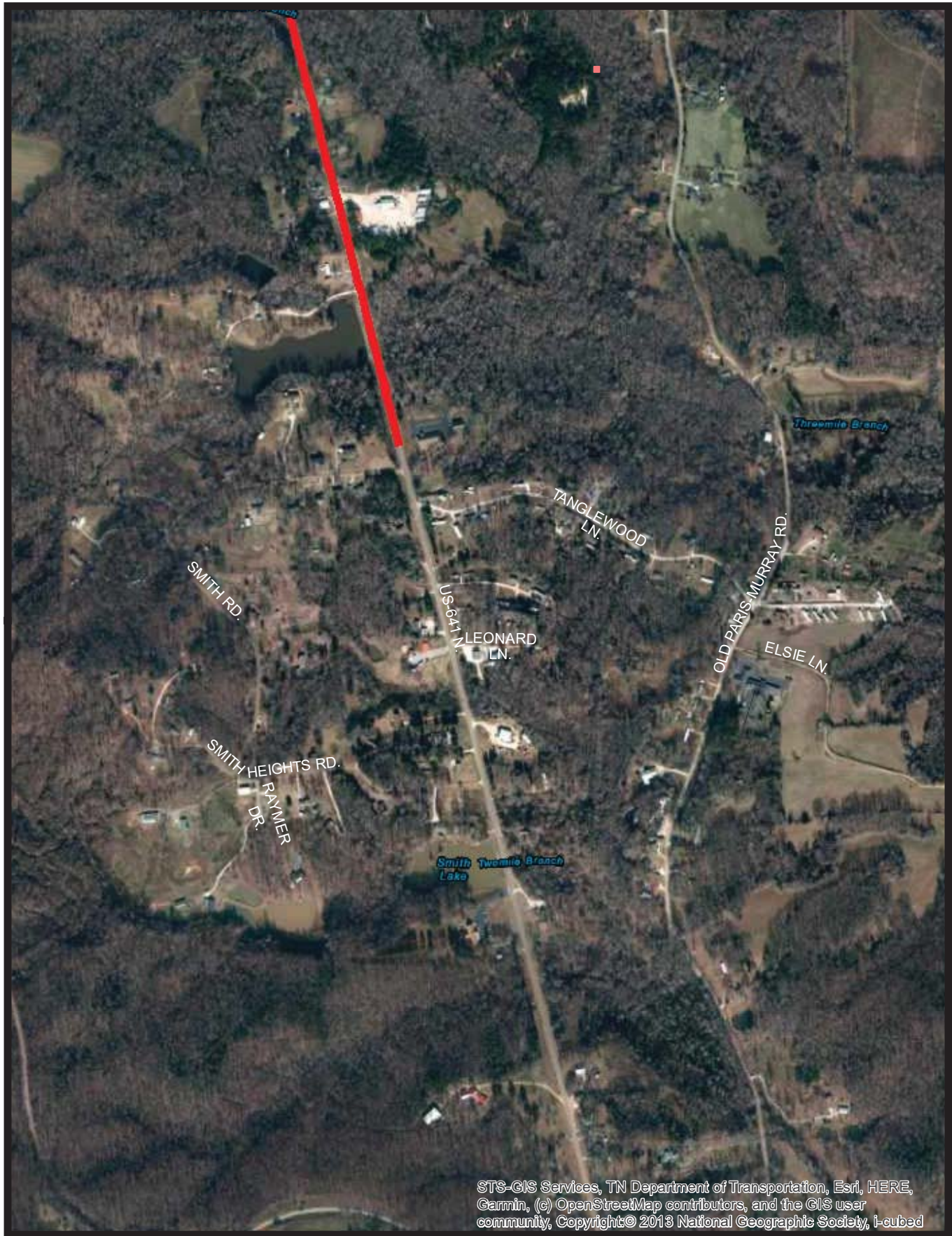
Miles

1:10,000



Project Location: Aerial View

TDOT PIN: 101886.02



STS-GIS Services, TN Department of Transportation, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Copyright© 2013 National Geographic Society, i-cubed

0

1

N

Miles

1:10,000



Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:49 PM
To: wwarrrior@ukb-nsn.gov
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Dear Ms. Warrior,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to the United Keetoowah Band of Cherokee Indians in Oklahoma and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If the United Keetoowah Band of Cherokee Indians in Oklahoma requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



Wes Cobb | Native American Coordination
Environmental Division
James K. Polk Building, 9th Floor

505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:49 PM
To: 'dfrazier@astribe.com'
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Dear Ms. Frazier,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to Absentee Shawnee Tribe and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If Absentee Shawnee Tribe requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



Wes Cobb | Native American Coordination
Environmental Division

James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:49 PM
To: 'elizabeth-toombs@cherokee.org'
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Dear Ms. Toombs,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to Cherokee Nation and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If Cherokee Nation requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:48 PM
To: thpo@estoo.net
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Dear Mr. Barnes,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to Eastern Shawnee Tribe of Oklahoma and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If Eastern Shawnee Tribe of Oklahoma requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



Wes Cobb | Native American Coordination
Environmental Division

James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:48 PM
To: 'tonya@shawnee-tribe.com'
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Dear Ms. Tipton,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to Shawnee Tribe and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If Shawnee Tribe requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



Wes Cobb | Native American Coordination
Environmental Division

James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:48 PM
To: THPO@tttown.org
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Dear Mr. Cloud,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to Thlopthlocco Tribal Town and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If Thlopthlocco Tribal Town requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



Wes Cobb | Native American Coordination
Environmental Division

James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Wes Cobb

From: TDOT TribalCoordination
Sent: Tuesday, July 7, 2020 2:47 PM
To: 'Gary.Fottrell@dot.gov'
Subject: Section 106 Early Coordination_PIN 101886.02
Attachments: 101886.02_S106 Early Coord.pdf

Mr. Fottrell,

On behalf of the Tennessee Division of the Federal Highway Administration, and on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division, I am pleased to provide you with information about the subject undertaking. Attached you will find a TDOT "Section 106 Early Coordination" form containing a description of the undertaking and maps illustrating its location.

This information is provided pursuant to 36 CFR 800.4(a)(4) as part of our effort to gather information about properties located within the area of potential effects which may be of religious and cultural significance to the Chickasaw Nation and which may be affected by the undertaking. Information about such properties will remain confidential pursuant to 36 CFR 800.11(c).

If the Chickasaw Nation requests to participate in the Section 106 process as a consulting party, we will provide documentation regarding the findings of the identification and evaluation effort and invite you to consult on the effects of the undertaking on historic properties located within the area of potential effects. You will also be invited to attend project meetings with FHWA, TDOT, and the Tennessee State Historic Preservation office, if any, and to provide input throughout the process. If you choose to not participate as a consulting party at this time, you may do so later by simply notifying me.

FHWA, and TDOT working on its behalf, recognize that early identification of historic properties of religious or cultural significance and concerns about confidentiality are keys to protection of such properties. To this end, I respectfully request any comments you have on the subject undertaking and any associated reports or other project materials within thirty (30) days of receipt. We have established a dedicated email address at TDOT.TribalCoordination@tn.gov and respectfully request that all correspondence is sent to this address. Of course, you may also provide comments directly to Dr. Sellers at Tammy.Sellers@tn.gov, by telephone at 615-741-5637, or by letter at the physical address below:

TDOT Environmental Division
c/o Dr. Tammy Sellers
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243

We appreciate your time and review of this information.

Sincerely,
Wes Cobb



Wes Cobb | Native American Coordination
Environmental Division

James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-253-1892
Wes.Cobb@tn.gov

Drew Mahan

From: Fottrell, Gary (FHWA) <Gary.Fottrell@dot.gov>
Sent: Thursday, July 9, 2020 2:33 PM
To: TDOT TribalCoordination
Subject: [EXTERNAL] FW: TDOT Section 106 responses
Attachments: TDOT - 5 projects_completed 7.9.20.pdf; TDOT follow up letter_completed (00000003) 7.9.20.pdf

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

From: Amber Hood [mailto:Amber.Hood@chickasaw.net]
Sent: Thursday, July 9, 2020 1:45 PM
To: Fottrell, Gary (FHWA) <Gary.Fottrell@dot.gov>
Cc: HPO <HPO@chickasaw.net>
Subject: TDOT Section 106 responses

Mr. Fottrell,

Please see attached.

Sincerely,

Amber Hood

Director of Historic Preservation & Repatriation
The Chickasaw Nation
Department of Culture & Humanities
Division of Historic Preservation
1020 N. Mississippi Avenue
P.O. Box 1548
Ada, OK 74821-1548
(580)559-0825

July 9, 2020

Mr. Gary Fottrell
Environmental Program Engineer
Tennessee Division, Federal Highway Administration
404 BNA Drive, Suite 508
Nashville, TN 37217

Dear Mr. Fottrell:


Thank you for the letters of notification regarding the proposed projects listed below:

- Section 106 Coordination, Proposed Bicycle and Pedestrian Facility on Elm Street in Martin, Weakley County, TN PIN 126659.01
- Section 106 Coordination, Proposed Widening of SR 50, Grundy County, TN PIN 124782.00
- Section 106 Coordination, Proposed Widening of SR 211, Dyer County, TN PIN 124213.00
- Section 106 Coordination, Proposed SR 2 Bridge Replacement over I-24, Coffee County, TN PIN 101980.01
- Section 106 Coordination, Proposed Widening of SR 54, Henry County, TN PIN 101886.02

We accept the invitation to consult under Section 106 of the National Historic Preservation Act. The Chickasaw Nation is in support of the proposed undertakings and is not presently aware of any specific historic properties, including those of traditional religious and cultural significance, that will be impacted by these projects. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

Your efforts to preserve and protect significant historic properties are appreciated. If you have any questions, please contact Ms. Karen Brunso, tribal historic preservation officer, by email at karen.brunso@chickasaw.net.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lisa John', with a stylized flourish extending to the right.

Lisa John, Secretary
Department of Culture and Humanities

cc: Gary.Fottrell@dot.gov

Drew Mahan

From: TDOT TribalCoordination
Sent: Tuesday, November 9, 2021 11:16 AM
To: 'Gary.Fottrell@dot.gov'
Cc: Joseph Santangelo
Subject: PIN PROJECT 101886.02
Attachments: 101886.02 Historic and Archaeology Reports REDUCED SIZE.pdf

Dear Mr. Fottrell,

I'm sending the attached information to you on behalf of Dr. Tammy Sellers, Assistant Director of TDOT's Environmental Division. This information is being provided in response to your letter dated July 9, 2020 indicating that The Chickasaw Nation would like to participate in the Section 106 process as a consulting party.

If you have any questions or need additional information, please feel free to let us know at this email address, or you may also contact Dr. Sellers directly at Tammy.Sellers@tn.gov or 615-741-5637. We appreciate your review and time.

Sincerely,

Drew



Drew Mahan | Native American Coordination
Environmental Division
James K. Polk Building, 9th Floor
505 Deaderick St.
Nashville, TN 37243
p. 615-770-1144
Drew.Mahan@TN.Gov

November 12, 2021

Mr. Gary Fottrell
Environmental Program Engineer
Tennessee Division, Federal Highway Administration
404 BNA Drive, Suite 508
Nashville, TN 37217

Dear Mr. Fottrell:

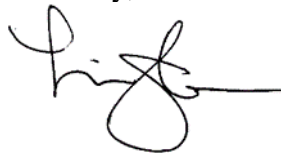
Thank you for the Archaeological Assessments, Historic/Architectural Assessments, and SHPO letters regarding the proposed projects in Tennessee listed below. This letter is a continuation of consultation under Section 106 of the National Historic Preservation Act. We concur with the findings of no adverse effects to historic or cultural properties.

- Proposed Widening of SR 1, Shelby County TN PIN 101609.01
- Proposed Widening of SR 54, Henry County, TN PIN 101886.02

The Chickasaw Nation is in support of the proposed undertakings and is not presently aware of any specific historic properties, including those of traditional religious and cultural significance, that will be impacted by these projects. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

Your efforts to preserve and protect significant historic properties are appreciated. If you have any questions, please contact Ms. Karen Brunso, tribal historic preservation officer, at (580) 272-1106, or by email at karen.brunso@chickasaw.net.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lisa John', with a stylized flourish extending to the right.

Lisa John, Secretary
Department of Culture and Humanities

cc: Gary.Fottrell@dot.gov

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix M
PIN 101886.02
Environmental Justice

HISPANIC OR LATINO ORIGIN BY RACE

Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

	Henry County, Tennessee		Block Group 1, Census Tract 9691, Henry County, Tennessee		Block Group 2, Census Tract 9691, Henry County, Tennessee		Block Group 3, Census Tract 9691, Henry County, Tennessee		Block Group 1, Census Tract 9696, Henry County, Tennessee	
Label	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
▼ Total:	32,284	*****	1,005	±270	872	±151	1,133	±248	1,423	±351
▼ Not Hispanic or Latino:	31,445	*****	1,005	±270	852	±145	1,118	±242	1,387	±344
White alone	28,185	±26	978	±271	783	±138	1,072	±242	1,155	±329
Black or African American alone	2,637	±105	8	±12	42	±33	46	±65	232	±150
American Indian and Alaska Native alone	84	±90	0	±12	3	±6	0	±12	0	±12
Asian alone	127	±72	0	±12	12	±18	0	±12	0	±12
Native Hawaiian and Other Pacific Islander alone	0	±26	0	±12	0	±12	0	±12	0	±12
Some other race alone	0	±26	0	±12	0	±12	0	±12	0	±12
▼ Two or more races:	412	±128	19	±24	12	±18	0	±12	0	±12
Two races including Some other race	0	±26	0	±12	0	±12	0	±12	0	±12
Two races excluding Some other race, and three or more races	412	±128	19	±24	12	±18	0	±12	0	±12
▼ Hispanic or Latino:	839	*****	0	±12	20	±42	15	±23	36	±31
White alone	569	±127	0	±12	8	±13	0	±12	36	±31
Black or African American alone	6	±11	0	±12	0	±12	0	±12	0	±12
American Indian and Alaska Native alone	0	±26	0	±12	0	±12	0	±12	0	±12
Asian alone	0	±26	0	±12	0	±12	0	±12	0	±12
Native Hawaiian and Other Pacific Islander alone	0	±26	0	±12	0	±12	0	±12	0	±12
Some other race alone	165	±88	0	±12	12	±38	15	±23	0	±12
▼ Two or more races:	99	±82	0	±12	0	±12	0	±12	0	±12
Two races including Some other race	13	±17	0	±12	0	±12	0	±12	0	±12
Two races excluding Some other race, and three or more races	86	±83	0	±12	0	±12	0	±12	0	±12

State Route 54 (U.S. 641), From Near Smith Road in
Paris to Near Howard Road (North of Puryear)
Henry County, Tennessee
PIN 101886.02

HISPANIC OR LATINO ORIGIN BY RACE

Survey/Program: American Community Survey
Universe: Total population
Year: 2019
Estimates: 5-Year
Table ID: B03002

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.

The 2015-2019 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Explanation of Symbols:

- An "***" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
- An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.
- An "-" following a median estimate means the median falls in the lowest interval of an open-ended distribution.
- An "+" following a median estimate means the median falls in the upper interval of an open-ended distribution.
- An "****" entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
- An "*****" entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
- An "N" entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
- An "(X)" means that the estimate is not applicable or not available.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

**State Route 54 (U.S. 641), From Near Smith Road in
Paris to Near Howard Road (North of Puryear)
Henry County, Tennessee
PIN 101886.02**



RATIO OF INCOME TO POVERTY LEVEL IN THE PAST 12 MONTHS

Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

	Henry County, Tennessee		Block Group 1, Census Tract 9691, Henry County, Tennessee		Block Group 2, Census Tract 9691, Henry County, Tennessee		Block Group 3, Census Tract 9691, Henry County, Tennessee		Block Group 1, Census Tract 9696, Henry County, Tennessee		
Label	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	
▼ Total:	31,720	±135	1,005	±270	840	±152	1,118	±242	1,423	±351	
Under .50	2,281	±397	64	±49	62	±54	15	±13	33	±38	
.50 to .99	4,101	±707	24	±27	128	±76	288	±215	212	±232	
1.00 to 1.24	1,840	±536	42	±30	49	±45	50	±53	165	±261	
1.25 to 1.49	2,328	±497	20	±22	98	±77	24	±36	375	±223	
1.50 to 1.84	2,536	±557	95	±83	55	±30	57	±76	217	±167	
1.85 to 1.99	987	±308	58	±83	37	±26	35	±45	59	±59	
2.00 and over	17,647	±975	702	±249	411	±120	649	±246	362	±159	

State Route 54 (U.S. 641), From Near Smith Road in
Paris to Near Howard Road (North of Puryear)
Henry County, Tennessee
PIN 101886.02

RATIO OF INCOME TO POVERTY LEVEL IN THE PAST 12 MONTHS

Survey/Program: American Community Survey
Universe: Population for whom poverty status is determined
Year: 2019
Estimates: 5-Year
Table ID: C17002

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.

The 2015-2019 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Explanation of Symbols:

- An "*" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
- An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.
- An "-" following a median estimate means the median falls in the lowest interval of an open-ended distribution.
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Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

State Route 54 (U.S. 641), From Near Smith Road in
Paris to Near Howard Road (North of Puryear)
Henry County, Tennessee
PIN 101886.02

Right-of-Way Reevaluation
State Route 54 (US-641), From Near Smith Road in Paris to Near
Howard Road (North of Puryear) Henry County, Tennessee
PIN 101886.02



Appendix N
PIN 101886.02
Multimodal

Environmental Studies

Multimodal

Environmental Studies Request

Project Information

Route: State Route 54 (U.S. 641)
Termini: From Near Smith Road in Paris to Near Howard Road (North of Puryear)
County: Henry
PIN: 101886.02

Request

Request Type: Environmental Study Reevaluation
Project Plans: Technical Report (signed 04/02/2020)
Date of Plans: 04/02/2020
Location: Email Attachment

Certification

Requestor: Laura Moribe
Title: Environmental Planner

Signature:

Laura Moribe

Digitally signed by Laura Moribe
Date: 2020.06.23 15:26:09 -05'00'

Environmental Study

Technical Section

Section: Multimodal

Study Results

The majority of this project is in a rural area where there is a lack of need and prudence in providing multimodal accommodations. The section passing through Puryear provides 4' shoulders, which is appropriate for occasional cyclist and pedestrian traffic, and is appropriate for the land use, travel speeds, and AADT in the area.

Commitments

Did the study of this project result in any environmental commitments?

No

Additional Information

Is there any additional information or material included with this study?

No

Certification

Responder: Matthew Cushing

Title: Active Transportation Analyst / Program Monitor

Signature: Matthew
Cushing

Digitally signed by
Matthew Cushing
Date: 2020.08.24
10:48:15 -05'00'