Appendix J: Ecological Resources Technical Reports

State Route (SR) 170
From SR-62 Interchange to SR-9 (US-25W)
Anderson County, Tennessee

Tennessee Department of Transportation

TDOT PIN 124121.00

August 2025

TDOT Environmental Division
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243
(615) 741-3655

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
ENVIRONMENTAL TECHNICAL STUDIES OFFICE
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402

WILL REID
COMISSIONER

BILL LEE
GOVERNOR

MEMORANDUM

To: *Marlena Gore*
Project Management

From: *Matt Beeler*
Region One Ecology

Date: *7/25/25*

Subject: **Environmental Boundaries Report For**:
SR-170, From SR-62 to near Melton Lake Drive in Anderson County, TN
PIN: 124121.01

An ecological evaluation of the subject project has been conducted in response to initial evaluation request for EBR with the following results:

STREAMS: *There are three streams and two WWC within project limits*

WETLANDS: There are *twenty-three wetlands within project limits.*

OTHER FEATURES: *There is one lake within project limits.*

SPECIES:

- *USFWS: USFWS coordination was completed March 5, 2025, with not likely to adversely affect the Indiana bat.*
- *TWRA: TWRA coordination was completed October 14, 2022, with no effect to state listed animal species.*
- *TDEC DNA: TDEC DNA 2023 MOA applies for this project under Condition 1, with no effect for state listed plant species.*

COMMITMENTS: All necessary tree clearing within project limits will be completed between October 1 and March 31.

Your assistance is appreciated. If you have any questions or comments, please contact me at

865-216-2448 or *e-mail* *matthew.beeler@tn.gov*.

xc: *Region 1 Project Development:* Dexter Justis, John Barrett, Mark Doty
Design Lead: Stacy Weaver
HQ Ecology: Brenden Barney, Dennis Crumby
HQ Permits: Claire Sichko
Region 1 Permits: Chad Weaver
TDOT.Env.Ecology@tn.gov
TDOT.Env.Permits@tn.gov
TDOT.Env.Mitigation@tn.gov
TDOT.Env.NEPA@tn.gov

COPPERHEAD
ENVIRONMENTAL CONSULTING

To: Keven Brown
Region 1 Project Development

From: Dakota Hunter
Copperhead Environmental Consulting Inc.

Date: 6 March 2025

Subject: ENVIRONMENTAL BOUNDARIES REPORT
SR-170 expansion from SR-62 to near Melton Lake Drive

PIN:124121.01

Copperhead Environmental Consulting Inc. biologists completed the environmental boundaries field survey for the subject project and submits the following results:

WETLANDS

There are twenty-three (23) wetlands within the project boundary.

SPRINGS, STREAMS, WET WEATHER CONVEYANCES AND EPHEMERAL STREAMS

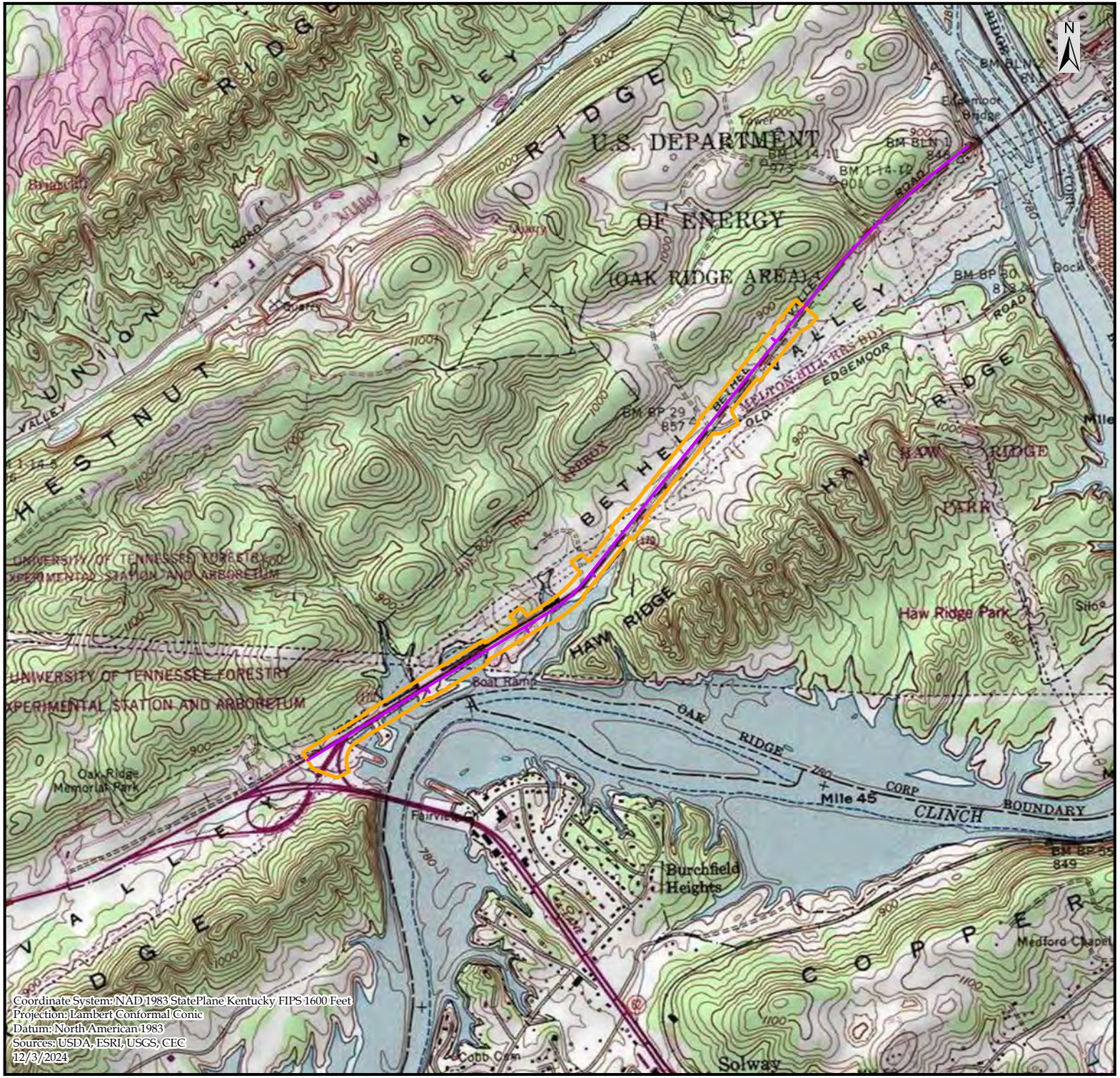
There are a total of six (6) water features found within the project boundary of the proposed project. Two (2) features are intermittent streams, one (1) feature is a perennial stream, one (1) feature is a lake/impoundment and two (2) are wet weather conveyances.

Wetlands 1, 2, 3, 4, 7, 8, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23 possess direct surface water connections to downstream waters, making them jurisdictional based on current guidance from the U.S. Army Corps of Engineers (USACE). Additionally, wetlands 5, 12, and 13 only have surface water connections with ephemeral drainages and wetlands 6 and 10 possess no surface water connection to downstream waters, making them isolated features based on current guidance from the USACE.

PROTECTED SPECIES

A USFWS review of the project for federally threatened or endangered species present in the vicinity of the project area has not been conducted. However, Copperhead biologists performed a habitat survey for listed bats and protected bird species within culverts diverting aquatic features beneath SR-170. Six culverts were identified that exceed a diameter of 36in and could serve as roosting habitat for listed bats. Roosting bats or signs of their activity were not observed at any of these locations during the delineation. Culverts were not entered during the survey and further investigation may be required to confirm that those locations are unoccupied.

Copperhead biologists also identified an incidental occurrence of a raptor nest, located on a transmission line tower near STA 136+14L. Based on the construction, size, and location of the nest, copperhead biologists expect that the nest was created by an Osprey (*Pandion haliaetus*), but no individuals were observed using the nest or within its vicinity during surveys.



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Prepared for:
Tennessee Department of Transportation

TDOT

FIGURE 1:
Topographic Overview for the Anderson County; SR-170, From SR-62 to near Melton Lake Drive Project
PIN: 124121.01
Anderson County, Tennessee.

Legend

- Project Centerline
- Area of Investigation

0 1,000 2,000
US Feet

Scale: 1 in = 2,000 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	12/3/2024
Checked by:	DH	Revision:	02

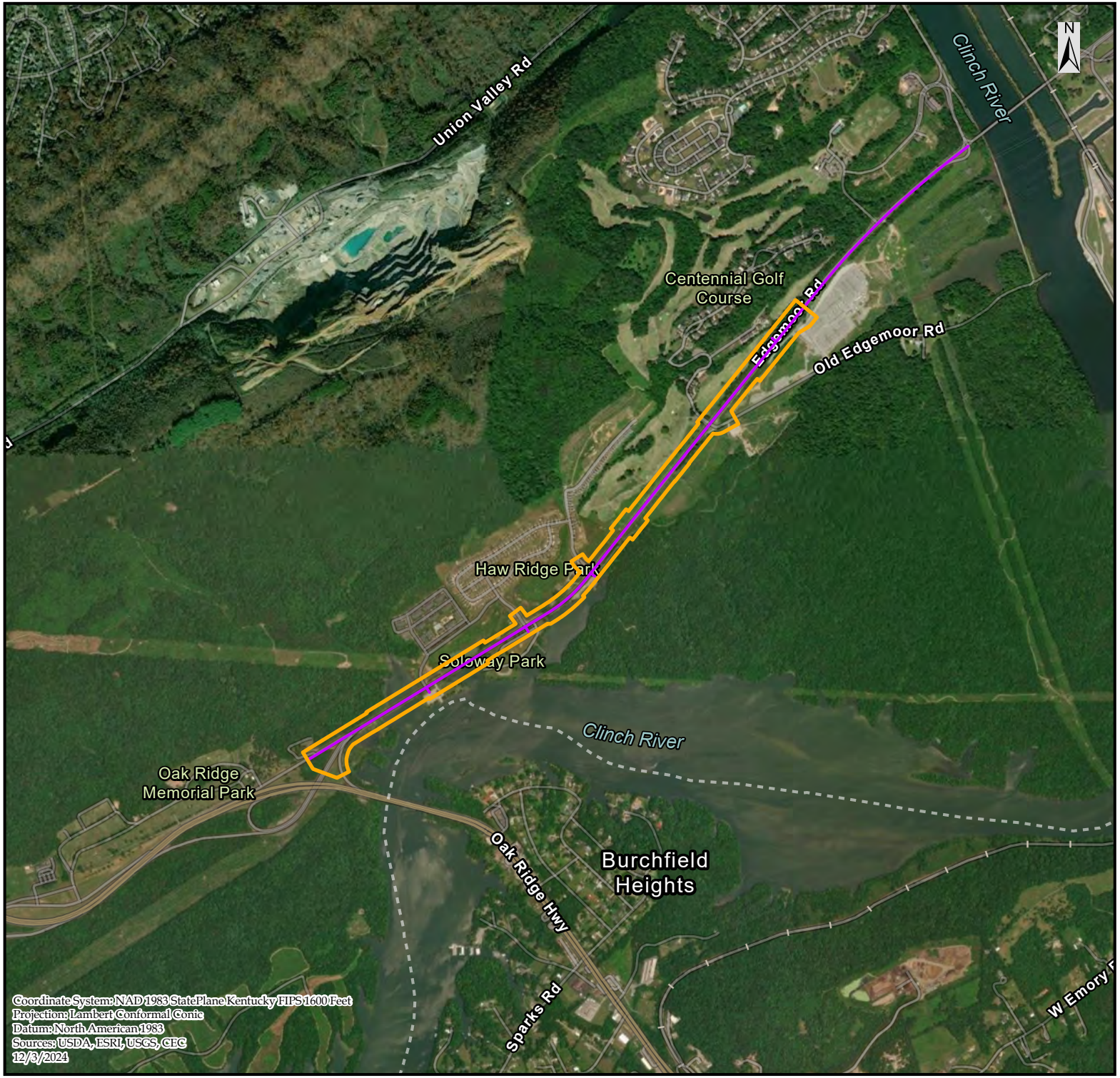

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FIGURE 2:
Aerial Overview for the Anderson County; SR-170, From SR-62 to near Melton Lake Drive Project
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Anderson County, Tennessee.

Legend

- Project Centerline
- Area of Investigation

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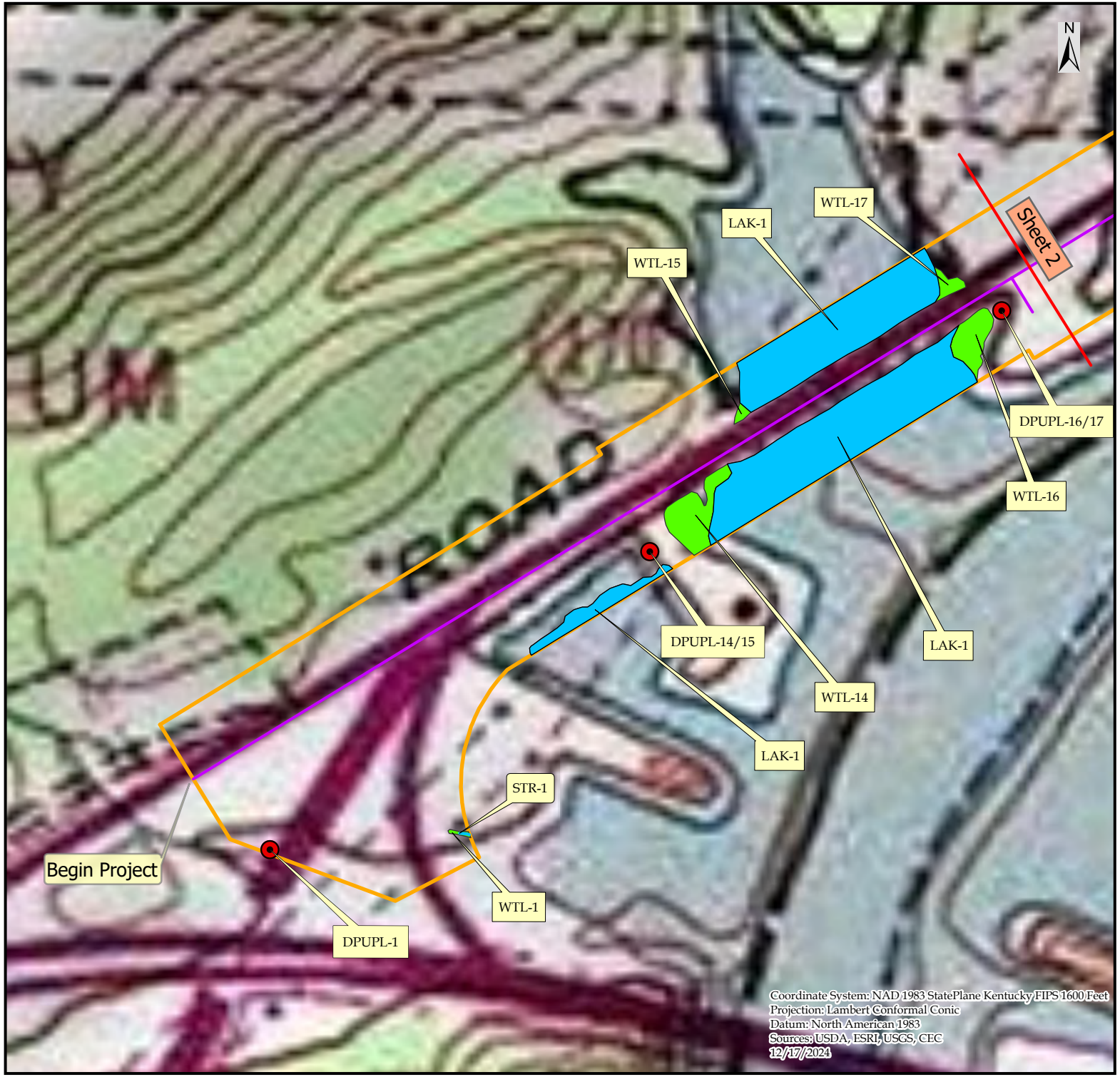

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Sheet 1:
Water Resource Map - Topographic
for the Anderson County;
SR-170, From SR-62 to near
Melton Lake Drive Project
PIN: 124121.01
Anderson County, Tennessee.

Legend

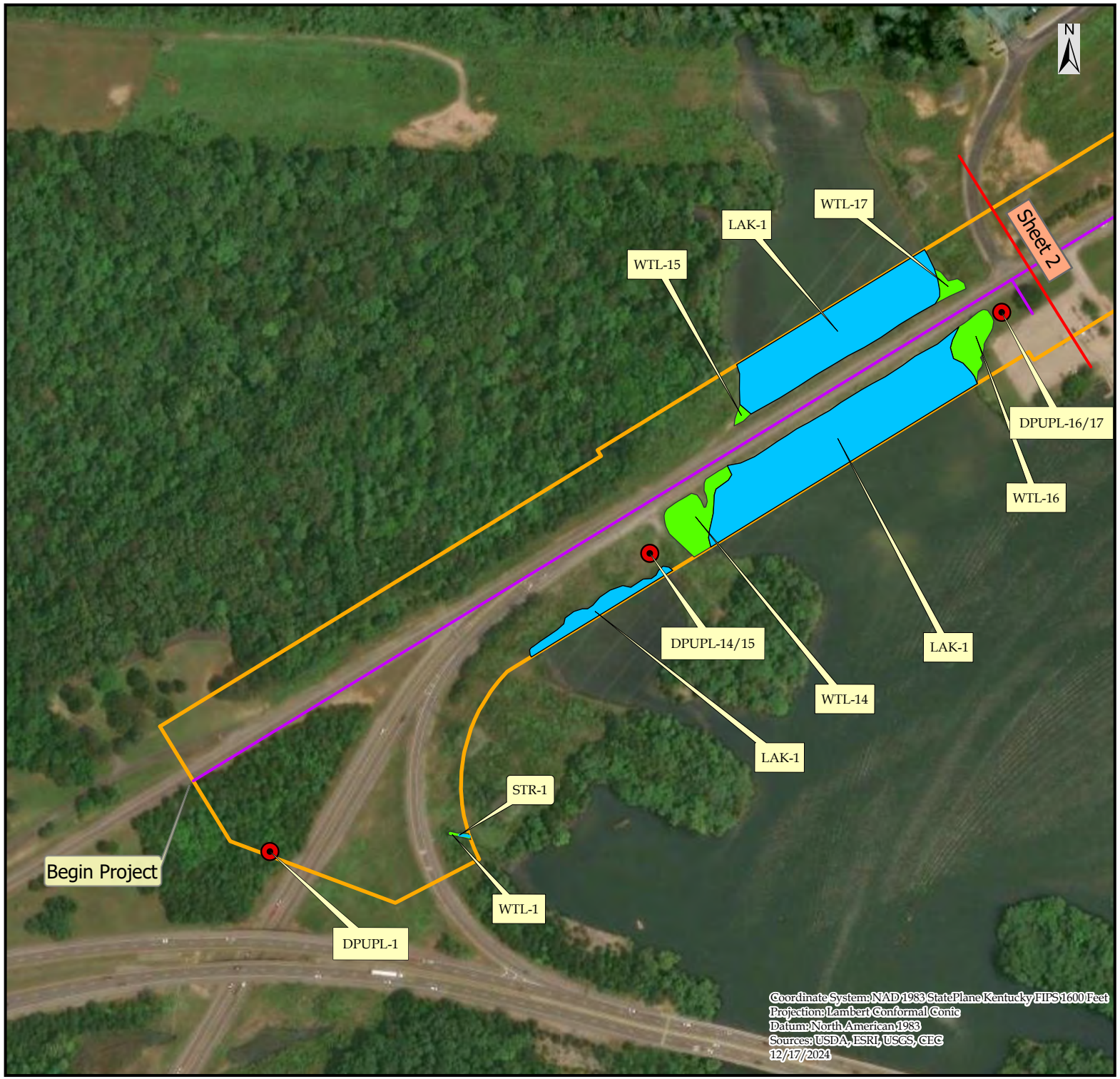
- Upland Data Point
- Stream
- Wet Weather Conveyance
- Project Centerline
- Waterbody
- Wetland
- Area of Investigation

0 145 290
US Feet

Scale: 1 in = 290 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	03/04/2025
Checked by:	DH	Revision:	05



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Water Resource Map - Topographic
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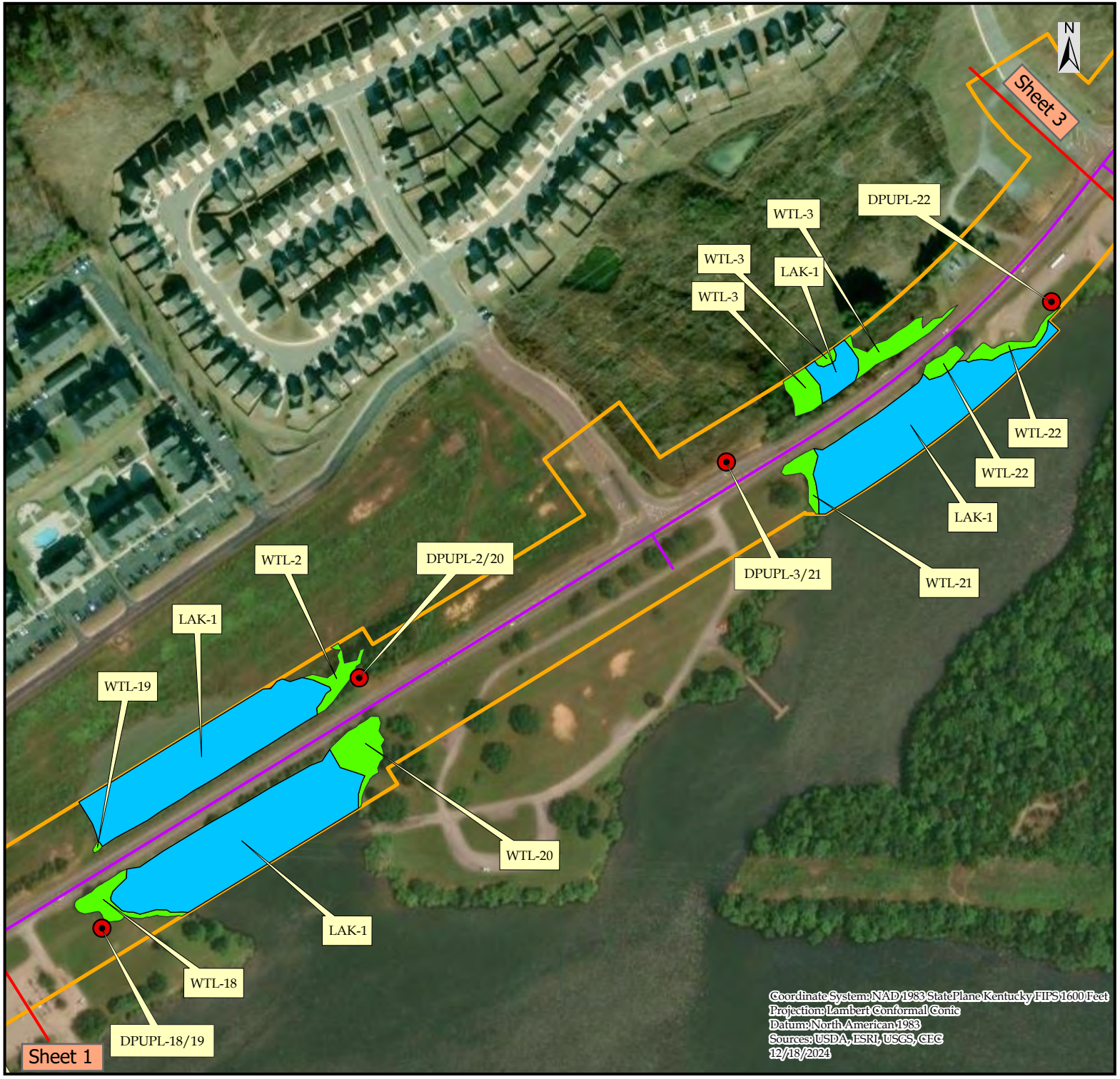

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Sheet 3:
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US Feet

Scale: 1 in = 290 ft

Prepared by :
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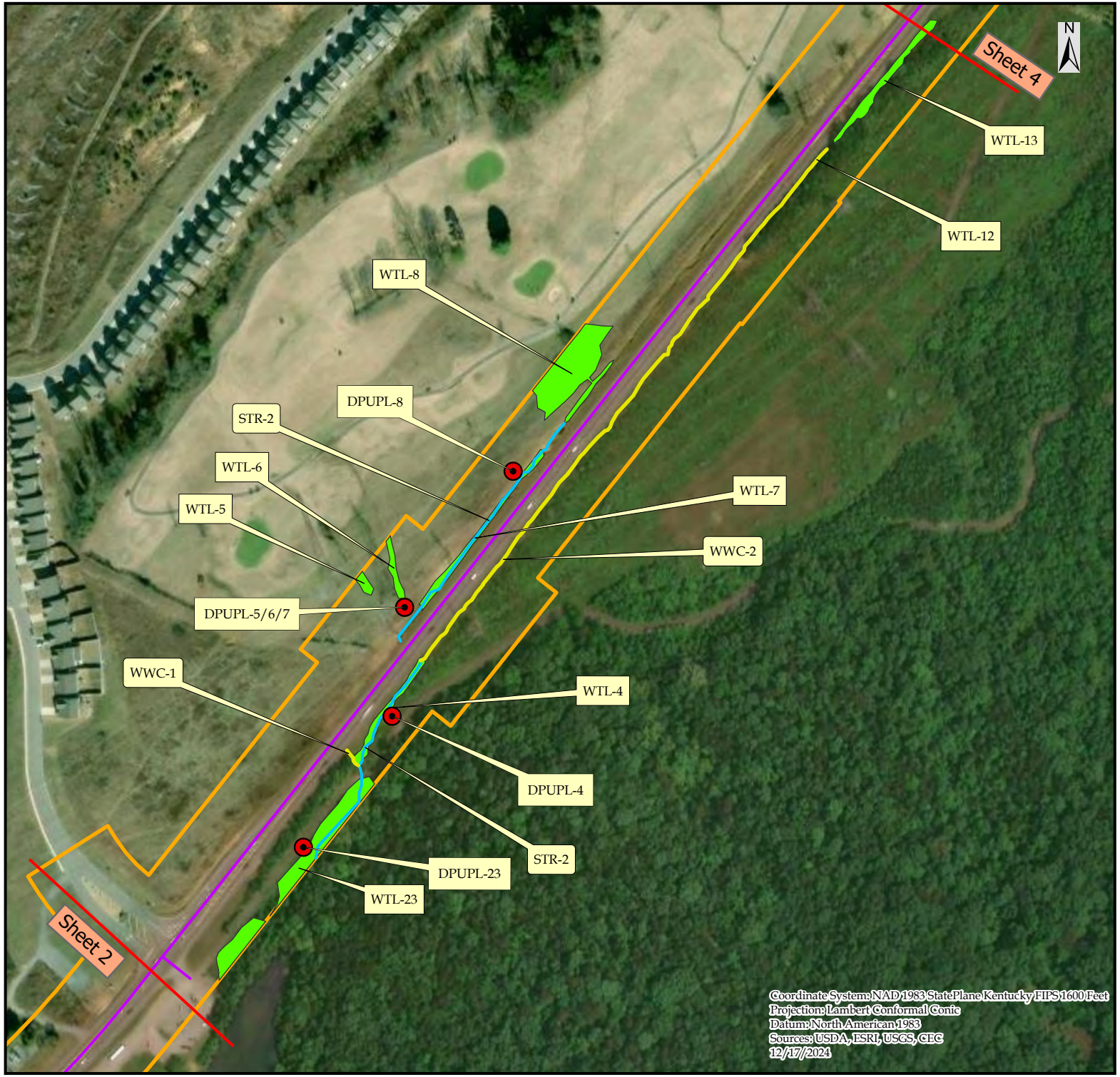

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Checked by:	DH	Revision:	04

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Sheet 4:
Water Resource Map - Topographic
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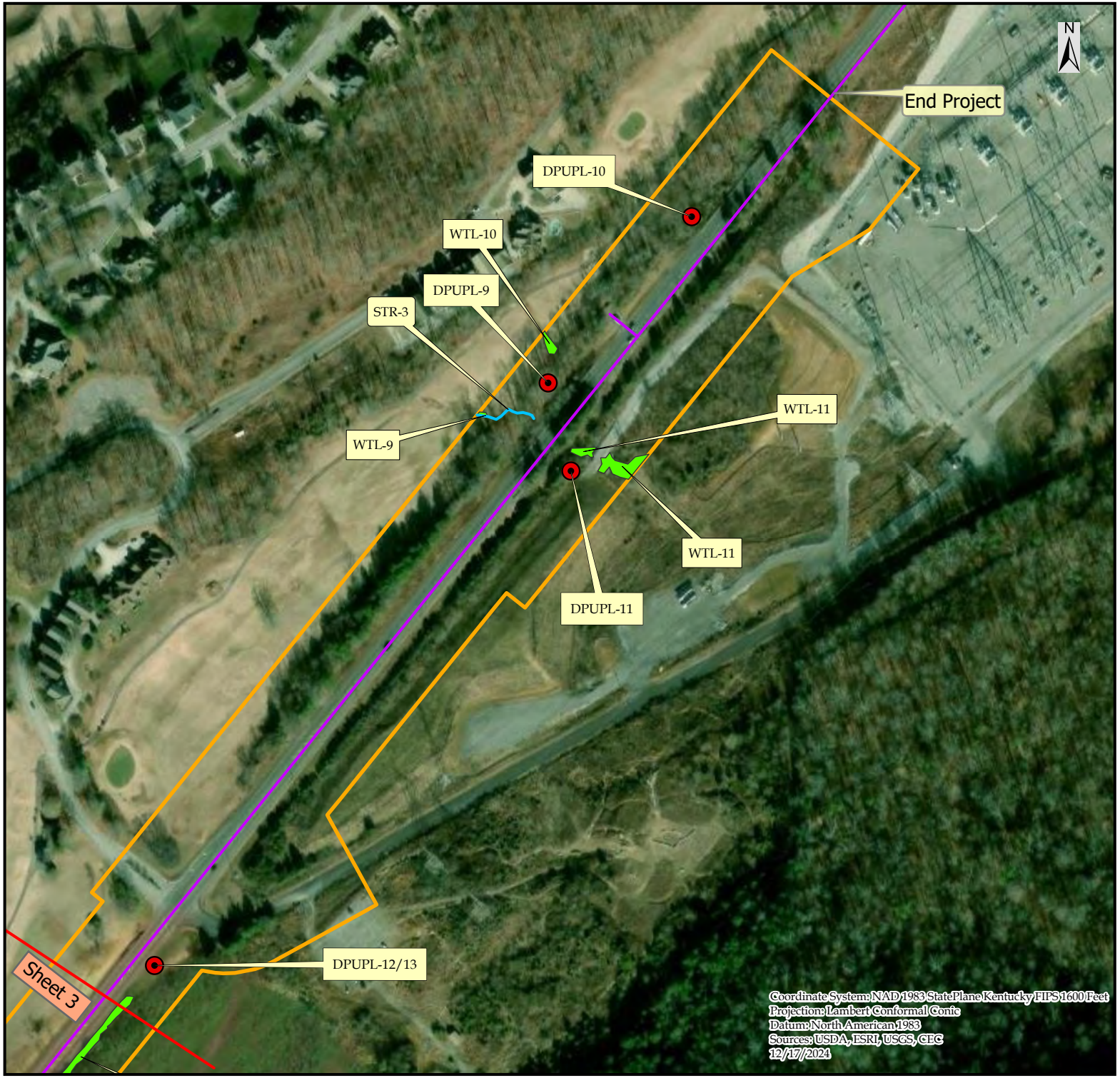

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Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	12/17/2024
Checked by:	DH	Revision:	04

Project Name: SR-170, From SR-62 to near Melton Lake Drive in Anderson County **PIN:** 124121.01

Water Resource Table for EBR

Based on: ETSA

Date: 7/25/2025

Water Resources (Non-Wetland)					
Label	**Type**	**Latitude**	**Longitude**	**Receiving Waters**	**Quality**
LAK-1	Lake/Reservoir	35.99577	-84.194816	Watts Bar Lake	Not Supporting
STR-1	Intermittent Stream	35.992918	-84.197547	Clinch River	Unassessed
STR-2	Perennial Stream	36.00168	-84.183872	Clinch River	Unassessed
STR-3	Intermittent Stream	36.009284	-84.176955	WTL-11, UNT to Clinch River	Unassessed
WWC-1	Wet Weather Conveyance/Ephemeral	36.001542	-84.184443	STR-2	Unassessed
WWC-2	Wet Weather Conveyance/Ephemeral	36.00441	-84.181308	STR-2	Unassessed

Water Resources (Wetland)*

Label	Type	Latitude	Longitude	Receiving Waters	Quality
WTL-1	Shrub	35.992934	-84.197547	STR-1	Low Resource Value
WTL-2	Forested	35.997593	-84.190867	Clinch River	Moderate Resource Value
WTL-3	Shrub	35.99949	-84.18698	Clinch River	Low Resource Value
WTL-4	Emergent	36.001978	-84.183709	STR-2	Low Resource Value
WTL-5	Emergent	36.002722	-84.183835	UNT to Clinch River	Low Resource Value
WTL-6	Emergent	36.002774	-84.183629	None-Isolated	Low Resource Value
WTL-7	Emergent	36.003035	-84.182938	STR-2	Low Resource Value
WTL-8	Emergent	36.003912	-84.182333	STR-2	Low Resource Value
WTL-9	Emergent	36.009265	-84.17711	STR-3	Low Resource Value
WTL-10	Emergent	36.009677	-84.17662	None-Isolated	Low Resource Value
WTL-11	Shrub	36.009019	-84.176412	STR-3	Low Resource Value
WTL-12	Emergent	36.00512	-84.180572	UNT to Clinch River	Low Resource Value
WTL-13	Emergent	36.005605	-84.180089	UNT to Clinch River	Low Resource Value
WTL-14	Shrub	35.994747	-84.195818	Clinch River	Low Resource Value

WTL-15	Emergent	35.996672	-84.192605	Clinch River	Low Resource Value
WTL-16	Forested	35.995727	-84.193822	Clinch River	Moderate Resource Value
WTL-17	Emergent	35.996078	-84.193973	Clinch River	Low Resource Value
WTL-18	Forested	35.996326	-84.192416	Clinch River	Moderate Resource Value
WTL-19	Emergent	35.996715	-84.192609	Clinch River	Low Resource Value
WTL-20	Forested	35.997211	-84.190717	Clinch River	Moderate Resource Value
WTL-21	Forested	35.998791	-84.187481	Clinch River	Moderate Resource Value
WTL-22	Forested	35.999488	-84.186327	Clinch River	Moderate Resource Value
WTL-23	Forested	36.000964	-84.184477	STR-2	Moderate Resource Value
*Unless described otherwise in the NEPA document; all wetlands are presumed to serve the following functions to varying degrees, based on location: wildlife habitat, flood storage, groundwater recharge, nutrient processing, contaminant filtering, and recreation.					

Note- Features referenced in this table are based on information available and may change as the project is further refined througout project development.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-1 (unnamed tributary to Clinch River/Melton Lake Res.)	Date/Time: 9/23/24 3:22 PM
Assessors/Affiliation: D. Hunter, S. Davis / Copperhead Environmental Consulting	Project ID : 124121.01
Site Name/Description: Anderson County; SR-170, From SR-62 to near Melton Lake Drive	
Site Location: STR-1 located right of SR-170 near STA 104+30 R	
HUC (12 digit): 060102070404, Clinch River - Conner Creek	Lat/Long:
Previous Rainfall (7-days) : 0.8 in	35.992918, -84.197547
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~70 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-1 has a stream has a defined bed and bank, hydric soils in channel, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	9/23/2024

1-Station: from plans	near STA 104+30 R									
2-Map label and name	STR-1									
3-Latitude/Longitude	35.992918, -84.197547									
4-Feature description:										
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc			
-HD score (if applicable)	N/A, Primary Indicator 6 (Presence of Fish) recorded									
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓
	change in plant community		destruction of terrestrial veg	✓	multiple observe flow events		sediment sorting	✓	water staining	
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank		shelving		wracking	
-channel bottom width	3-4 ft		-top of bank width		4-5ft					
-width and max depth at ordinary high water mark	3 ft, 2 inches									
-width at bankfull	3 ft									
-bank height	LDB - 1-2 ft		RDB - 1-2 ft							
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species: ----------(LDB /RDB)----------	LDB: shallow sedge, slippery elm									
	RDB: shallow sedge, slippery elm									
-particle size distribution %	Silt/Sand:	40	Gravel:	10	Cobble:	50	Boulder:	0	Bedrock:	0
5-photo numbers	4, 5									
6-HUC -8 Code & Name	06010207, Lower Clinch									
7-Assessed	yes		no	✓						
8-ETW	yes		no	✓						
9-303 (d) List	yes		siltation		habitat:		other:			
	no	✓								
10-Notes	STR-1 is a heavily manipulated intermittent stream located near the west end of the project area. STR-1 and originates as 2 WWC's within the interchange median and is diverted through concrete flumes and a system of culverts beneath SR-170 until it flows south into the Clinch River/Melton Hill Reservoir.									

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to near Melton Lake Drive PN 12412.01 City/County: Anderson County Sampling Date: 2024-09-23

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-1

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.992869 Long: -84.198882 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: R4SBC

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within NWI feature (upland) upstream of WTL-1, located right of SR-170 near STA 100+30 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	38	Y	FACU
2. *Ulmus rubra*	38	Y	FAC
3. *Acer rubrum*	15	N	FAC
4.			
5.			
6.			
7.			
	91.0 = Total Cover		
50% of total cover: 45.5	20% of total cover: 18.2		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera morrowii*	38	Y	FACU
2. *Ulmus rubra*	15	Y	FAC
3. *Asimina triloba*	3	N	FAC
4. *Ligustrum vulgare*	3	N	FACU
5.			
6.			
7.			
8.			
9.			
	59.0 = Total Cover		
50% of total cover: 29.5	20% of total cover: 11.8		
Herb Stratum (Plot size: 5 ' radius)			
1. *Fraxinus americana*	15	Y	FACU
2. *Microstegium vimineum*	3	N	FAC
3. *Asplenium platyneuron*	3	N	FACU
4. *Geum canadense*	3	N	FACU
5. *Polystichum acrostichoides*	3	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	27.0 = Total Cover		
50% of total cover: 13.5	20% of total cover: 5.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Euonymus fortunii*	38	Y	UPL
2. *Lonicera japonica*	15	Y	FACU
3.			
4.			
5.			
	53.0 = Total Cover		
50% of total cover: 26.5	20% of total cover: 10.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.57 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	74.00	x 3 =	222.00
FACU species	118.00	x 4 =	472.00
UPL species	38.00	x 5 =	190.00
Column Totals:	230.00 (A)		884.00 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/4	100					L	Gravelly
4-18	5YR 4/6	100					CL	Gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-23

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-1

Investigator(s): D. Hunter, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.992921 Long: -84.197492 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-1, located right of SR-170 near STA 104+30 R.
All parameters met; area is considered a palustrine scrub/shrub (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1
Water Table Present?	Yes ✓	No _____	Depth (inches): 9
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 7

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera morrowii*	38	Y	FACU
2. *Rosa multiflora*	15	Y	FACU
3. *Ulmus rubra*	15	Y	FAC
4. *Ligustrum vulgare*	3	N	FACU
5.			
6.			
7.			
8.			
9.			
	71.0 = Total Cover		
50% of total cover: 35.5	20% of total cover: 14.2		
Herb Stratum (Plot size: 5' radius)			
1. *Vernonia noveboracensis*	15	Y	FACW
2. *Dichanthelium dichotomum*	15	Y	FAC
3. *Carex lurida*	3	N	OBL
4. *Rubus pensilvanicus*	3	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	36.0 = Total Cover		
50% of total cover: 18.0	20% of total cover: 7.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Euonymus fortunii*	38	Y	UPL
2. *Vitis rotundifolia*	15	Y	FAC
3. *Lonicera japonica*	15	Y	FACU
4. *Toxicodendron radicans*	15	Y	FAC
5.			
	83.0 = Total Cover		
50% of total cover: 41.5	20% of total cover: 16.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55.56 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3.00	x 1 =	3.00
FACW species	15.00	x 2 =	30.00
FAC species	63.00	x 3 =	189.00
FACU species	71.00	x 4 =	284.00
UPL species	38.00	x 5 =	190.00
Column Totals:	190.00 (A)		696.00 (B)

Prevalence Index = B/A = 3.66

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					SICL	
4-12	10YR 4/2	85	7.5YR 4/6	15	C	M	C	
12-18	10YR 4/4	80	10YR 5/8	20	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/23/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter, S. Davis Wetland Name/Location WTL-1 near STA 106+00 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ cypress panicgrass	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ broadleaf ironweed	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ Morrow's honeysuckle
☐ _____	☐ _____	0 Number native herbaceous spp.		☑ multiflora rose

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: [(1.0 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.33

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 0.25
- ○ 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 value is the SI for **V7**= 0.50

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 1.00 (SCOV) V7 0.50 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.25 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-1

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Scrub-shrub wetland, WTL-1, located right of SR-170 near STA 106+00 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.46
	Function: Retain Particulates	--
	Function: Plant Community	0.33
	Function: Wildlife Community	0.34
	Quantitative Score (Average of FCIs x 100)	40.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	40.75

Ecology Field Data Sheet: **Other Resource Features**

(Caves/Rock Houses; Potential Sinkholes; Specialized Habitats; Other)

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive **PIN #:** 124121.01

Date of survey: 09/25/2024 **Biologist(s):** D. Hunter **Affiliation:** Copperhead

1-Station: from plans	from near STA 107+00 R to STA 119+00 L&R	
2-Map label	LAK-1	
3-Lat/Long	35.995777, -84.194816	
4-Potential impact size	~3.09 acres	
5-Feature name	Clinch River / Melton Hill Reservoir	
6-Feature description:		
~~w~~hat is the feature	Impoundment of the Clinch River, named the Melton Hill Reservoir	
portion affected	E and W of SR-170 at varying widths depending on the location within ETSA.	
connection to other features	Terminus of STR-1 abutted by WTL-1, 14, 15, 16, and 17.	
photo number(s)	7	
other information	The Melton Hill Reservoir is included in the 303d list and is listed as Non-Supporting.	
7- HUC code & name if applicable (12-digit)	060102070404, Clinch River - Conner Creek	
8-Notes	Nomenclature (LAK-1) was retained for all points where the reservoir intersects the ETSA.	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-14/15

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Baseslope Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.994539 Long: -84.196108 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point taken upslope of LAK-1 near the western boundary of the ETSA. The sample point is located within uplands adjacent to WTL-14 and WTL-15, located on the right side of SR-170near STA 110+95 R. Vegetation is maintained within transmission ROW. One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-14/15

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	15	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Allium vineale*	30	Y	FACU
2. *Lespedeza cuneata*	15	Y	FACU
3. *Andropogon glomeratus*	5	N	FACW
4. *Solidago canadensis*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	5.00	x 2 =	10.00
FAC species	0.00	x 3 =	0.00
FACU species	65.00	x 4 =	260.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		270.00 (B)

Prevalence Index = B/A = 3.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking. Vegetation maintained within transmission line ROW.

SOIL

Sampling Point: DPUPL-14/15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SICL	
3-18	10YR 4/3	75	10YR 6/1	10	D	M	SICL	Mix depletion/reduction
			7.5YR 5/4	15	D	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Indicators of hydric soils absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-14

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.9946586 Long: -84.1958587 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-14, located right of SR 170 near STA 112+00 R.
All parameters met; area is considered a palustrine scrub shrub (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 1
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-14

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No Rooted Trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix Nigra*	63	Y	OBL
2. *Ulmus rubra*	15		FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	78.0 = Total Cover		
50% of total cover: 39	20% of total cover: 15.6		
Herb Stratum (Plot size: 5' Radius)			
1. *Rosa multiflora*	15	Y	FACU
2. *Typha latifolia*	15	Y	OBL
3. *Eupatorium serotinum*	5		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	78.00	x 1 =	78.00
FACW species	5.00	x 2 =	10.00
FAC species	15.00	x 3 =	45.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	113.00 (A)		193.00 (B)

Prevalence Index = B/A = 1.71

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SCL	
3-18	10YR 6/2	80	10YR 5/6	20	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-14 near STA 112+00 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☑ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ broadleaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ multiflora rose
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.44

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 0.22
- ○ 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 value is the SI for **V7**= 0.47

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 1.00 (SCOV) V7 0.47 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.50 (TDEN) V6 0.25 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-14

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Scrub-shrub wetland, WTL-14, located right of SR 170 near STA 112+00 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.46
	Function: Retain Particulates	--
	Function: Plant Community	0.33
	Function: Wildlife Community	0.33
	Quantitative Score (Average of FCIs x 100)	40.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	40.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-23

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-15

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.9953703 Long: -84.1954789 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-15, located left of SR-170 near STA 114+40 L.
All parameters met; area is considered a palustrine emergent (PEM)) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 8
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-15

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Juncus effusus*	38	Y	FACW
2. *Scirpus georgianus*	38	Y	OBL
3. *Mimulus ringens*	15		OBL
4. *Solidago altissima*	3		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	94 = Total Cover		
50% of total cover: 47.0	20% of total cover: 18.8		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	53.00	x 1 =	53.00
FACW species	38.00	x 2 =	76.00
FAC species	0.00	x 3 =	0.00
FACU species	3.00	x 4 =	12.00
UPL species	0.00	x 5 =	0.00
Column Totals:	94.00 (A)		141.00 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (RapidTest) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SCL	
3-18	10YR 6/2	80	10YR 5/6	20	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-15 near STA 114+40 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ common rush	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ Georgia bulrush	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-15

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-15, located left of SR-170 near STA 114+40 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.32
	Function: Retain Particulates	--
	Function: Plant Community	0.20
	Function: Wildlife Community	0.20
	Quantitative Score (Average of FCIs x 100)	30.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	30.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-16

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.995690 Long: -84.193789 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓ No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-16, located right of SR-170 near STA 129+90 R.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-16

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	20	Y	FACW
2. *Acer saccharinum*	20	Y	FACW
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Lonicera maackii*	40	Y	UPL
2. *Ulmus rubra*	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Rosa multiflora*	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	40.00	x 2 =	80.00
FAC species	15.00	x 3 =	45.00
FACU species	5.00	x 4 =	20.00
UPL species	40.00	x 5 =	200.00
Column Totals:	100.00 (A)		345.00 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SCL	
3-18	10YR 6/2	80	10YR 5/6	20	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-16 near STA 129+90 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☑ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☑ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☐ _____	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	____ Number of native shrub spp.		☑ Amur honeysuckle
☐ _____	☐ _____	____ Number native herbaceous spp.		☑ Multiflora rose

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: [(1.0 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.40

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 0.30
- ○ 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 value is the SI for **V7**= 0.55

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.55 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 1.00 (TDEN) V6 0.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-16

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-16, located right of SR-170 near STA 129+90 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.50
	Function: Retain Particulates	--
	Function: Plant Community	0.62
	Function: Wildlife Community	0.47
	Quantitative Score (Average of FCIs x 100)	52.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	52.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-16/17

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.995914 Long: -84.193589 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point taken in uplands adjacent to WTL-16, located right of SR-170 near STA 120+30 R facing west.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-16/17

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Digitaria ciliaris*	50	Y	FACU
2. *Paspalum laeve*	50	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75.0 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	50.00	x 3 =	150.00
FACU species	50.00	x 4 =	200.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100 (A)		450.00 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-16/17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SICL	
2-18	10YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-17

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Baseslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.996121 Long: -84.194007 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-17, located left of SR-170 near STA 119+70 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-17

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	15	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Agrimonia parviflora*	30	Y	FACW
2. *Juncus effusus*	15	Y	FACW
3. *Conoclinium coelestinum*	10	N	FAC
4. *Solidago canadensis*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	45.00	x 2 =	90.00
FAC species	10.00	x 3 =	30.00
FACU species	20.00	x 4 =	80.00
UPL species	0.00	x 5 =	0.00
Column Totals:	75.00 (A)		200.00 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/4	100					SICL	
6-18	10YR 6/1	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 8

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-17 STA 119+70 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ harvestlice	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ common rush	☐ Phragmites
☐ Overcup oak	☐ _____	1 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.50
- ○ 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 value is the SI for **V7**= 0.70

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.70 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-17

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-17, located left of SR-170 near STA 119+70 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.32
	Function: Retain Particulates	--
	Function: Plant Community	0.22
	Function: Wildlife Community	0.22
	Quantitative Score (Average of FCIs x 100)	30.0
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	30.0

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-18

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.9963970 Long: -84.1925756 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-18, located right of SR-170 near STA 123+90 R.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-18

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	20	Y	FACW
2. *Platanus occidentalis*	20	Y	FACW
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Lonicera maackii*	40	Y	UPL
2. *Ulmus rubra*	15	Y	FAC
3. *Asimina triloba*	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Herb Stratum (Plot size: 5' Radius)			
1. *No rooted herbs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	40.00	x 2 =	80.00
FAC species	15.00	x 3 =	45.00
FACU species	5.00	x 4 =	20.00
UPL species	40.00	x 5 =	200.00
Column Totals:	100.00 (A)		345.00 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SCL	
3-18	10YR 6/2	80	10YR 5/6	20	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-18 near STA 129+90 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☑ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☑ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☐ _____	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ Amur honeysuckle
☐ _____	☐ _____	0 Number native herbaceous spp.		☑ multiflora rose

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: [(1.0 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.40

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 0.30
- ○ 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 value is the SI for **V7**= 0.55

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.55 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 1.00 (TDEN) V6 0.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-18

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-18, located right of SR-170 near STA 129+90 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.50
	Function: Retain Particulates	--
	Function: Plant Community	0.62
	Function: Wildlife Community	0.47
	Quantitative Score (Average of FCIs x 100)	52.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	52.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-18/19

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.99623323 Long: -84.1925695 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken in uplands adjacent to WTL-18, located right of SR-170 near STA 127+70 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-18/19

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Digitaria ciliaris*	50	Y	FACU
2. *Paspalum laeve*	30	Y	FAC
3. *Cynodon dactylon*	20		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.0 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	30.00	x 3 =	90.00
FACU species	80.00	x 4 =	320.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100 (A)		410.00 (B)

Prevalence Index = B/A = 4.1

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-18/19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SICL	
2-18	10YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-23

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-19

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.9966920 Long: -84.1925905 Datum: WGS84

Soil Map Unit Name: Collegedale clay, 12 to 20 percent slopes, severely eroded NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-19, located left of SR-170 near STA 127+90 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 8
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-19

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No Rooted Trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0.0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No Rooted Saplings/Shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0.0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Vernonia noveboracensis*	20	Y	FACW
2. *Microstegium vimineum*	20	Y	FAC
3. *Hibiscus moscheutos*	15	Y	OBL
4. *Asclepias incarnata*	5	N	FACW
5. *Carex lurida*	5	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	65.0 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	25.00	x 2 =	50.00
FAC species	25.00	x 3 =	75.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		160.00 (B)

Prevalence Index = B/A = 2.29

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	90	10YR 4/4	10	C	M	SIL	
4-18	10YR 6/1	95	10YR 4/4	5	C	PL	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-19 near STA 140+25 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☑ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ ironweed	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ swamp rose mallow	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.44

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 0.22
- ○ 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 value is the SI for **V7**= 0.47

*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. 70 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.47 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-19

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Scrub-shrub wetland, WTL-19, located left of SR-170 near STA 140+25 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.32
	Function: Retain Particulates	--
	Function: Plant Community	0.19
	Function: Wildlife Community	0.19
	Quantitative Score (Average of FCIs x 100)	30.0
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	30.0

Ecology Field Data Sheet: **Other Resource Features**

(Caves/Rock Houses; Potential Sinkholes; Specialized Habitats; Other)

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive **PIN #:** 124121.01

Date of survey: 09/25/2024 **Biologist(s):** D. Hunter **Affiliation:** Copperhead

1-Station: from plans	from near STA 123+50 L&R to STA 129+90 L&R	
2-Map label	LAK-1	
3-Lat/Long	35.997196, -84.191841	
4-Potential impact size	~2.98 acres	
5-Feature name	Clinch River / Melton Hill Reservoir	
6-Feature description:		
~~w~~hat is the feature	Impoundment of the Clinch River, named the Melton Hill Reservoir	
portion affected	Up to 150 ft left of SR-170, up to 170 ft right of SR-170	
connection to other features	Abutted by several wetlands including WTL-2, 18, 19, and 20.	
photo number(s)	7	
other information	The Melton Hill Reservoir is included in the 303d list and is listed as Non-Supporting.	
7- HUC code & name if applicable (12-digit)	060102070404, Clinch River - Conner Creek	
8-Notes	Nomenclature (LAK-1) was retained for all points where the reservoir intersects the ETSA.	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-2

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.997725 Long: -84.190703 Datum: WGS84

Soil Map Unit Name: Collegedale clay, 12 to 20 percent slopes, severely eroded NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-2, located left of SR-170 near STA 129+90 L.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 8
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-2

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Nyssa sylvatica*	15	Y	FAC
2. *Acer rubrum*	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Acer rubrum*	5	Y	FAC
2. *Liquidambar styraciflua*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10.0 = Total Cover		
50% of total cover: 5.0	20% of total cover: 2.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Bidens aristosa*	20	Y	FACW
2. *Microstegium vimineum*	20	Y	FAC
3. *Typha latifolia*	15	Y	OBL
4. *Chasmanthium latifolium*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35.00	x 1 =	35.00
FACW species	0.00	x 2 =	0.00
FAC species	60.00	x 3 =	180.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		235.00 (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	90	10YR 4/4	10	C	M/PL	SIL	
4-18	10YR 6/1	95	10YR 4/4	5	C	PL	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-2 near STA 129+90 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☑ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☑ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☑ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ broad-leaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ bearded beggartick	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	1 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 1.00 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-2

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-2, located left of SR-170 near STA 129+90 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.50
	Function: Retain Particulates	--
	Function: Plant Community	0.68
	Function: Wildlife Community	0.51
	Quantitative Score (Average of FCIs x 100)	54.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	54.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-2/20

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Noseslope Local relief (concave, convex, none): convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.997663 Long: -84.190700 Datum: WGS84

Soil Map Unit Name: Collegedale clay, 12 to 20 percent slopes, severely eroded NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken in uplands adjacent to WTL-2 and WTL-20 near STA 129+90 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-2/20

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus Montana*	30	Y	UPL
2. *Acer rubrum*	15	Y	FAC
3. *Juniperus virginiana*	10	N	FACU
4. *Liquidambar styraciflua*	5	N	FAC
5.			
6.			
7.			
	60.0	= Total Cover	
50% of total cover: 30.0	20% of total cover: 12.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ulmus alata*	15	Y	FACU
2. *Campsis radicans*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20.0	= Total Cover	
50% of total cover: 10.0	20% of total cover: 4.0		
Herb Stratum (Plot size: 5' Radius)			
1. *No rooted herbs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0	= Total Cover	
50% of total cover: 0.0	20% of total cover: 0.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0	= Total Cover	
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	30.00	x 3 =	90.00
FACU species	25.00	x 4 =	100.00
UPL species	30.00	x 5 =	150.00
Column Totals:	85.00 (A)		340.00 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPUPL-2/20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SIL	
2-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-20

Investigator(s): I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.997030 Long: -84.190625 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: L1UBHh

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-20, located right of SR-170 near STA 129+90 R.
All parameters met; area is considered a palustrine scrub/shrub (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-20

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ligustrum sinense*	38	Y	FACU
2. *Eleagnus umbellata*	3	N	UPL
3. *Cercis canadensis*	3	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	20.0 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Paspalum laeve*	50	Y	FAC
2. *Andropogon virginicus*	3	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	53.0 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Smilax rotundifolia*	15	Y	FAC
2. *Lonicera japonica*	3	N	FACU
3.			
4.			
5.			
	18 = Total Cover		
50% of total cover: 9.0	20% of total cover: 3.6		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	65	x 3 =	195.00
FACU species	47	x 4 =	188.00
UPL species	3	x 5 =	15
Column Totals:	115.00 (A)		398.00 (B)

Prevalence Index = B/A = 3.46

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

Vegetation disturbed due to recent mowing/human activity.

SOIL

Sampling Point: DPWTL-20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					SICL	
8-18	10YR 6/2	90	10YR 5/6	10	C	M/PL	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-20 near STA 129+90 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☑ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ beardgrass	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.33

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 value is the SI for **V7**= 0.08

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.08 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 1.00 (TDEN) V6 0.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-20

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-20, located right of SR-170 near STA 129+90 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.50
	Function: Retain Particulates	--
	Function: Plant Community	0.52
	Function: Wildlife Community	0.39
	Quantitative Score (Average of FCIs x 100)	47.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	47.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 12412.01 City/County: Anderson County Sampling Date: 2024-10-02

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: DPWTL-21

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.998735 Long: -84.187455 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes** ✓ **No** ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within wetland WTL-21, located right of SR-170 near STA 140+25 R.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** ✓ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-21

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharinum	20	Y	FACW
2. Fraxinus pennsylvanica	20	Y	FACW
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Lonicera maackii	40	Y	UPL
2. Ulmus rubra	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Herb Stratum (Plot size: 5' radius)			
1. Rosa multiflora	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. No rooted vines			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	40	x 5 =	200
Column Totals:	100 (A)		345.00 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SCL	
3-18	10YR 6/2	80	10YR 5/6	20	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/25/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter Wetland Name/Location WTL-21 near STA 140+25 R

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☑ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☑ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Flowering dogwood	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	____ Number of native shrub spp.		☑ Amur honeysuckle
☐ _____	☐ _____	____ Number native herbaceous spp.		☑ Multiflora rose

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: [(1.0 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.44

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 — 0.44
- ○ 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 value is the SI for **V7**= 0.66

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.66 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.75 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-21

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-21, located right of SR-170 near STA 140+25 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.47
	Function: Retain Particulates	--
	Function: Plant Community	0.59
	Function: Wildlife Community	0.45
	Quantitative Score (Average of FCIs x 100)	50
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	50

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 12412.01 City/County: Anderson County Sampling Date: 2024-10-02

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: DPUPL-3/21

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.998883 Long: -84.188057 Datum: WGS84

Soil Map Unit Name: Collegedale clay, 12 to 20 percent slopes, severely eroded NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Sample point taken within maintained transmission ROW adjacent to WTL-3 and WTL-21 on the left side of SR-170 near STA 139+50 L. One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-3/21

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. No rooted trees			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. No rooted shrubs			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. Allium vineale	30	Y	FACU
2. Lespedeza cuneata	15	Y	FACU
3. Andropogon glomeratus	5	N	FACW
4. Solidago canadensis	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. No rooted vines			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	55 (A)		210.00 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ___ **No** ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking. Vegetation maintained within transmission line ROW.

SOIL Sampling Point: DPUPL-3/21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SICL	
3-18	10YR 4/3	75	10YR 6/1	10	D	M	SICL	Mixed depletion/reduction
			7.5YR 5/4	15	D	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Indicators of hydric soils absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-3

Investigator(s): I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.999193 Long: -84.187497 Datum: WGS84

Soil Map Unit Name: Water NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-3, located on the left side of SR-170 near STA 143+50 L.
All parameters met; area is considered a palustrine emergent (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 9
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-3

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	25	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	25.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 5.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	30	Y	OBL
2. *Arthraxon hispidus*	25	Y	FAC
3. *Microstegium vimineum*	20	Y	FAC
4. *Carex frankii*	10	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85.0 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65.00	x 1 =	65.00
FACW species	0.00	x 2 =	0.00
FAC species	45.00	x 3 =	135.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	110.00 (A)		200.00 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 6/1	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley Wetland Name/Location WTL-3 near STA 143+50 L

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☑ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ broad-leaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ small carpetgrass
☐ _____	☐ _____	0 Number native herbaceous spp.		☑ Nepalese browntop

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: [(1.0 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.33

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 0.17
- ○ 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 value is the SI for **V7**= 0.41

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 1.00 (SCOV) V7 0.41 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-3

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Scrub-shrub wetland, WTL-3, located on the left side of SR-170 near STA 143+50 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.46
	Function: Retain Particulates	--
	Function: Plant Community	0.32
	Function: Wildlife Community	0.32
	Quantitative Score (Average of FCIs x 100)	40
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	40

Ecology Field Data Sheet: **Other Resource Features**

(Caves/Rock Houses; Potential Sinkholes; Specialized Habitats; Other)

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive **PIN #:** 124121.01

Date of survey: 09/25/2024 **Biologist(s):** D. Hunter **Affiliation:** Copperhead

1-Station: from plans	from near STA 140 +25 to STA 150+85 L & R	
2-Map label	LAK-1	
3-Lat/Long	35.99941, -8418727	
4-Potential impact size	~1.41-acres	
5-Feature name	Clinch River / Melton Hill Reservoir	
6-Feature description:		
~~w~~hat is the feature	Impoundment of the Clinch River, named the Melton Hill Reservoir	
portion affected	Up to 130 ft NW of SR-170	
connection to other features	Abuts WTL-3, 21, 22, and 23. Terminus of STR-2	
photo number(s)	7	
other information	The Melton Hill Reservoir is included in the 303d list and is listed as Non-Supporting.	
7- HUC code & name if applicable (12-digit)	060102070404, Clinch River - Conner Creek	
8-Notes	Nomenclature (LAK-1) was retained for all points where the reservoir intersects the ETSA.	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-22

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Dip Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.999417 Long: -84.186460 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓ No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-22, located right of SR-170 near STA 146+00 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ✓ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 12
Water Table Present?	Yes ✓	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-22

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Celtis occidentalis*	15	Y	FACU
2. *Ulmus rubra*	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Cornus amomum*	15	Y	FACW
2. *Ulmus rubra*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Iris pseudoacorus*	50	Y	OBL
2. *Persicaria hydropiperoides*	30	Y	OBL
3. *Iva annua*	5	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85.0 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80.00	x 1 =	80.00
FACW species	15.00	x 2 =	30.00
FAC species	25.00	x 3 =	75.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	135.00 (A)		245.00 (B)

Prevalence Index = B/A = 1.81

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					SIL	
3-16	10YR 6/1	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Concrete

Depth (inches): 6

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

Soils are undconsolidated below 16".

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-22 near STA 146+00 R

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☑	3. Wetland depth moderately impacted (SI = 0.5)		
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☐	4. Wetland depth significantly impacted (SI = 0.25)		
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	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
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V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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1. Average size of canopy trees > 3 in. DBH

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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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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. *

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☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☑ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ paleyellow iris	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ swamp smartweed	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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.

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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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

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TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-22

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-22, located right of SR-170 near STA 146+00 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.50
	Function: Retain Particulates	--
	Function: Plant Community	0.68
	Function: Wildlife Community	0.51
	Quantitative Score (Average of FCIs x 100)	54.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	54.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 12412.01 City/County: Anderson County Sampling Date: 2024-10-02

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: DPUPL-22

Investigator(s): I. Bentley, S. David Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 35.999783 Long: -84.185712 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-22 located on the right side of SR-170 near STA 147+00 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-22

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. No rooted trees			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. No rooted shrubs			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. Digitaria ciliaris	50	Y	FAC
2. Paspalum laeve	50	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.0 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. No rooted vines			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300.00 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPUPL-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SICL	
2-18	10YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 12412.01 City/County: Anderson County Sampling Date: 2024-10-02

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: DPWTL-23

Investigator(s): D. Hunter Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.000705 Long: -84.184723 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓ No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-23 located left of SR-170 near STA 150+85 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-23

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus rubra	15	Y	FAC
2. Celtis occidentalis	10	Y	FACU
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Liquidambar styraciflua	15	Y	FAC
2. Platanus occidentalis	15	Y	FACW
3. Ulmus rubra	4	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	34.0 = Total Cover		
50% of total cover: 17.0	20% of total cover: 6.8		
Herb Stratum (Plot size: 5' radius)			
1. Iris pseudacorus	20	Y	OBL
2. Iva annua	20	Y	FAC
3. Typha latifolia	20	Y	OBL
4. Rudbeckia triloba	10	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. No rooted vines			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	15	x 2 =	30
FAC species	54	x 3 =	162
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	129 (A)		312.00 (B)

Prevalence Index = B/A = 2.42

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					SIL	
3-16	10YR 6/1	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Concrete

Depth (inches): 6

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.
Soils unconsolidated below 16".

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-23 near STA 150+85 R

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
✓	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☑ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☑ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ hackberry	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ yellow iris	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	2 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 1.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-23

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-23, located left of SR-170 near STA 150+85 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.50
	Function: Retain Particulates	--
	Function: Plant Community	0.68
	Function: Wildlife Community	0.51
	Quantitative Score (Average of FCIs x 100)	54.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	54.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-23

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.0011992 Long: -84.1842919 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-23 located right of SR-170 near STA 156+60 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-23

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	40	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Liriodendron tulipifera*	15	Y	FACU
2. *Cercis canadensis*	10	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	30	Y	FAC
2. *Lespedeza cuneata*	30	Y	FACU
3. *Vernonia gigantea*	10	N	FAC
4. *Solidago canadensis*	5	N	FACU
5. *Rudbeckia hirta*	5	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	80.0 = Total Cover		
50% of total cover: 40.0	20% of total cover: 16.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted Vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	40.00	x 3 =	120.00
FACU species	105.00	x 4 =	420.00
UPL species	0.00	x 5 =	0.00
Column Totals:	145.00 (A)		540.00 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-1	Date/Time: 9/24/24 2:32 PM
Assessors/Affiliation: D. Hunter, S. Davis / Copperhead Environmental Consulting	Project ID : 124121.01
Site Name/Description: SR-170 From SR-62 to near Melton Lake Drive	
Site Location: WWC-1 located near STA 154+50	
HUC (12 digit): 060102070404, Clinch River - Conner Creek	Lat/Long:
Previous Rainfall (7-days) : ~1 inch	36.001542, -84.184443
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : <10 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Suburban/urban, light forest	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	☐	WWC ✓
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions N/A	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 = WWC

Secondary Indicator Score (if applicable) = 14.5

Justification / Notes :

WWC-1/EPH-1 is an upland swale dominated by upland vegetation west of SR-170. East of the road, it becomes channelized and shows signs of periodic ponding/flow. Channel is poorly defined and water (standing or flowing) is absent except immediately below culvert.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	1
4. Sorting of soil textures or other substrate	0	1	2	3	0.5
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	1.5	.5
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 2.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	1
17. Sediment on plants or on debris	0	0.5	1	1.5	0
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 7.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	1
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	1
25. Macrobenthos (record type & abundance)	0	1	2	3	1
26. Filamentous algae; periphyton	0	1	2	3	1
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	0.5

[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 :

Snails observed in abundance in pool beneath culvert, adult frogs observed near culvert as well. Channel is poorly defined otherwise heavily altered by mowing/roadway activity.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	9/23/2024

1-Station: from plans	near STA 154+50										
2-Map label and name	WWC-1										
3-Latitude/Longitude	36.001542, -84.184443										
4-Feature description:											
-channel identification	perennial stream	☐	intermittent stream	☐	ephemeral stream	☐	wwc	☑			
-HD score (if applicable)	14.5										
-OHWM indicators	bed & banks	☑	deposition	☐	presence of litter debris	☐	scour	☐	veg absent, bent, matted	☑	
	change in plant community	☑	destruction of terrestrial veg	☐	multiple observe flow events	☐	sediment sorting	☐	water staining	☐	
	change in soil character	☐	leaf litter disturb or absent	☐	natural line impressed on bank	☐	shelving	☐	wracking	☐	
-channel bottom width	1-2 ft		-top of bank width		2-3 ft						
-width and max depth at ordinary high water mark	4 ft, 20 inches (beneath culvert)										
-width at bankfull	1 ft										
-bank height	LDB - 0-1 ft		RDB - 0-1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: fescue, white clover										
	RDB: fescue, white clover										
-particle size distribution %	Silt/Sand: 100		Gravel: 0		Cobble: 0		Boulder: 0		Bedrock: 0		
5-photo numbers	26										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes	☐			no	☑					
8-ETW	yes	☐			no	☑					
9-303 (d) List	yes	☐			siltation	☐	habitat:	☐ ☐ ☐	other:	☐ ☐ ☐	
	no	☑									
10-Notes	WWC-1 is a discontinuous wet weather conveyance channel that is dominated by upland species. WWC-1 flows southwest underneath SR-170 via culvert and forms a channel bordering WTL-4 until its confluence with STR-2.										

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-26

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-4

Investigator(s): D. Hunter, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.002003 Long: -84.183697 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-4, located right of SR-170 near STA 157+30 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 2
Water Table Present?	Yes ✓	No _____	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 2

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-4

Tree Stratum (Plot size: 15' x 190' rectangle)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' x 45' rectangle)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Typha latifolia*	38	Y	OBL
2. *Carex frankii*	38	Y	OBL
3. *Juncus effusus*	15	N	FACW
4. *Lobelia siphilitica*	15	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	106.0 = Total Cover		
50% of total cover: 53.0	20% of total cover: 21.2		
Woody Vine Stratum (Plot size: 15'x190' rectangle)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	76.00	x 1 =	76.00
FACW species	30.00	x 2 =	60.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	106.00 (A)		136.00 (B)

Prevalence Index = B/A = 1.28

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					SIC	
3-10	10YR 5/1	85	7.5YR 4/6	15	C	M	C	Refusal due to bedrock below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 10

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/26/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter, S. Davis Wetland Name/Location WTL-4 near STA 157+30 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Frank's sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ broad-leaf cattail	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-4

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-4, located right of SR-170 near STA 157+30 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-26

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-4

Investigator(s): D. Hunter, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.001931 Long: -84.183646 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands surrounding WTL-4, located right of SR-170 near STA 157+00 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Surface water present due to recent heavy rainfall only.

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-4

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Rubus pensilvanicus*	15	Y	FAC
2. *Apocynum cannabinum*	15	Y	FACU
3. *Verbesina virginica*	15	Y	UPL
4. *Allium vineale*	15	Y	FACU
5. *Solidago altissima*	3	N	FACU
6. *Perilla frutescens*	3	N	FACU
7.			
8.			
9.			
10.			
11.			
	66.0 = Total Cover		
50% of total cover: 33.0	20% of total cover: 13.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Smilax rotundifolia*	38	Y	FAC
2. *Lonicera japonica*	15	Y	FACU
3.			
4.			
5.			
	53.0 = Total Cover		
50% of total cover: 26.5	20% of total cover: 10.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	53.00	x 3 =	159.00
FACU species	51.00	x 4 =	204.00
UPL species	15.00	x 5 =	75.00
Column Totals:	119.00 (A)		438.00 (B)

Prevalence Index = B/A = 3.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	100					L	
3-18	5YR 4/3	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-2	Date/Time: 9/24/24 2:43 PM
Assessors/Affiliation: D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.01
Site Name/Description: Anderson County; SR-170, From SR-62 to near Melton Lake Drive	
Site Location: STR-2 located right of SR-170 from near STA 152+50 R to near STA 158+0 R	
HUC (12 digit): 060102070404, Clinch River - Conner Creek	Lat/Long:
Previous Rainfall (7-days) : ~1 inch	36.001580, -84.183889
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~170 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 12 to 20 percent slopes	Source: NRCS
Surrounding Land Use : Suburban/urban, light forest	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-2 is a perennial stream with a defined bed and bank originating from a series of wetlands west of SR-170. Flowing water was observed during the survey period (dry season), and Lepomis sp. were observed within the channel on either side of SR-170 during the survey.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01					
Biologist:	D. Hunter & I. Bentley	**Affiliation:**	Copperhead	**Date:**	9/24/2024

1-Station: from plans	located left and right of SR-170 near STA 152+50 R to near STA 158+0 R										
2-Map label and name	STR-2										
3-Latitude/Longitude	36.001580, -84.183889										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (presence of fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓	
	change in plant community	✓	destruction of terrestrial veg		multiple observe flow events	✓	sediment sorting		water staining		
	change in soil character		leaf litter disturb or absent	✓	natural line impressed on bank		shelving		wracking		
-channel bottom width	3-4 ft		-top of bank width		4-5 ft						
-width and max depth at ordinary high water mark	3 ft, 6 inches										
-width at bankfull	3 ft										
-bank height	LDB - 1-2 ft		RDB - 1-2 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Dallis Grass, tall false ryegrass, tall goldenrod, spreading dogbane, Sycamore and Red Maple East of SR-170										
	RDB: Dallis Grass, tall false ryegrass, tall goldenrod, spreading dogbane, Sycamore and Red Maple East of SR-170										
-particle size distribution %	Silt/Sand:	80	Gravel:	10	Cobble:	5	Boulder:	0	Bedrock:	5	
5-photo numbers	29										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes		no	✓							
8-ETW	yes		no	✓							
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									
10-Notes	STR-2 is a upper perennial stream fed by a series of wetlands and WWC's located right of SR-170. STR-2 is culverted beneath the roadway (SR-170) to its terminus at LAK-1 (Clinch River).										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-2	Date/Time: 9/24/24 2:43 PM
Assessors/Affiliation: D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.01
Site Name/Description: Anderson County; SR-170, From SR-62 to near Melton Lake Drive	
Site Location: STR-2 located left of SR-170 from near STA158 +00 L to near 167+80 L	
HUC (12 digit): 060102070404, Clinch River - Conner Creek	Lat/Long:
Previous Rainfall (7-days) : ~1 inch	36.003568, -84.182456
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~170 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 12 to 20 percent slopes	Source: NRCS
Surrounding Land Use : Suburban/urban, light forest	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-2 is a perennial stream with a defined bed and bank originating from a series of wetlands west of SR-170. Flowing water was observed during the survey period (dry season), and Lepomis sp. were observed within the channel on either side of SR-170 during the survey.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01					
Biologist:	D. Hunter & I. Bentley	**Affiliation:**	Copperhead	**Date:**	9/24/2024

1-Station: from plans	located left and right of SR-170 from near STA 167+80 to near STA 157+30										
2-Map label and name	STR-2										
3-Latitude/Longitude	36.003568, -84.182456										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (presence of fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓	
	change in plant community	✓	destruction of terrestrial veg		multiple observe flow events	✓	sediment sorting		water staining		
	change in soil character		leaf litter disturb or absent	✓	natural line impressed on bank		shelving		wracking		
-channel bottom width	3-4 ft		-top of bank width		4-5 ft						
-width and max depth at ordinary high water mark	3 ft, 6 inches										
-width at bankfull	3 ft										
-bank height	LDB - 1-2 ft		RDB - 1-2 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Dallis Grass, tall false ryegrass, tall goldenrod, spreading dogbane, Sycamore and Red Maple East of SR-170										
	RDB: Dallis Grass, tall false ryegrass, tall goldenrod, spreading dogbane, Sycamore and Red Maple East of SR-170										
-particle size distribution %	Silt/Sand:	80	Gravel:	10	Cobble:	5	Boulder:	0	Bedrock:	5	
5-photo numbers	30										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes		no	✓							
8-ETW	yes		no	✓							
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									
10-Notes	STR-2b is a upper perennial stream fed by a series of wetlands and WWC's located right of SR-170. STR-2b is culverted beneath the roadway (SR-170) to its terminus at LAK-1 (Clinch River).										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-2	Date/Time: 9/24/24 4:01 PM
Assessors/Affiliation: D. Hunter, S. Davis / Copperhead Environmental Consulting	Project ID : 124121.01
Site Name/Description: Anderson County; SR-170, From SR-62 to near Melton Lake Drive	
Site Location: WWC-2 located near STA 171+12	
HUC (12 digit): 060102070404, Clinch River - Conner Creek	Lat/Long:
Previous Rainfall (7-days) : ~1 inch	36.004410, -84.181308
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~45 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 12 to 20 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, suburban/urban, light forest	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	☐	WWC ✓
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions N/A	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 = WWC

Secondary Indicator Score (if applicable) = 15

Justification / Notes :

WWC-2/EPH-2 is an artificial roadside drainage ditch storing minimal water and exhibiting no flow even after 6 hours of continuous precipitation. Secondary indicators scored as supporting evidence.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	0
4. Sorting of soil textures or other substrate	0	1	2	3	0.5
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0.5
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 3.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	0.5
15. Water in channel and >48 hours since sig. rain	0	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	1
17. Sediment on plants or on debris	0	0.5	1	1.5	0.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 7)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0.5
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0.5
25. Macrobenthos (record type & abundance)	0	1	2	3	0
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	1

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 15

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Crayfish burrows observed in channel bed, hydric soils present within portion of feature that borders WTL-12 but absent below. No flow observed after 6 hours of continuous light to moderate precipitation, some standing water present but <1in deep. Secondary indicators scored as supporting evidence.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	9/23/2024

1-Station: from plans	near STA 171+12										
2-Map label and name	WWC-2										
3-Latitude/Longitude	36.004410, -84.181308										
4-Feature description:											
-channel identification	perennial stream		intermittent stream		ephemeral stream		wwc	✓			
-HD score (if applicable)	15										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour	✓	veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character		leaf litter disturb or absent		natural line impressed on bank		shelving		wracking		
-channel bottom width	1-2 ft		-top of bank width		1-2 ft						
-width and max depth at ordinary high water mark	2 ft, 1 inch										
-width at bankfull	2 ft										
-bank height	LDB - 0-1 ft		RDB - 0-1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Indian hemp, white crownbeard, tall goldenrod										
	RDB: Indian hemp, white crownbeard, tall goldenrod										
-particle size distribution %	Silt/Sand: 80		Gravel: 10		Cobble: 10		Boulder: 0		Bedrock: 0		
5-photo numbers	31										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes			no	✓						
8-ETW	yes			no	✓						
9-303 (d) List	yes			siltation			habitat:		other:		
	no	✓									
10-Notes	WWC-2 is a wet weather conveyance that originates from WTL-13 and flows through WTL-12 and WTL-4. Within WTL-4, WWC-2 confluences with an upper perennial riverine feature, STR-2.										

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-5

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.002747 Long: -84.183625 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-5, located left of SR-170 near STA 156+60 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-5

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Juncus effusus*	20	Y	FACW
2. *Dichanthelium clandestinum*	10	Y	FAC
3. *Carex frankii*	10	Y	OBL
4. *Rubus pensilvanicus*	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10.00	x 1 =	10.00
FACW species	20.00	x 2 =	40.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	45.00 (A)		95.00 (B)

Prevalence Index = B/A = 2.11

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2						SICL	
3-18	10YR 4/2	90	10YR 5/6	10	C	M/PL	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (depleted matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-5 near STA 156+60 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ common rush	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ deertongue	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	1 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.50
- ○ 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 value is the SI for **V7**= 0.70

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.70 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.50 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-5

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-5, located left of SR-170 near STA 156+60 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.27
	Function: Retain Particulates	--
	Function: Plant Community	0.19
	Function: Wildlife Community	0.19
	Quantitative Score (Average of FCIs x 100)	28.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	28.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-5/6/7

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.002611 Long: -84.183520 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken adjacent to WTL-5, WTL-6, and WTL-7 located left of SR-170 near STA 159+30 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-5, 6, 7

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Paspalum laeve*	30	Y	FAC
2. *Solidago canadensis*	15	Y	FACU
3. *Dipsacus fullonum*	10	N	FACU
4. *Rubus pensilvanicus*	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Calystegia sepium*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	40.00	x 3 =	120.00
FACU species	25.00	x 4 =	100.00
UPL species	0.00	x 5 =	0.00
Column Totals:	65.00 (A)		220.00 (B)

Prevalence Index = B/A = 3.38

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPUPL-5, 6, 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-6

Investigator(s): I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.002611 Long: -84.183306 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-6, located left of SR-170 near STA 160+20 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-6

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex lupulina*	25	Y	OBL
2. *Carex frankii*	15	Y	OBL
3. *Symphyotrichum lateriflorum*	10	N	FACW
4. *Juncus effusus*	10	N	FACW
5. *Persicaria lapathifolia*	10	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40.00	x 1 =	40.00
FACW species	30.00	x 2 =	60.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		100.00 (B)

Prevalence Index = B/A = 1.43

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					SL	
2-5	10YR 6/2	90	7.5YR 5/3	10	C	M/PL	SCL	
5-18	10YR 5/2	90	7.5YR 5/3	10	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley Wetland Name/Location WTL-6 near STA 160+20 L

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ hop sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ Frank's sedge	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-6

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-6, located left of SR-170 near STA 160+20L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake DR PIN 12412.01 City/County: Anderson County Sampling Date: 2024-10-03

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-7

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.002708 Long: -84.183345 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-7, located left of SR-170 near STA 160+20 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 6
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-7

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	30	Y	OBL
2. *Juncus effusus*	15	Y	FACW
3. *Paspalum laeve*	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	15.00	x 2 =	30.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	60.00 (A)		105.00 (B)

Prevalence Index = B/A = 1.75

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only

SOIL

Sampling Point: DPWTL-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 6/2	100					SICL	
6-18	10YR 5/2	90	10YR 5/4	10	C	M/PL	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/03/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-7 near STA 160+20 L

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ broad-leaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ common rush	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	1 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.50
- ○ 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 value is the SI for **V7**= 0.70

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.70 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-7

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-7, located left of SR-170 near STA 160+20 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.32
	Function: Retain Particulates	--
	Function: Plant Community	0.22
	Function: Wildlife Community	0.22
	Quantitative Score (Average of FCIs x 100)	31.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	31.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-26

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-8

Investigator(s): D. Hunter, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.003835 Long: -84.182384 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: R4SBC

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 ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-8, located left of SR-170 near STA 165+00 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 2
Water Table Present?	Yes ✓	No ____	Depth (inches): 14
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 4

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-8

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Typha latifolia*	38	Y	OBL
2. *Leersia oryzoides*	15	Y	OBL
3. *Carex frankii*	15	Y	OBL
4. *Juncus effusus*	15	Y	FACW
5. *Scirpus georgianus*	15	Y	OBL
6. *Solidago rugosa*	3	N	FAC
7. *Lobelia siphilitica*	3	N	FACW
8. *Cyperus strigosus*	3	N	FACW
9.			
10.			
11.			
	107.0 = Total Cover		
50% of total cover: 53.5	20% of total cover: 21.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	83.00	x 1 =	83.00
FACW species	21.00	x 2 =	42.00
FAC species	3.00	x 3 =	9.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	107.00 (A)		134.00 (B)

Prevalence Index = B/A = 1.25

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	82	7.5YR 4/6	18	C	M/PL	SIL	
3-12	10YR 5/1	95	7.5YR 4/6	5	C	M	CL	
12-18	10YR 5/2	70	10YR 5/1	30	D	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/26/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter, S. Davis Wetland Name/Location WTL-8 near STA 165+00 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ broad-leaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ rice cutgrass	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	3 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-8

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-8, located left of SR-170 near STA 165+00 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.26
	Function: Wildlife Community	0.26
	Quantitative Score (Average of FCIs x 100)	34.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	34.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-26

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-8

Investigator(s): D. Hunter, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.003371 Long: -84.182784 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: R4SBC

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 ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within NWI mapped feature (upland) west of WTL-8, located left of SR-170 near STA 165+00 L. One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Surface water present due to recent heavy rainfall only.

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-8

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Schedonorus arundinaceus*	38	Y	FACU
2. *Symphyotrichum racemosum*	15	Y	FACW
3. *Apocynum cannabinum*	15	Y	FAC
4. *Rubus pensilvanicus*	15	Y	FAC
5. *Solidago altissima*	15	Y	FACU
6. *Agrimonia parviflora*	3	N	FACW
7. *Verbesina virginica*	3	N	UPL
8. *Desmodium paniculatum*	3	N	FACU
9.			
10.			
11.			
	107.0 = Total Cover		
50% of total cover: 53.5	20% of total cover: 21.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Campsis radicans*	38	Y	FAC
2. *Lonicera japonica*	15	Y	FACU
3.			
4.			
5.			
	53.0 = Total Cover		
50% of total cover: 26.5	20% of total cover: 10.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	18.00	x 2 =	36.00
FAC species	68.00	x 3 =	204.00
FACU species	86.00	x 4 =	344.00
UPL species	3.00	x 5 =	15.00
Column Totals:	160.00 (A)		589.00 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with >50% of dominant species FAC or wetter; parameter met.

SOIL

Sampling Point: DPUPL-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	100					L	
5-12	10YR 5/3	100					CL	
12-18	10YR 6/3	85	10YR 4/6	15	C	M	SC	Disturbed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 12412.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: DPWTL-12

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.0051399 Long: -84.1805596 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-12, located right of SR-170 near STA 176+90 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWET-12

Tree Stratum (Plot size: 190' x 15' rectangle)	Absolute % Cover	Dominant Species?	Indicator Status
1. No rooted trees			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' x 45' rectangle)			
1. Platanus occidentalis	3	Y	FACW
2. Salix nigra	3	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	6.0 = Total Cover		
50% of total cover: 3.0	20% of total cover: 1.2		
Herb Stratum (Plot size: 5' radius)			
1. Juncus effusus	85	Y	FACW
2. Mimulus ringens	15	N	OBL
3. Scirpus georgianus	3	N	OBL
4. Bidens aristosa	2	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105.0 = Total Cover		
50% of total cover: 52.5	20% of total cover: 21.0		
Woody Vine Stratum (Plot size: 190' x 15' section)			
1. No rooted vines			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	21	x 1 =	21
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	111 (A)		201.00 (B)

Prevalence Index = B/A = 1.81

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWET-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/1	90	7.5YR 4/6	10	C	M/PL	SIC	
8-18	10YR 5/4	85	7.5YR 4/6	15	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/25/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter Wetland Name/Location WTL-12 near STA 176+90 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☑ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☑ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ common rush	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.50
- ○ 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 value is the SI for **V7**= 0.70

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.70 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-12

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-12, located right of SR-170 near STA 176+90 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.24
	Function: Wildlife Community	0.25
	Quantitative Score (Average of FCIs x 100)	33.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	33.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-13

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.005895 Long: -84.179717 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-13, located right of SR-170 near STA 171+12 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-13

Tree Stratum (Plot size: 190' x 15' rectangle)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' x 45' rectangle)			
1. *Salix nigra*	3	Y	OBL
2. *Platanus occidentalis*	3	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	6.0 = Total Cover		
50% of total cover: 3.0	20% of total cover: 1.2		
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	85	Y	FACW
2. *Mimulus ringens*	15	N	OBL
3. *Scirpus georgianus*	3	N	OBL
4. *Bidens aristosa*	3	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	106.0 = Total Cover		
50% of total cover: 53.0	20% of total cover: 21.2		
Woody Vine Stratum (Plot size: 190' x 15' rectangle)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	21.00	x 1 =	21.00
FACW species	91.00	x 2 =	182.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	112.00 (A)		203.00 (B)

Prevalence Index = B/A = 1.81

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/1	90	7.5YR 4/6	10	C	M/PL	SIC	
8-18	10YR 5/4	85	7.5YR 4/6	15	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/25/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter Wetland Name/Location WTL-13 near STA 171+12 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☑ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☑ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ common rush	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.50
- ○ 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 value is the SI for **V7**= 0.70

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.70 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-13

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-13, located right of SR-170 near STA 171+12 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.24
	Function: Wildlife Community	0.25
	Quantitative Score (Average of FCIs x 100)	33.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	33.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from SR-62 to Near Melton Lake Dr PIN 12412.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-12/13

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.006126 Long: -84.179514 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands between WTL-12 and WTL-13, located right of SR-170 near STA 176+70 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Surface water present due to recent heavy rainfall only.

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-12/13

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Cynodon dactylon*	63	Y	FACU
2. *Plantago lanceolata*	15	N	UPL
3. *Paspalum laeve*	15	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	93.0 = Total Cover		
50% of total cover: 46.5	20% of total cover: 18.6		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	15.00	x 3 =	45.00
FACU species	63.00	x 4 =	252.00
UPL species	15.00	x 5 =	75.00
Column Totals:	93.00 (A)		372.00 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-12/13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3	100					L	
3-12	5YR 4/4	100					L	Auger refusal at 12in due to gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-9

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.009299 Long: -84.177100 Datum: WGS84

Soil Map Unit Name: Colbert-Lyerly-Rock outcrop complex, 5 to 20 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-9, located left of SR-170 near STA 187+00 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1
Water Table Present?	Yes ✓	No _____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 1

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-9

Tree Stratum (Plot size: 30'' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Typha latifolia*	38	Y	OBL
2. *Leersia oryzoides*	15	Y	OBL
3. *Eupatorium serotinum*	15	Y	FAC
4. *Bidens aristosa*	15	Y	FACW
5. *Scirpus cyperinus*	3	N	FACW
6. *Symphyotrichum racemosum*	3	N	FACW
7. *Boehmeria cylindrica*	3	N	FACW
8.			
9.			
10.			
11.			
	92.0 = Total Cover		
50% of total cover: 46.0	20% of total cover: 18.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	53.00	x 1 =	53.00
FACW species	24.00	x 2 =	48.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	92.00 (A)		146.00 (B)

Prevalence Index = B/A = 1.59

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/2	90	7.5YR 4/6	10	C	M	C	
12-18	10YR 5/1	85	7.5YR 4/6	15	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/25/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter Wetland Name/Location WTL-9 near STA 187+00 L

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ broad-leaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ rice cutgrass	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	2 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-9

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-9, located left of SR-170 near STA 187+00 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.26
	Function: Wildlife Community	0.26
	Quantitative Score (Average of FCIs x 100)	34.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	34.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-9

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.010151 Long: -84.177052 Datum: WGS84

Soil Map Unit Name: Colbert-Lyerly-Rock outcrop complex, 5 to 20 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within upland adjacent to WTL-9 located right of SR-170 near STA 191+00 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Surface water present due to recent heavy rainfall only.

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-9

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	38	Y	FACU
2. *Acer saccharum*	38	Y	FACU
3. *Quercus rubra*	15	N	FACU
4. *Ulmus rubra*	15	N	FAC
5.			
6.			
7.			
	106.0 = Total Cover		
50% of total cover: 53.0	20% of total cover: 21.2		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Fraxinus americana*	38	Y	FACU
2. *Acer saccharum*	38	Y	FACU
3. *Ulmus rubra*	15	N	FAC
4. *Celtis occidentalis*	15	N	FACU
5. *Ligustrum vulgare*	3	N	FACU
6.			
7.			
8.			
9.			
	109.0 = Total Cover		
50% of total cover: 54.5	20% of total cover: 21.8		
Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Toxicodendron radicans*	15	Y	FAC
2. *Campsis radicans*	15	Y	FAC
3.			
4.			
5.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	60.00	x 3 =	180.00
FACU species	185.00	x 4 =	740.00
UPL species	0.00	x 5 =	0.00
Column Totals:	245.00 (A)		920.00 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					L	
3-12	10YR 5/3	100					CL	
12-18	10YR 4/3	95	10YR 6/6	5	C	M	L	Gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-3	Date/Time: 9/24/24 2:43 PM
Assessors/Affiliation: D. Hunter, S. Davis / Copperhead Environmental Consulting	Project ID :
Site Name/Description: Anderson County; SR-170, From SR-62 to near Melton Lake Drive	
Site Location: STR-3 located left of SR-170 near STA 187+00 L	
HUC (12 digit): 060102070404, Clinch River - Conner Creek	Lat/Long:
Previous Rainfall (7-days) : ~1 inch	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~28 acres	County: Anderson
Soil Type(s) / Geology : Colbert-Lyerly-Rock outcrop complex, 5-20 percent slopes Source: NRCS	
Surrounding Land Use : Suburban/urban, light forest	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-3 is an intermittent stream located near the north end of the project area on the west side of SR-170. STR-2 flows south toward a culvert underneath SR-170. This culvert has an outlet to WTL-11.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	1
4. Sorting of soil textures or other substrate	0	1	2	3	2
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	1
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	1.5
11. Grade controls	0	0.5	1	1.5	0
12. Natural valley or drainageway	0	0.5	1	1.5	.5
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 7)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	2
15. Water in channel and >48 hours since sig. rain	0	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	1.5
17. Sediment on plants or on debris	0	0.5	1	1.5	1
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 9.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	1
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	1
25. Macrobenthos (record type & abundance)	0	1	2	3	1
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	1.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 25.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Strong flow observed during sampling as well as biological indicators, macrobenthos included aquatic isopods and snails.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County; SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01					
Biologist:	D. Hunter, S. Davis	**Affiliation:**	Copperhead	**Date:**	9/25/2024

1-Station: from plans	left of SR-170 near STA 187+00 L										
2-Map label and name	STR-3										
3-Latitude/Longitude	36.009284, -84.176955										
4-Feature description:											
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc				
-HD score (if applicable)	25.5										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris		scour	✓	veg absent, bent, matted	✓	
	change in plant community	✓	destruction of terrestrial veg	✓	multiple observe flow events		sediment sorting		water staining		
	change in soil character		leaf litter disturb or absent		natural line impressed on bank		shelving		wracking		
-channel bottom width	1-2 ft		-top of bank width		2-3 ft						
-width and max depth at ordinary high water mark	1 ft, 1 inch										
-width at bankfull	1 ft										
-bank height	LDB - 1-2 ft		RDB - 1-2 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Chinese privet, sawtooth blackberry										
	RDB: yellow poplar, Chinese privet										
-particle size distribution %	Silt/Sand:	90	Gravel:	10	Cobble:	0	Boulder:	0	Bedrock:	0	
5-photo numbers	42, 43										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes				no	✓					
8-ETW	yes				no	✓					
9-303 (d) List	yes				siltation		habitat:		other:		
	no	✓									
10-Notes	STR-3 is an intermitent stream located near the east end of the project area, left and right of SR-170. STR-3 flows south toward a culvert underneath SR-170. This culvert has an outlet to WTL-11.										

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-11

Investigator(s): S. Davis, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.009577 Long: -84.176719 Datum: WGS84

Soil Map Unit Name: Colbert-Lyerly-Rock outcrop complex, 5 to 20 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-11, located right of SR-170 near STA 187+00 R.
All parameters met; area is considered a palustrine scrub/shrub (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-11

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus rubra*	3	N	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ligustrum sinense*	63	Y	FACU
2. *Fraxinus pennsylvanica*	5	N	FACW
3. *Acer negundo*	5	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	73.0 = Total Cover		
50% of total cover: 36.5	20% of total cover: 14.6		
Herb Stratum (Plot size: 5' Radius)			
1. *Leersia oryzoides*	38	Y	OBL
2. *Juncus effusus*	15	Y	FACW
3. *Penthorum sedoides*	5	N	OBL
4. *Eupatorium serotinum*	3	N	FAC
5. *Cyperus strigosus*	3	N	FACW
6. *Symphyotrichum racemosum*	3	N	FACW
7. *Boehmeria cylindrica*	3	N	FACW
8. *Mimulus alatus*	3	N	OBL
9.			
10.			
11.			
	73.0 = Total Cover		
50% of total cover: 36.5	20% of total cover: 14.6		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	46.00	x 1 =	46.00
FACW species	29.00	x 2 =	58.00
FAC species	11.00	x 3 =	33.00
FACU species	63.00	x 4 =	252.00
UPL species	0.00	x 5 =	0.00
Column Totals:	149.00 (A)		389.00 (B)

Prevalence Index = B/A = 2.61

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/1	70	7.5YR 4/6	30	C	M	SIL	
4-18	10YR 5/2	90	2.5YR 4/6		C	M	SIL	Gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/25/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel S. Davis, I. Bentley Wetland Name/Location WTL-11 near STA 187+00 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☑ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ rice cutgrass	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ common rush	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.44

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 0.22
- ○ 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 value is the SI for **V7**= 0.47

*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. 1 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 1.00 (SCOV) V7 0.47 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-11

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Scrub-shrub wetland, WTL-11, located right of SR-170 near STA 187+00 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.46
	Function: Retain Particulates	--
	Function: Plant Community	0.33
	Function: Wildlife Community	0.33
	Quantitative Score (Average of FCIs x 100)	40.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	40.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-11

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.008956 Long: -84.176466 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 12 to 20 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken in uplands adjacent to WTL-11, located left of SR-170 near STA 190+00 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Surface water present due to recent heavy rainfall only.

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-11

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	38	Y	FAC
2. *Prunus serotina*	15	Y	FACU
3. *Juniperus virginiana*	15	Y	FACU
4.			
5.			
6.			
7.			
	68.0 = Total Cover		
50% of total cover: 34.0	20% of total cover: 13.6		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Elaeagnus umbellata*	38	Y	UPL
2. *Ligustrum vulgare*	38	Y	FACU
3. *Asimina triloba*	15	N	FAC
4. *Cercis canadensis*	15	N	FACU
5. *Fraxinus americana*	3	N	FACU
6.			
7.			
8.			
9.			
	109.0 = Total Cover		
50% of total cover: 54.5	20% of total cover: 21.8		
Herb Stratum (Plot size: 5' radius)			
1. *Passiflora lutea*	3	Y	UPL
2. *Agrimonia striata*	3	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	6.0 = Total Cover		
50% of total cover: 3.0	20% of total cover: 1.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Smilax rotundifolia*	15	Y	FAC
2.			
3.			
4.			
5.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	68.00	x 3 =	204.00
FACU species	89.00	x 4 =	356.00
UPL species	41.00	x 5 =	205.00
Column Totals:	198.00 (A)		765.00 (B)

Prevalence Index = B/A = 3.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					L	
3-12	10YR 5/3	100					CL	Auger refusal at 12in due to gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170, From SR-62 to near Melton Lake Drive; PIN 124121.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-10

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.009674 Long: -84.176600 Datum: WGS84

Soil Map Unit Name: Colbert-Lyerly-Rock outcrop complex, 5 to 20 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-10, located left of SR-170 near STA 187+00 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1
Water Table Present?	Yes ✓	No _____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 1

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-10

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Carex frankii*	38	Y	OBL
2. *Leersia oryzoides*	38	Y	OBL
3. *Boehmeria cylindrica*	15	N	FACW
4. *Bidens aristosa*	3	N	FACW
5. *Andropogon glomeratus*	3	N	FACW
6. *Eclipta prostrata*	3	N	FAC
7.			
8.			
9.			
10.			
11.			
	100.0 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	76.00	x 1 =	76.00
FACW species	21.00	x 2 =	42.00
FAC species	3.00	x 3 =	9.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		127.00 (B)

Prevalence Index = B/A = 1.27

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/2	90	7.5YR 4/6	10	C	M	C	
12-18	10YR 5/1	85	7.5YR 4/6	15	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 09/25/2024 Project Name Anderson County; SR-170, From SR-62 to near Melton Lake Drive

Field Personnel D. Hunter Wetland Name/Location WTL-10 STA 187+00 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Frank's sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ rice cutgrass	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-10

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-10, located right of SR-170 near STA 187+00 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 12412.01 City/County: Anderson County Sampling Date: 2024-09-25

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-10

Investigator(s): S. Davis, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.010323 Long: -84.175499 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 12 to 20 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within uplands adjacent to WTL-10, located left of SR-170 near STA 196+00 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-10

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus rubra*	38	Y	FAC
2. *Acer saccharum*	38	Y	FACU
3. *Prunus serotina*	15	N	FACU
4. *Morus rubra*	15	N	FACU
5.			
6.			
7.			
	106.0 = Total Cover		
50% of total cover: 53.0	20% of total cover: 21.2		

Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Lonicera morrowii*	38	Y	FACU
2. *Acer negundo*	38	Y	FAC
3. *Acer saccharum*	38	Y	FACU
4. *Ligustrum vulgare*	38	Y	FACU
5. *Ulmus rubra*	15	N	FAC
6. *Sambucus nigra*	3	N	FAC
7.			
8.			
9.			
	170.0 = Total Cover		
50% of total cover: 85.0	20% of total cover: 34.0		

Herb Stratum (Plot size: 5' Radius)			
1. *No rooted herbs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	15	Y	FAC
2. *Lonicera japonica*	5	Y	FACU
3. *Bignonia capreolata*	5	Y	FAC
4. *Toxicodendron radicans*	5	Y	FAC
5.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	119.00	x 3 =	357.00
FACU species	187.00	x 4 =	748.00
UPL species	0.00	x 5 =	0.00
Column Totals:	306.00 (A)		1105.00 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SCL	
3-10	10YR 4/4	100		0			L	
10-18	10YR 4/6	100					C	Gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

Photo Number: 1

9/23/2024

Description:
Overview of the right-of-way (ROW) near the west end of the Environmental Technical Study Area (ETSA) near STA 102+30 R, facing northeast.

Photo Number: 2

9/23/2024

Description:
Overview of the ROW near the west end of the ETSA near STA 102+30 R, facing southwest.

Photo Number: 3

9/23/2024

Description:
Photo fo DPUPL-1 near STA 100+10 R facing southeast.

Photo Number: 4

9/23/2024

Description:
Downstream view of STR-1 near STA 106+00 R facing southeast.

Photo Number: 5

9/23/2024

Description:
Upstream view of STR-1 near STA 106+00 R facing northwest.

Photo Number: 6

9/23/2024

Description:
Overview of WTL-1 located right of SR-170 near STA 106+00 R,facing south.

Photo Number: 7

9/25/2024

Description: Overview of LAK-1 (Melton Hill Lake) located left and right of SR-170 from near STA 105+08 to STA 150+85, facing southwest.

Photo Number: 8

9/23/2024

Description:
Photo of DPUPL-14/15 near STA 110+95 R facing southeast.

Photo Number: 9

9/23/2024

Description:
Overview of WTL-14 located right of SR 170 near STA 112+00 R, facing north.

Photo Number: 10

9/23/2024

Description:
Overview of WTL-15 located left of SR-170 near STA 114+40 L, facing south.

Photo number: 11

10/3/2024

Description:
Overview of WTL-16 located right of SR-170 near STA 129+90 R, facing east.

Photo Number: 12

10/3/2024

Description:
Overview of WTL-17 located left of SR-170 near STA 119+70 L, facing southwest.

Photo Number: 13

9/23/2024

Description:
Photo of DPUPL-16/17 near STA 120+30 R facing west.

Photo Number: 14

9/23/2024

Description:
Photo of DPUPL-18/19 near STA 127+70 R facing east.

Photo Number: 15

10/3/2024

Description:
Overview of WTL-18 located right of SR-170 near STA 129+90, facing east.

Photo Number: 16

9/24/2024

Description:
Overview of WTL-19 located left of SR-170 near STA 140+25 L, facing west.

Photo Number: 17

9/23/2024

Description:
Overview of WTL-2 located left of SR-170 near STA 129+90 L facing northwest.

Photo Number: 18

10/3/2024

Description:
Overview of WTL-20 located right of SR-170 near STA 129+90 R facing south.

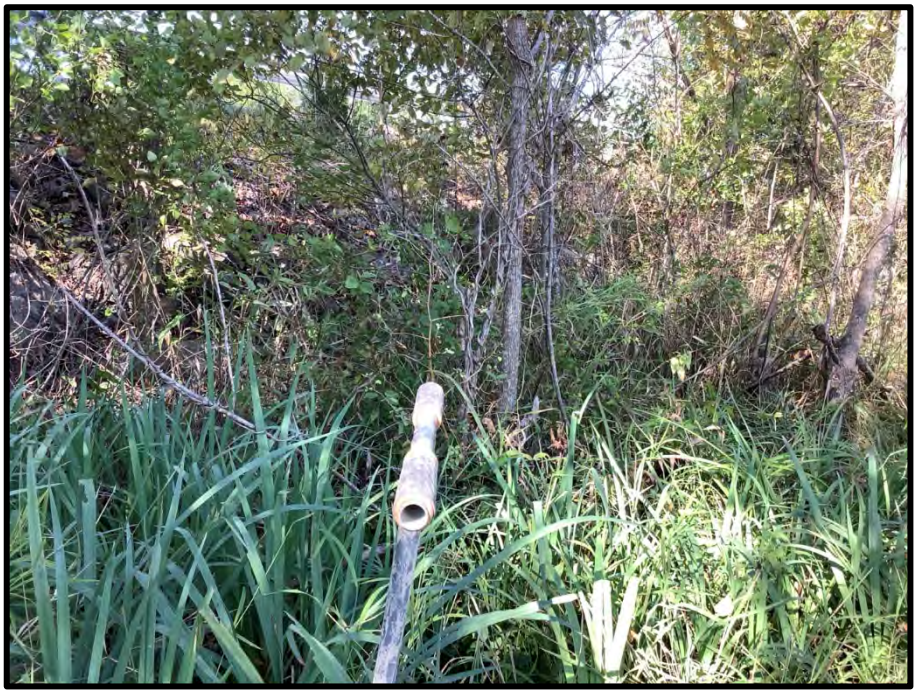


Photo Number: 19

9/24/2024

Description:
Photo of DPUPL-2/20 near STA 129+90 L facing east.

Photo Number: 20

9/24/2024

Description:
Overview of DPUPL-3/21 from STA 139+50 L facing northeast.

Photo Number: 21

9/24/2024

Description:
Overview of WTL-21 located right of SR-170 near STA 140+25 R, facing east.

Photo Number: 22

10/3/2024

Description:
Overview of WTL-3 located left of SR-170 near STA 143+50 L facing south.

Photo Number: 23

9/24/2024

Description:
Overivew of DPUPL-22 taken near STA 147+00 R facing southwest.

Photo Number: 24

10/3/2024

Description:
Overview of WTL-22 located right of SR-170 near STA 146+00 R facing northeast.

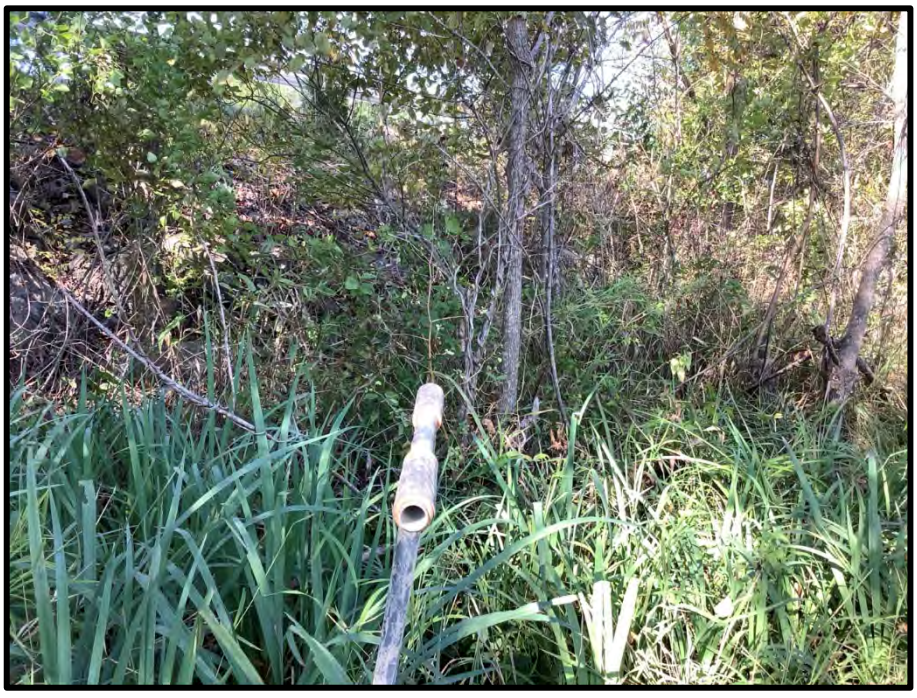


Photo Number: 25

10/3/2024

Description:
Overview of WTL-23 located left of SR-170 near STA 150+85 R facing NE.

Photo Number: 26

9/24/2024

Description:
Overview of WWC-1 located from near STA 150+85 to near STA 160+90, facing northwest from east of SR-170.

Photo Number: 27

10/2/2024

Description:
Overview of WTL-4 (PEM) located right of SR-170 near STA 157+30, facing northwest.

Photo Number: 28

10/2/2024

Description:
Overview of DPUPL-4 (PEM) located right of SR-170 near STA 157+00 R, facing northwest.

Photo Number: 29

9/24/2024

Description:
Upstream view of STR-2 located left and right of SR-170 from near STA 167+80 to near STA 157+30, facing northwest.

Photo Number: 30

9/24/2024

Description:
Downstream view of STR-2, facing southeast.

Photo Number: 31

9/24/2024

Description:
Overview of WWC-2 located near STA 171+12, facing northeast.

Photo Number: 32

9/24/2024

Description:
Overview of WTL-5 located left of SR-170 near STA 156+60, facing south.

Photo Number: 33

9/24/2024

Description:
Overview of DPUPL-5/6/7 located left of SR-170 near STA 159+30 L, facing west.

Photo Number: 34

9/24/2024

Description:
Overview of WTL-6 (PEM) located left of SR-170 near STA 160+20, facing south.

Photo Number: 35

9/24/2024

Description:
Overview of WTL-7 (PEM) located left of SR-170 near STA 160+20 facing northeast.

Photo Number: 36

10/2/2024

Description:
Overview of DPUPL-8 located left of SR-170 near STA 162+20 L facing northeast.

Photo Number: 37

10/2/2024

Description:
Overview of WTL-8 located left of SR-170 near STA 165+00 L facing northeast.

Photo Number: 38

10/2/2024

Description:
View of vegetation community within WTL-12 located right of SR-170 near STA 176+90 R facing northeast.

Photo Number: 39

10/2/2024

Description:
Overview of WTL-13 located right of SR-170 near STA 171+12, facing northeast.

Photo Number: 40

10/2/2024

Description:
Overview of DPUPL-12/13 located right of SR-170 near STA 176+70 facing south.

Photo Number: 41

9/25/2024

Description:
Overview of WTL-9 (PEM) located left of SR-170 near STA 187+00 facing northeast.

Photo Number: 42

9/25/2024

Description:
Upstream view of STR-3 located left and right of SR-170 near STA 187+00, facing northwest.

Photo Number: 43

9/25/2024

Description:
Downstream view of STR-3 and an existing culvert under SR-170, facing southeast.

Photo Number: 44

9/24/2024

Description:
Overview of DPUPL-11 located right of SR-170 near STA 190+00 R facing northeast.

Photo Number: 45

9/25/2024

Description:
Overview of WTL-11 (PSS) located right of SR-170 near STA 187+00 facing west.

Photo Number: 46

9/24/2024

Description:
Overview of DPUPL-9 located right of SR-170 near STA 191+00 L facing east.

Photo Number: 47

9/25/2024

Description:
Overview of WTL-10 (PSS) located right of SR-170 near STA 187+00 facing northeast.

Photo Number: 48

9/24/2024

Description:
Overview of DPUPL-10 located left of SR-170 near STA 196+00 L facing northeast.

Photo Number: 49

9/25/2024

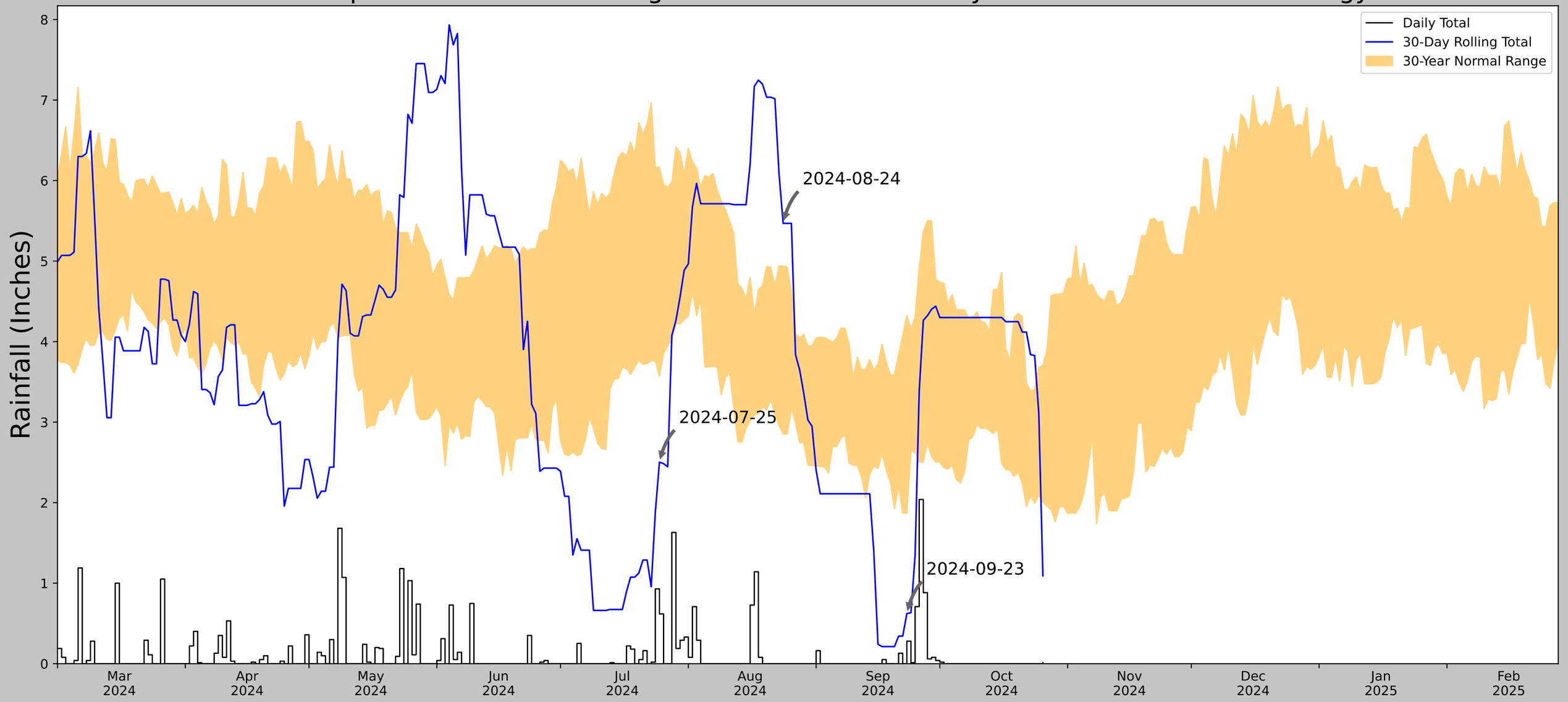
Description:
Overview of the ROW near the east end of the ETSA near STA 196 +50L, facing northeast.

Photo Number: 50

9/23/2024

Description:
Overview of the ROW near the east end of the ETSA near STA 196 +50L, facing sotuhwest.

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.994544, -84.1965
Observation Date	2024-09-23
Elevation (ft)	801.558
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-09-23	1.866142	4.322047	0.622047	Dry	1	3	3
2024-08-24	2.852362	4.938583	5.468504	Wet	3	2	6
2024-07-25	3.570079	6.166142	2.503937	Dry	1	1	1
Result							Normal Conditions - 10

US Army Corps of Engineers

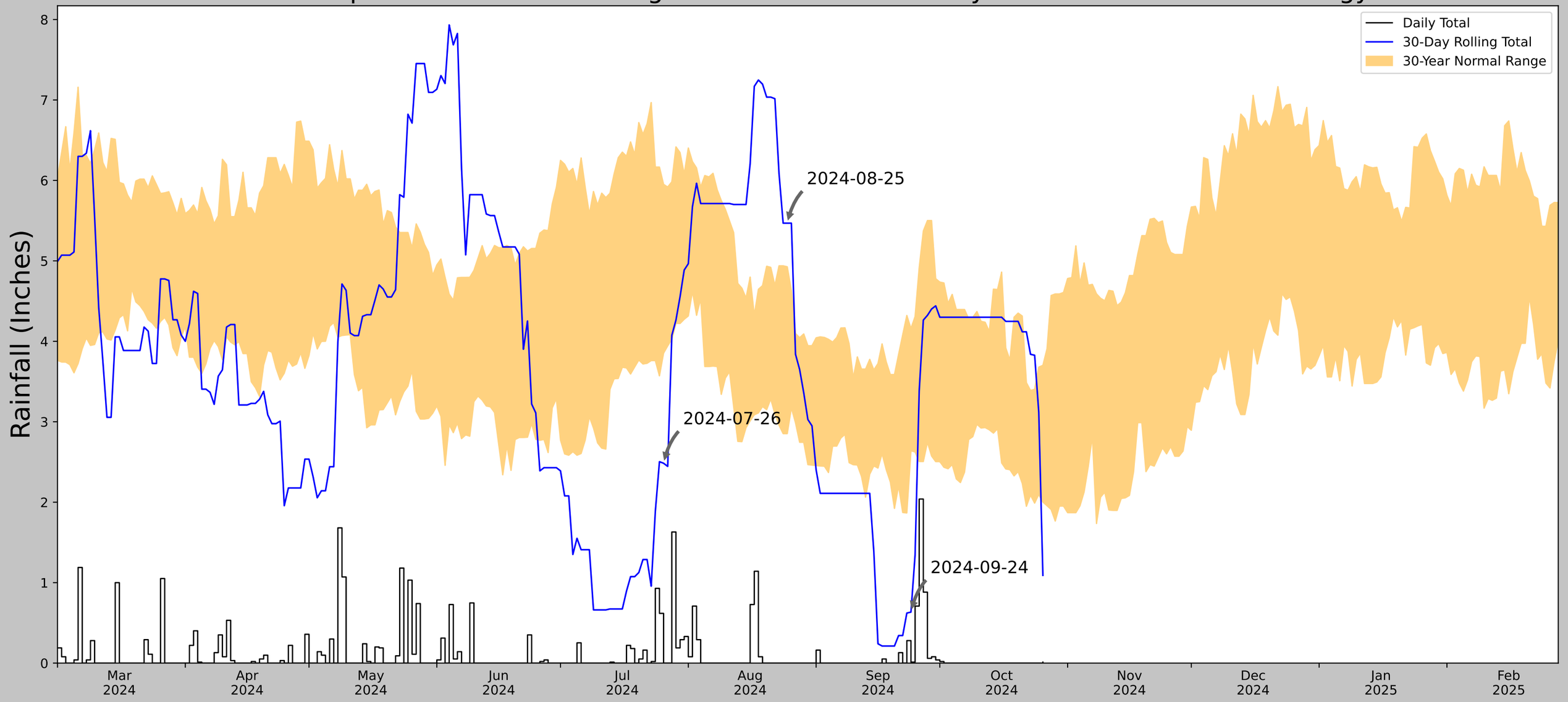
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	2.862	98.376	1.57	9097	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	2253	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.994544, -84.1965
Observation Date	2024-09-24
Elevation (ft)	801.558
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-09-24	2.638976	4.159449	0.633858	Dry	1	3	3
2024-08-25	2.852362	4.926772	5.468504	Wet	3	2	6
2024-07-26	3.852362	5.951181	2.484252	Dry	1	1	1
Result							Normal Conditions - 10

US Army Corps of Engineers

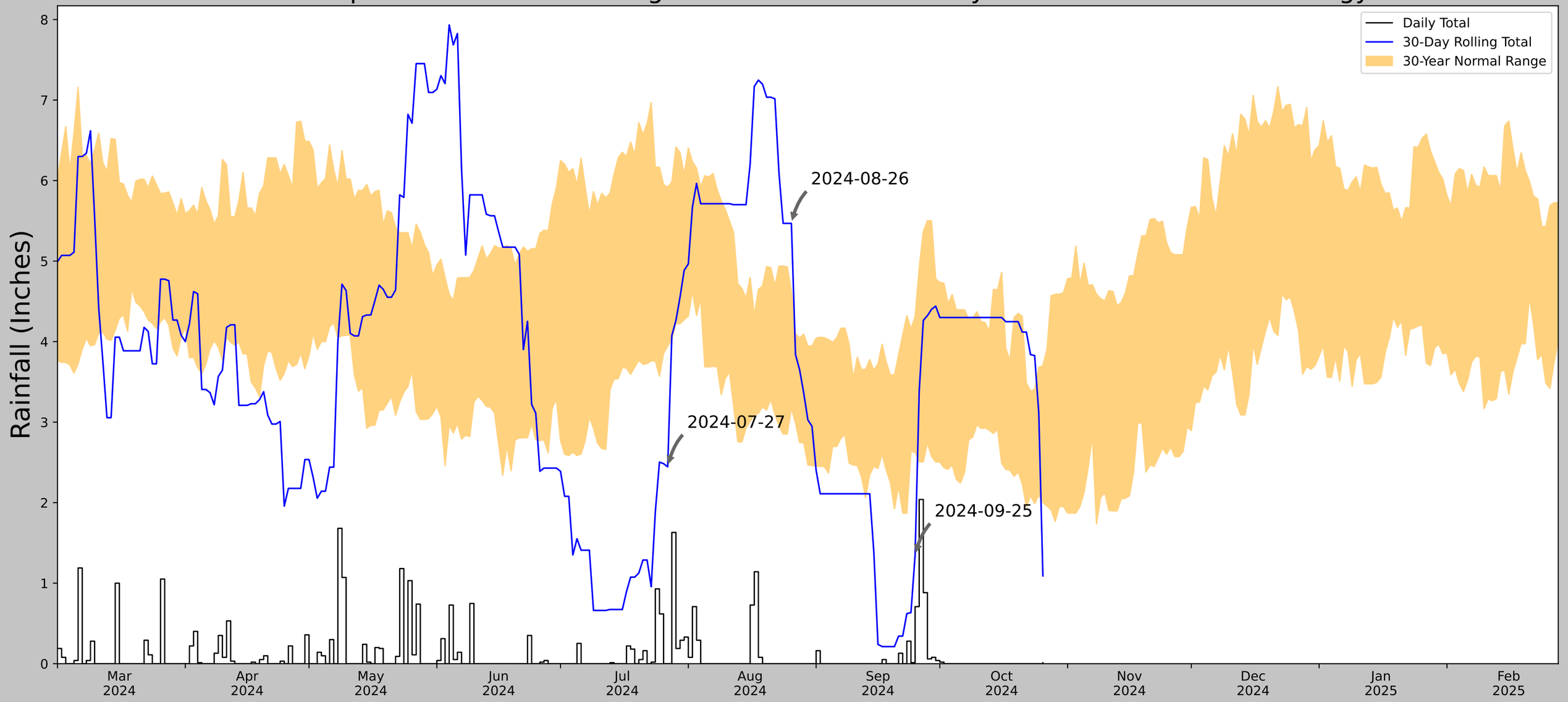
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	2.862	98.376	1.57	9097	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	2253	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.994544, -84.1965
Observation Date	2024-09-25
Elevation (ft)	801.558
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-09-25	2.625197	4.308268	1.34252	Dry	1	3	3
2024-08-26	3.173228	4.631103	5.468504	Wet	3	2	6
2024-07-27	3.942914	5.91811	2.444882	Dry	1	1	1
Result							Normal Conditions - 10

US Army Corps of Engineers

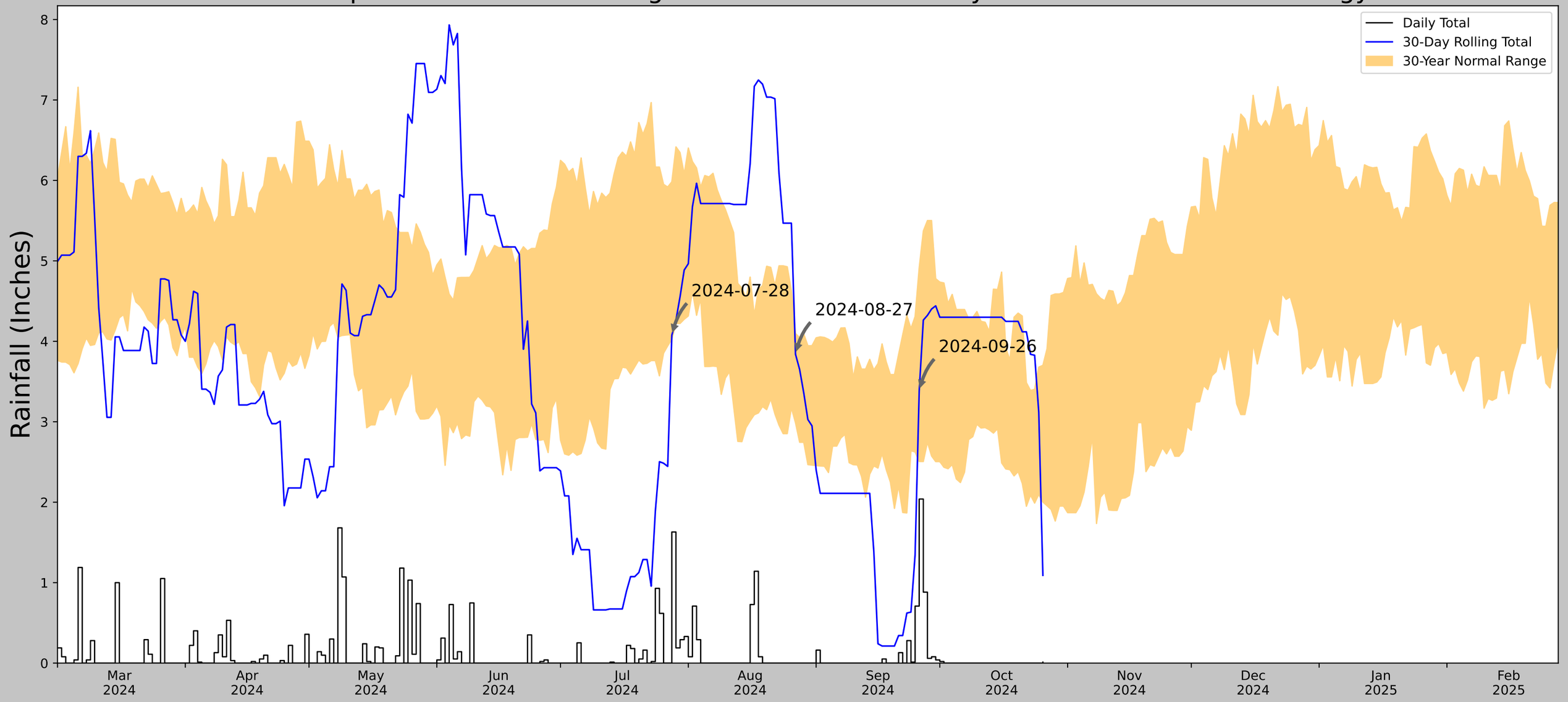
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	2.862	98.376	1.57	9097	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	2253	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.994544, -84.1965
Observation Date	2024-09-26
Elevation (ft)	801.558
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-09-26	2.505512	4.916142	3.38189	Normal	2	3	6
2024-08-27	2.986221	4.098032	3.838583	Normal	2	2	4
2024-07-28	4.026772	5.983071	4.074803	Normal	2	1	2
Result							Normal Conditions - 12

US Army Corps of Engineers

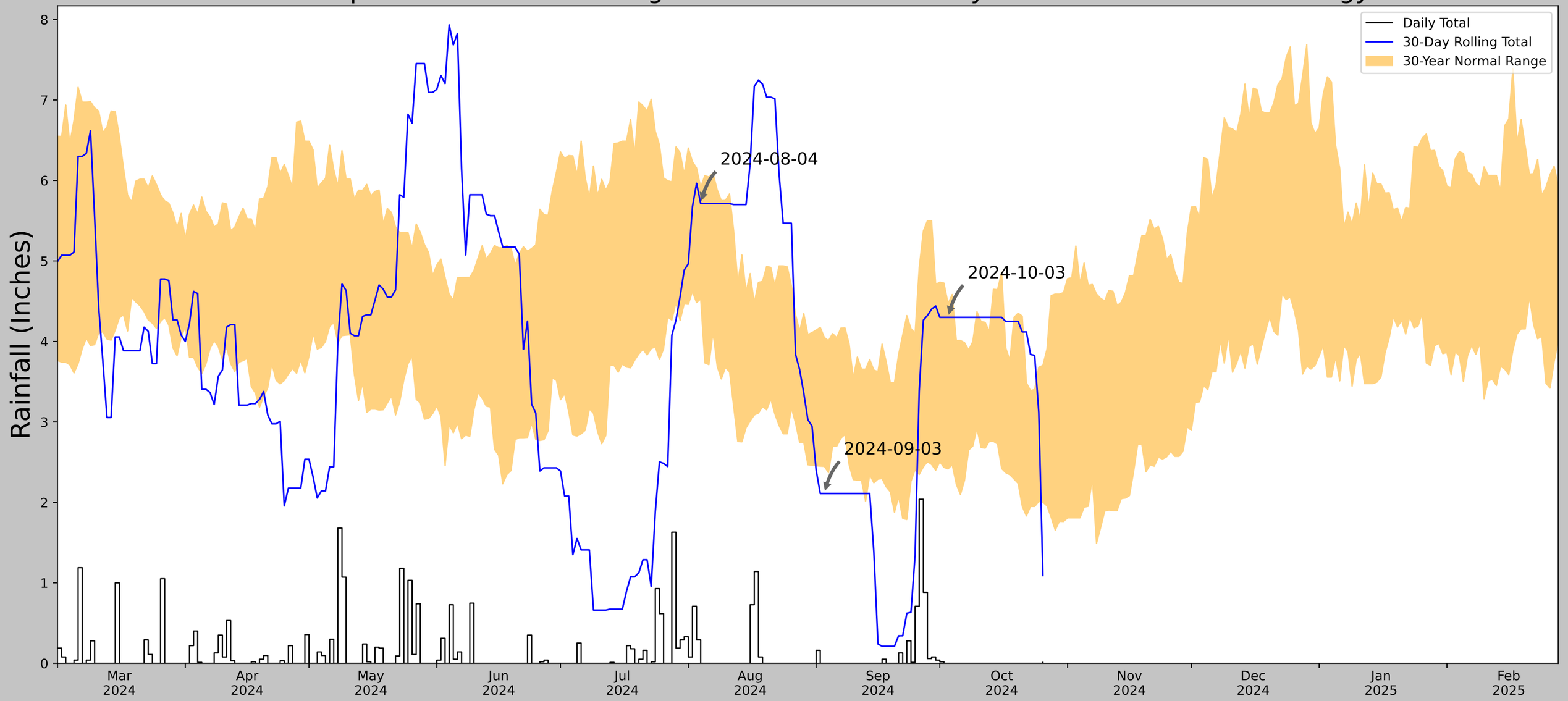
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	2.862	98.376	1.57	9097	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	2253	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.994544, -84.1965
Observation Date	2024-10-03
Elevation (ft)	801.558
Drought Index (PDSI)	Mild wetness (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-03	2.415748	4.472047	4.299213	Normal	2	3	6
2024-09-03	2.447244	4.048425	2.110236	Dry	1	2	2
2024-08-04	4.527953	5.916929	5.712599	Normal	2	1	2
Result							Normal Conditions - 10

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	2.862	98.376	1.57	9463	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	1888	0

Tennessee Ecological Services Field Office

FWS Log No: 2024-0144419

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act. If project design changes are made or new information becomes available, please submit new plans for review.

NICOLE SIKULA

Digitally signed by NICOLE SIKULA
Date: 2025.03.21 11:15:18 -05'00'

Acting Field Supervisor Date

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
ENVIRONMENTAL TECHNICAL STUDIES OFFICE
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

BUTCH ELEY
DEPUTY GOVERNOR &
COMMISSIONER OF TRANSPORTATION

BILL LEE
GOVERNOR

March 5, 2025

Mr. Daniel Elbert
US Dept. of Interior
Fish and Wildlife Service
446 Neal Street
Cookeville, TN 38501

SUBJECT: **TDOT PIN 124121.01 Anderson County; SR-170, From SR-62 to Near Melton Lake Drive (IA) (TMA) USFWS ETK Project (2024-0144419)**

Dear Mr. Elbert:

The Tennesse Department of Transportation (TDOT) coordinated the Anderson County SR-170 widening project (PIN 124121.01) through IPaC on September 17, 2024. Mr. John Griffith responded on October 1, 2024, notifying TDOT that the federally endangered spectaclecase (*Margaritifera monodonta*) may still occur in the Clinch River between Norris Dam and Melton Hill Reservoir (MHR). In addition, the SR-170 widening project lies within a summer buffer area for the federally endangered Indiana bat (*Myotis sodalis*).

Disturbance to the Clinch River (MHR) is not anticipated on this project. The construction termini for PIN 124121.01 end approximately 1000' west of Clinch River (MHR). Best Management Practices (BMP's) for Erosion Protection and Sediment Control would limit the potential for runoff from the project to reach the Clinch River (MHR) via tributary streams or conveyances. TDOT has determined that the SR-170 widening project (PIN 124121.01) is not likely to adversely affect the spectaclecase.

Tree removal is anticipated as part of the scope of work for the SR-170 widening project. TDOT has requested that the following Environmental Commitment be made active and included on project construction plans:

All necessary tree clearing within project limits will be completed between October 1 and March 31.

Based on the seasonal tree clearing commitment, TDOT has determined that the SR-170 widening project (PIN 124121.01) is not likely to adversely affect the Indiana bat.

TDOT appreciates your review of the effects determination and requests concurrence or continued coordination. If you have any questions or need additional information, please contact me at 615-253-2465 or dennis.crumby@tn.gov.

Respectfully,

Dennis Crumby

Dennis Crumby
TDOT SR Technical Specialist

CC: Mark Doty
Keven Brown
Matt Beeler

From: Griffith, John
To: Dennis Crumby
Cc: Sikula, Nicole R
Subject: [EXTERNAL] Re: IPaC delivered Official Species List for project: TDOT PIN 124121.01 Anderson Co; SR-170, From SR-62 to Near Melton Lake Drive (IA)(TMA)
Date: Tuesday, October 1, 2024 3:39:40 PM

This Message Is From an External Sender
This message came from outside your organization.
Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security

Dennis,

Thank you for your correspondence regarding the proposed State Route (SR-) 170 widening from SR-62 (Oak Ridge Highway) to near Melton Lake Drive in Anderson County, Tennessee. The The scope of work (number of lanes, etc.) has not been established, but the widening would require land disturbance and tree clearing. You are requesting a list of federally threatened or endangered species that may be present in the project area.

According to our records and the listing rule, the federally endangered spectaclecase (*Margaritifera monodonta*)) may still persist in the reach of the Clinch River between Norris Dam and Melton Hill Reservoir. If the project scope would involve instream work that could affect populations in the nearby Clinch River, a qualified individual should assess impacts to this species. The project lies within a summer buffer area for the federally endangered Indiana bat (*Myotis sodalis*). Because tree removal would likely be required for the project, you should determine potential impacts to the Indiana bat. As a designated representative for the Federal Highway Administration (FHWA), the Tennessee Department of Transportation may submit its assessment and findings directly to this office for review and concurrence. A finding of "may affect" can be addressed through formal consultation by the FHWA, except when the Service concurs, in writing, that a proposed action “is not likely to adversely affect” listed species.

This email will serve as our official project response. Please let me know if we can offer further assistance. Thanks,

John Griffith
Transportation Biologist
U.S. Fish and Wildlife Service
Tennessee Field Office
931-444-1393 (office)
931-261-3755 (cell)

From: Administrator Email <ecosphere_support@ecosphere.fws.gov>
Sent: Tuesday, September 17, 2024 3:02 AM
To: Griffith, John <john_griffith@fws.gov>; Tennessee ES, FWS <tennesseeES@fws.gov>; Sykes, Robbie <robbie_sykes@fws.gov>; Alexander, Steven <steven_alexander@fws.gov>

Subject: IPaC delivered Official Species List for project: TDOT PIN 124121.01 Anderson Co; SR-170, From SR-62 to Near Melton Lake Drive (IA)(TMA)

To: IPaC point(s) of contact for Tennessee Ecological Services Field Office
Project Location: Anderson County, Tennessee

IPaC has delivered an official Section 7 species list on behalf of your office. For your convenience, IPaC has created an ETK project (2024-0144419) with a new associated 'Species List Provided' event. A PDF file of the species list document is attached to the event and contact information for the project can be found on the last page of the PDF.

IPaC has automatically set the consultation status to "Closed". If you need to do any additional work in this project (*e.g.*, add staff, add events, change lead office, etc.), you must first change the status to "active" so that you can edit the project. You can access the project via the link, above.

Lead FWS Office:
The Tennessee Ecological Services Field Office is currently designated as the lead office for Section 7 on this project. The following additional offices have jurisdiction and have been notified: None. If another office is the lead office on this project, please access the project (via the link above) and update it. IPaC will not reset the Lead Office once it has been updated by a biologist.

*Projects created in ETK by IPaC have not been assigned to an FWS staff member. To identify the staff assigned to this project, please access the project (via the link above) and add their name(s).

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
5107 EDMONDSON PIKE
NASHVILLE, TENNESSEE 37211

10/15/2024

Dennis Crumby / Ecology Section
Environmental Division
James K. Polk BLDG., Suite 900
505 Deaderick Street
Nashville, TN 37242-0334
p. 615-253-2465 c. 615-761-8513

RE: Anderson County; SR-170 From SR-62 (Oak Ridge Highway) to near Melton Lake Drive (IA)(TMA) PIN 124121.01

Dear Mr. Crumby,

The Tennessee Wildlife Resources Agency has reviewed the information provided for the proposed project to widen SR-170 along the existing corridor in Anderson County, Tn. You have requested that we provide your office with a list of threatened or endangered species that may be present in the vicinity of the proposed project.

TDOT proposes to widen SR-170 along the existing corridor. The exact scope of work (number of lanes etc.) has not been set but the widening will occur within the proposed Environmental Technical Study Area.

Our databases show documented occurrences of multiple state listed species within 4.0 miles for the project location however, based on the scope of work and location of the project our agency does not anticipate significant adverse impacts to these species provided that all applicable TDEC and US EPA approved Erosion Prevention/Silt Control measures and Best Management Practices be planned for, implemented, monitored, and maintained throughout construction.

Thank you for the opportunity to review and comment on this proposed project. If I may be of further assistance, please contact me at Andy.Barlow@tn.gov.

Sincerely,

Andy Barlow
Wildlife Biologist/Liaison to TDOT and the Federal Highway Administration

Project Name: SR-170, From SR-62 to Near Melton Lake Drive **PIN:** 124121.01

Water Resource Table for NEPA Documentation

Based on: ETSA

Date: 3/4/2025

Table Amounts are based on (choose only one): Estimated extent of resource within ETSA

Water Resources (Non-Wetland)									
Label	**Type**	**Latitude**	**Longitude**	**Receiving Waters**		**USACE Jurisdiction**	**Quality**	**Amount (Linear Feet)**	**Amount (Acres)**
LAK-1	Lake/Reservoir	35.99577	-84.194816	Watts Bar Lake		Yes	Not Supporting	N/A	7.48
STR-1	Intermittent Stream	35.992918	-84.197547	Clinch River		Yes	Unassessed	21.33	0.001
STR-2	Perennial Stream	36.00168	-84.183872	Clinch River		Yes	Unassessed	1092.96	0.075
STR-3	Intermittent Stream	36.009284	-84.176955	WTL-11, UNT to Clinch River		Yes	Unassessed	136	0.003
WWC-1	Wet Weather Conveyance/Ephemeral	36.001542	-84.184443	STR-2		No	Not Applicable	41.95	0.002
WWC-2	Wet Weather Conveyance/Ephemeral	36.00441	-84.181308	STR-2		No	Not Applicable	1400.78	0.039
							Total:	2,693	7.60

Water Resources (Wetland)*								
Label	**Type**	**Latitude**	**Longitude**	**Receiving Waters**	**TDEC Jurisdiction**	**USACE Jurisdiction**	**Quality**	**Amount (Acres)**
WTL-1	Shrub	35.992934	-84.197547	STR-1	Non-Isolated	Yes	Low Resource Value	0.01
WTL-2	Forested	35.997593	-84.190867	Clinch River	Non-Isolated	Yes	Moderate Resource Value	0.11
WTL-3	Shrub	35.99949	-84.18698	Clinch River	Non-Isolated	Yes	Low Resource Value	0.12
WTL-4	Emergent	36.001978	-84.183709	STR-2	Non-Isolated	Yes	Low Resource Value	0.08
WTL-5	Emergent	36.002722	-84.183835	UNT to Clinch River	Non-Isolated	Yes	Low Resource Value	0.02
WTL-6	Emergent	36.002774	-84.183629	None-Isolated	Isolated	No	Low Resource Value	0.04
WTL-7	Emergent	36.003035	-84.182938	STR-2	Non-Isolated	Yes	Low Resource Value	0.11
WTL-8	Emergent	36.003912	-84.182333	STR-2	Non-Isolated	Yes	Low Resource Value	0.32
WTL-9	Emergent	36.009265	-84.17711	STR-3	Non-Isolated	Yes	Low Resource Value	0.01
WTL-10	Emergent	36.009677	-84.17662	None-Isolated	Isolated	No	Low Resource Value	0.02
WTL-11	Shrub	36.009019	-84.176412	STR-3	Non-Isolated	Yes	Low Resource Value	0.09
WTL-12	Emergent	36.00512	-84.180572	UNT to Clinch River	Non-Isolated	Yes	Low Resource Value	0.01
WTL-13	Emergent	36.005605	-84.180089	UNT to Clinch River	Non-Isolated	Yes	Low Resource Value	0.11
WTL-14	Shrub	35.994747	-84.195818	Clinch River	Non-Isolated	Yes	Low Resource Value	0.27
WTL-15	Emergent	35.996672	-84.192605	Clinch River	Non-Isolated	Yes	Low Resource Value	0.02
WTL-16	Forested	35.995727	-84.193822	Clinch River	Non-Isolated	Yes	Moderate Resource Value	0.13
WTL-17	Emergent	35.996078	-84.193973	Clinch River	Non-Isolated	Yes	Low Resource Value	0.05
WTL-18	Forested	35.996326	-84.192416	Clinch River	Non-Isolated	Yes	Moderate Resource Value	0.13
WTL-19	Emergent	35.996715	-84.192609	Clinch River	Non-Isolated	Yes	Low Resource Value	0.01
WTL-20	Forested	35.997211	-84.190717	Clinch River	Non-Isolated	Yes	Moderate Resource Value	0.16
WTL-21	Forested	35.998791	-84.187481	Clinch River	Non-Isolated	Yes	Moderate Resource Value	0.06
WTL-22	Forested	35.999488	-84.186327	Clinch River	Non-Isolated	Yes	Moderate Resource Value	0.07
WTL-23	Forested	36.000964	-84.184477	STR-2	Non-Isolated	Yes	Moderate Resource Value	0.34
							Total:**	2.11

**For the purposes of the NEPA document, Amount is assumed to be Permanent Loss.

Note- Features and estimated amounts referenced in this table are based on information available and may change as the project is further refined througout project development.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
ENVIRONMENTAL TECHNICAL STUDIES OFFICE
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

WILL REID
COMISSIONER

BILL LEE
GOVERNOR

MEMORANDUM

To: *Marlena Gore*
Project Management

From: *Matt Beeler*
Region One Ecology

Date: *7/24/25*

Subject: **DRAFT Environmental Boundaries Report For**:
SR-170, From near Melton Lake Drive to SR-9, Anderson County, TN
PIN: 124121.01

An ecological evaluation of the subject project has been conducted in response to initial evaluation request for EBR with the following results:

STREAMS: *There are eleven streams and two WWC within project limits*

WETLANDS: There are *twenty-four wetlands within project limits.*

OTHER FEATURES: *There is one lake within project limits.*

SPECIES:

- *USFWS: USFWS coordination was completed October 1, 2024, with species concern for the Indiana Bat, Tricolored Bat and the Spectaclecase mussel.*
- *TWRA: TWRA coordination was completed October 15, 2022, with no effect to state listed animal species.*
- *TDEC DNA: TDEC DNA 2023 MOA applies for this project under Condition 1, with no effect for state listed plant species.*

COMMITMENTS: Commitments will be determined by future USFWS correspondence.

Your assistance is appreciated. If you have any questions or comments, please contact me at 865-216-2448 or *e-mail* matthew.beeler@tn.gov.

xc: *Region 1 Project Development:* Dexter Justis, John Barrett, Mark Doty
Design Lead: Stacy Weaver
HQ Ecology: Brenden Barney, Dennis Crumby
HQ Permits: Claire Sichko
Region 1 Permits: Chad Weaver
TDOT.Env.Ecology@tn.gov
TDOT.Env.Permits@tn.gov
TDOT.Env.Mitigation@tn.gov
TDOT.Env.NEPA@tn.gov

COPPERHEAD
ENVIRONMENTAL CONSULTING

To: Keven Brown
Region 1 Project Development

From: Dakota Hunter
Copperhead Environmental Consulting Inc.

Date:
23 December 2024

Subject: ENVIRONMENTAL BOUNDARIES REPORT: SR-170 expansion from near Melton Lake Drive to SR-9

PIN:124121.02 **Project: 01024-0221-14**

Copperhead Environmental Consulting Inc. biologists completed the environmental boundaries field survey for the subject project and submits the following results:

WETLANDS

There are twenty-four (24) wetlands within the project boundary.

SPRINGS, STREAMS, WET WEATHER CONVEYANCES AND EPHEMERAL STREAMS

There are a total of fourteen (14) water features found within the project boundary of the proposed project. Six (6) features are perennial streams, five (5) features are intermittent streams, one (1) feature is lake/impoundment and two (2) are wet weather conveyances.

Wetlands 24, 25, 28, 36, 37, 39, 40, 41, 42, and 43 possess direct surface water connections to downstream waters, making them jurisdictional based on current guidance from the U.S. Army Corps of Engineers (USACE). Additionally, wetlands 26, 27, 29, 30, 31, 32, 33, 34, 35, 44, and 45, possess no surface water connection to downstream waters, making them isolated features based on current guidance from the USACE

PROTECTED SPECIES

A USFWS review of the project for federally threatened or endangered species present in the vicinity of the project area has not been conducted. However, Copperhead biologists performed a habitat survey for listed bats and protected bird species within culverts diverting aquatic features beneath SR-170. Sixteen (16) culverts were identified that exceed a diameter of 36in and could serve as roosting habitat for listed bats. Ro osting bats or signs of their activity were not observed at any of these locations during the delineation. Culverts were not entered during the survey and further investigation may be required to confirm that those locations are unoccupied.

The bridge spanning Melton Hill Reservoir was also inspected for the presence of listed bat and/or migratory bird habitat. Evidence of use by bat species (staining) and bird species (swallow nests) were both observed on the bridge. A habitat assessment data form was completed as part of the inspection and attached separately.

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.
P.O. BOX 73 ■ 471 MAIN STREET ■ PAINT LICK, KENTUCKY 40461
(859) 925-9012 OFFICE (859) 925-9816 FAX

www.copperheadconsulting.com

COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:
Tennessee Department of Transportation

TDOT

Sheet 1:
Water Resource Map - Aerial
for the Anderson County; SR-170,
From near Melton Lake Drive to SR-9 Project.
PIN: 124121.02
Anderson County, Tennessee.

Legend

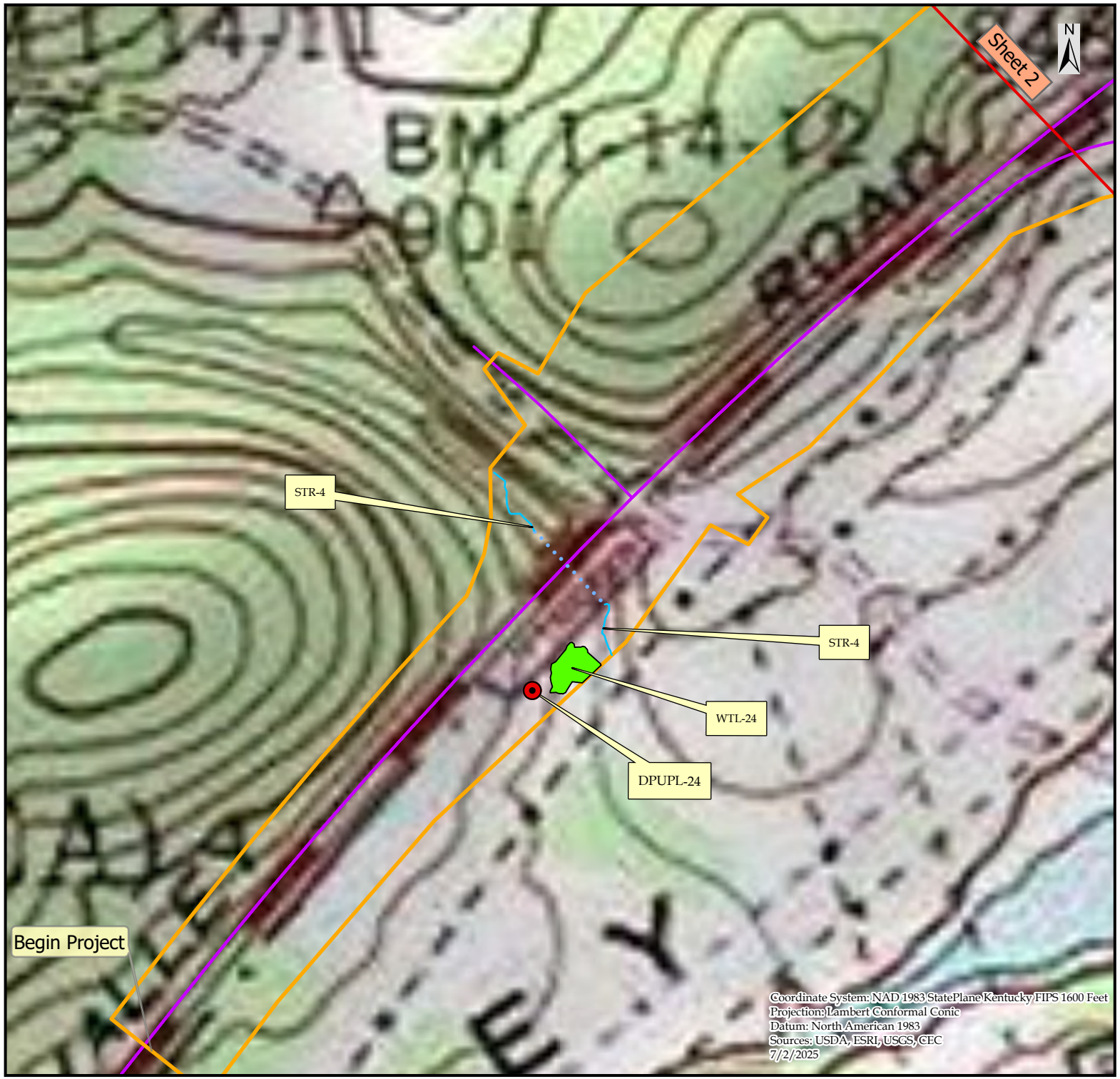
- Upland Data Point
- Culvert - Stream
- Culvert - WWC
- Stream
- Wet Weather Conveyance
- Project Centerline
- Waterbody
- Wetland
- Environmental Technical Survey Area

0 150 300
US Feet

Scale: 1 in = 300 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	7/2/2025
Checked by:	DH	Revision:	03



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ENVIRONMENTAL CONSULTING

Prepared for:
Tennessee Department of Transportation

TDOT

Sheet 1:
Water Resource Map - Topographic
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From near Melton Lake Drive to SR-9 Project.
PIN: 124121.02
Anderson County, Tennessee.

Legend

- Upland Data Point
- Culvert - Stream
- Culvert - WWC
- Stream
- Wet Weather Conveyance
- Project Centerline
- Waterbody
- Wetland
- Environmental Technical Survey Area

0 150 300
US Feet

Scale: 1 in = 300 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

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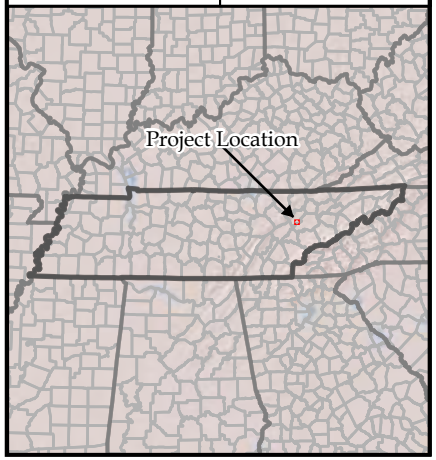

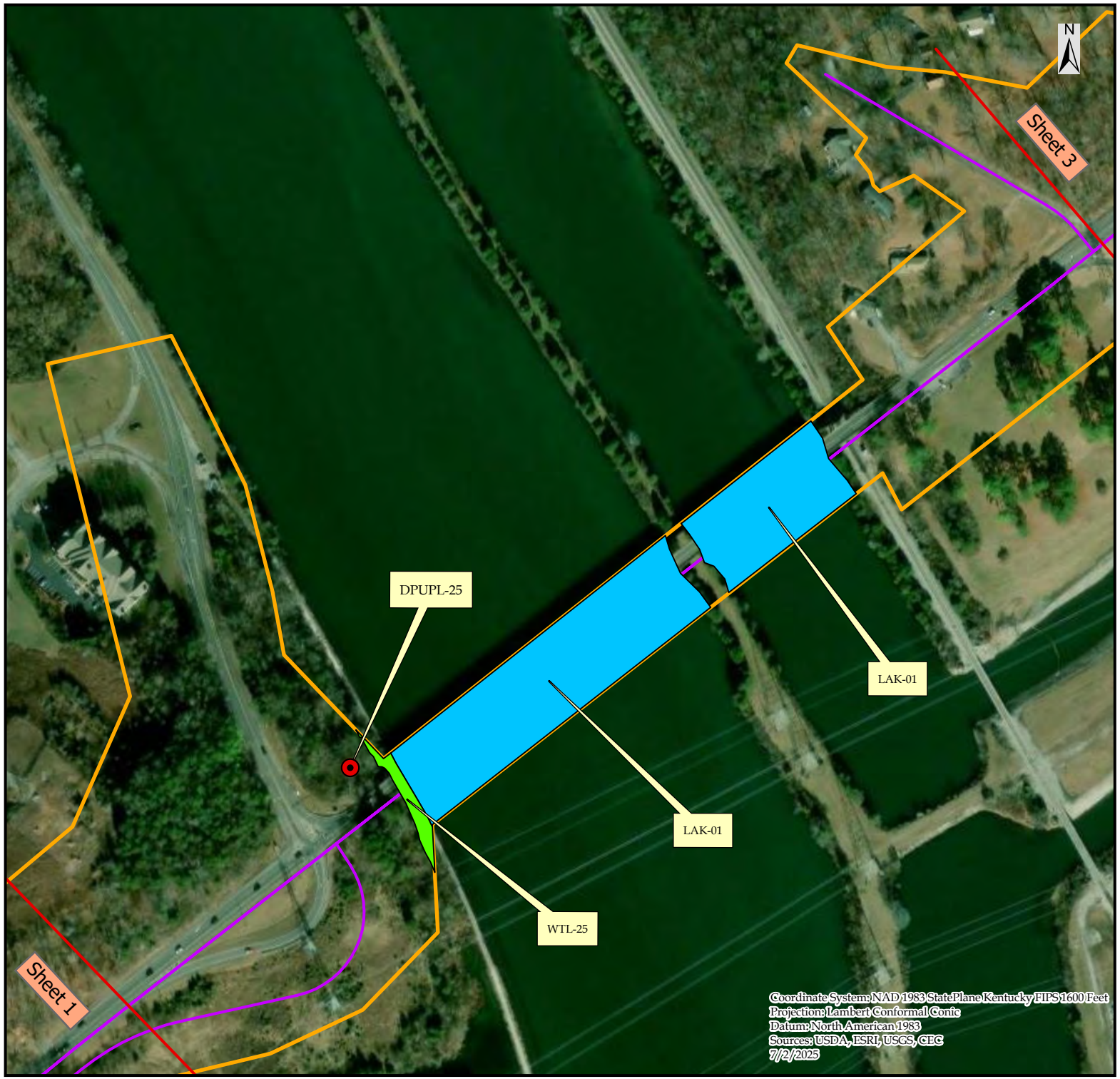

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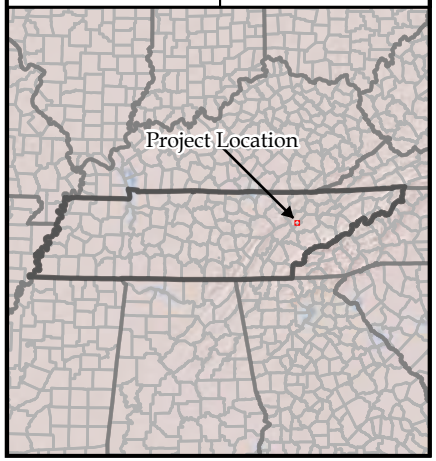

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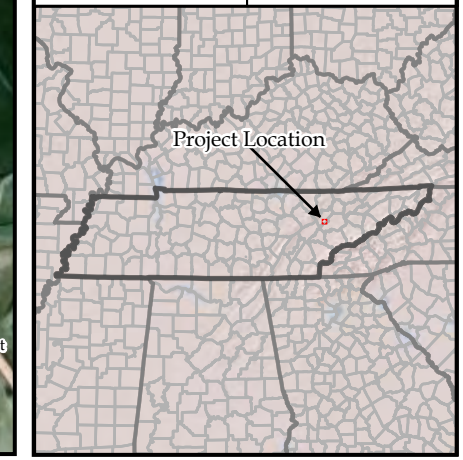

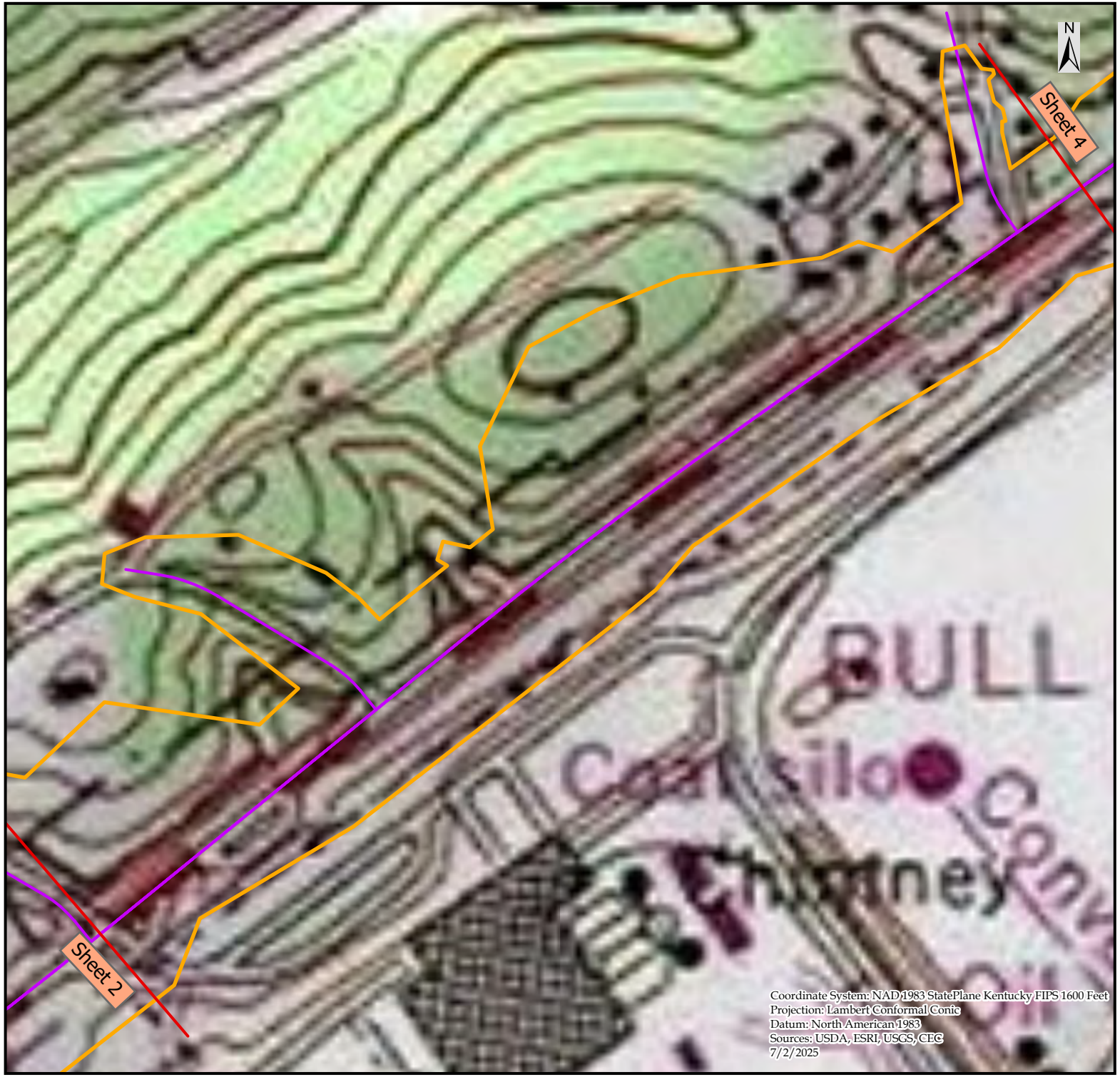

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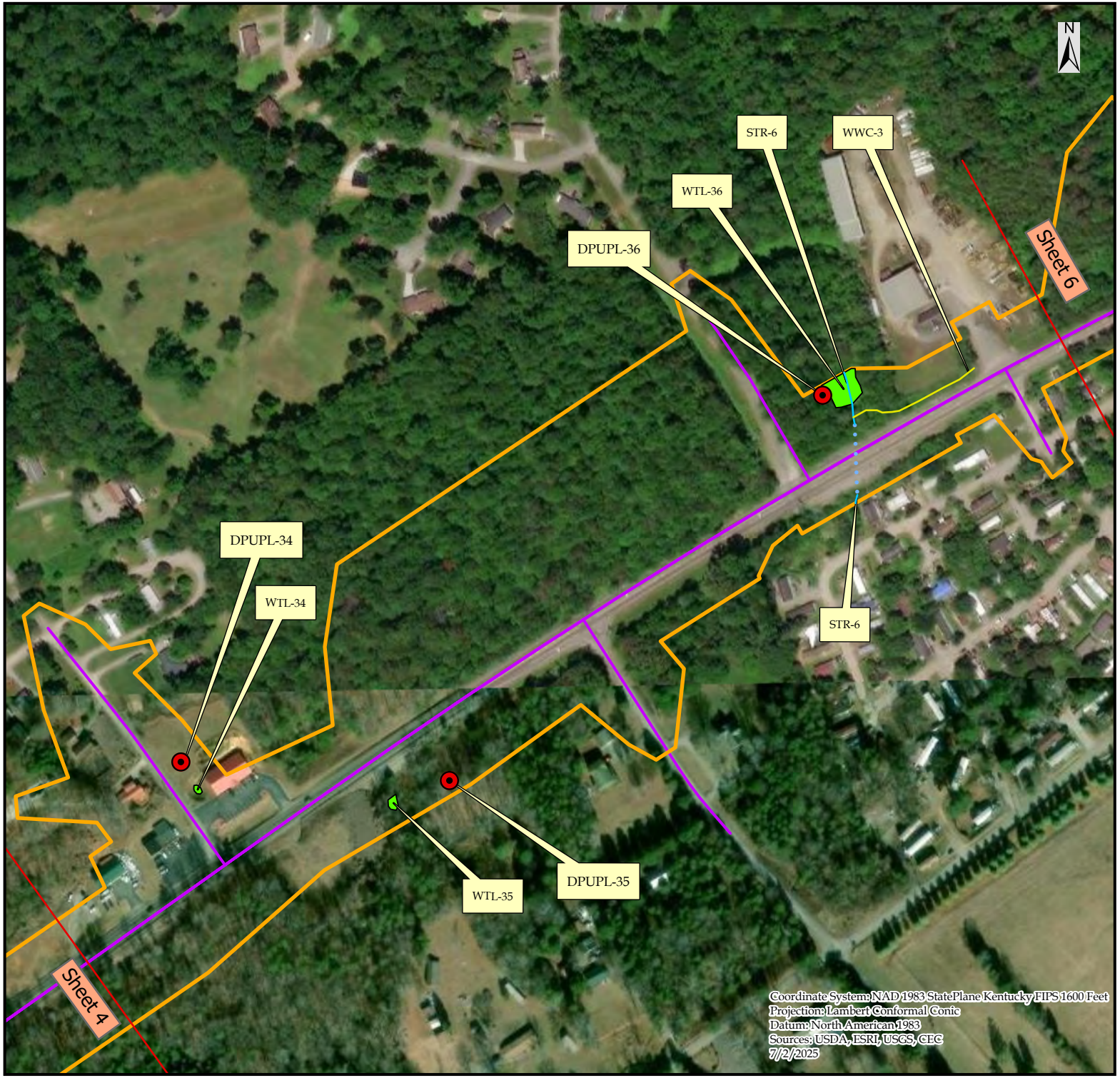

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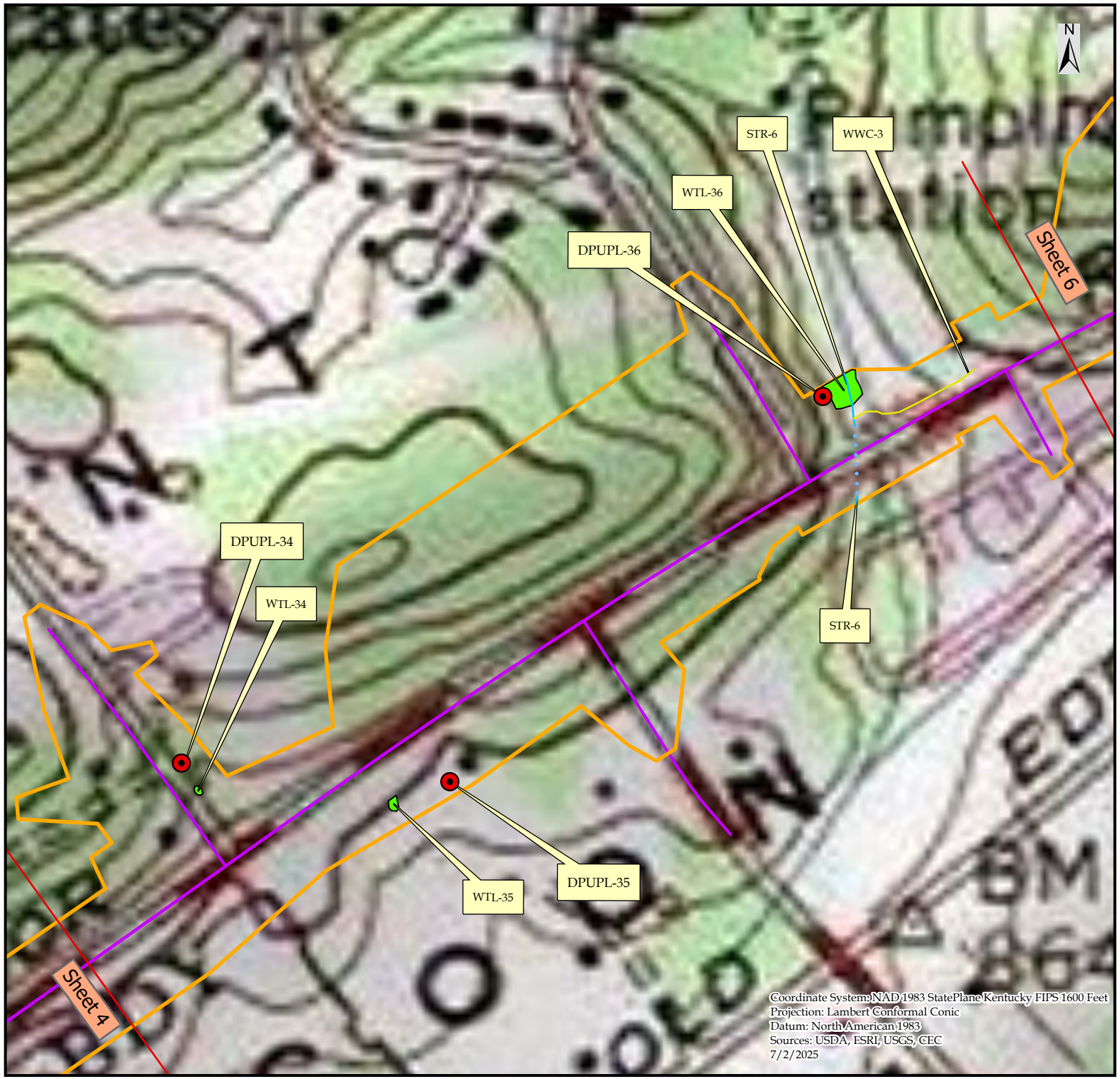

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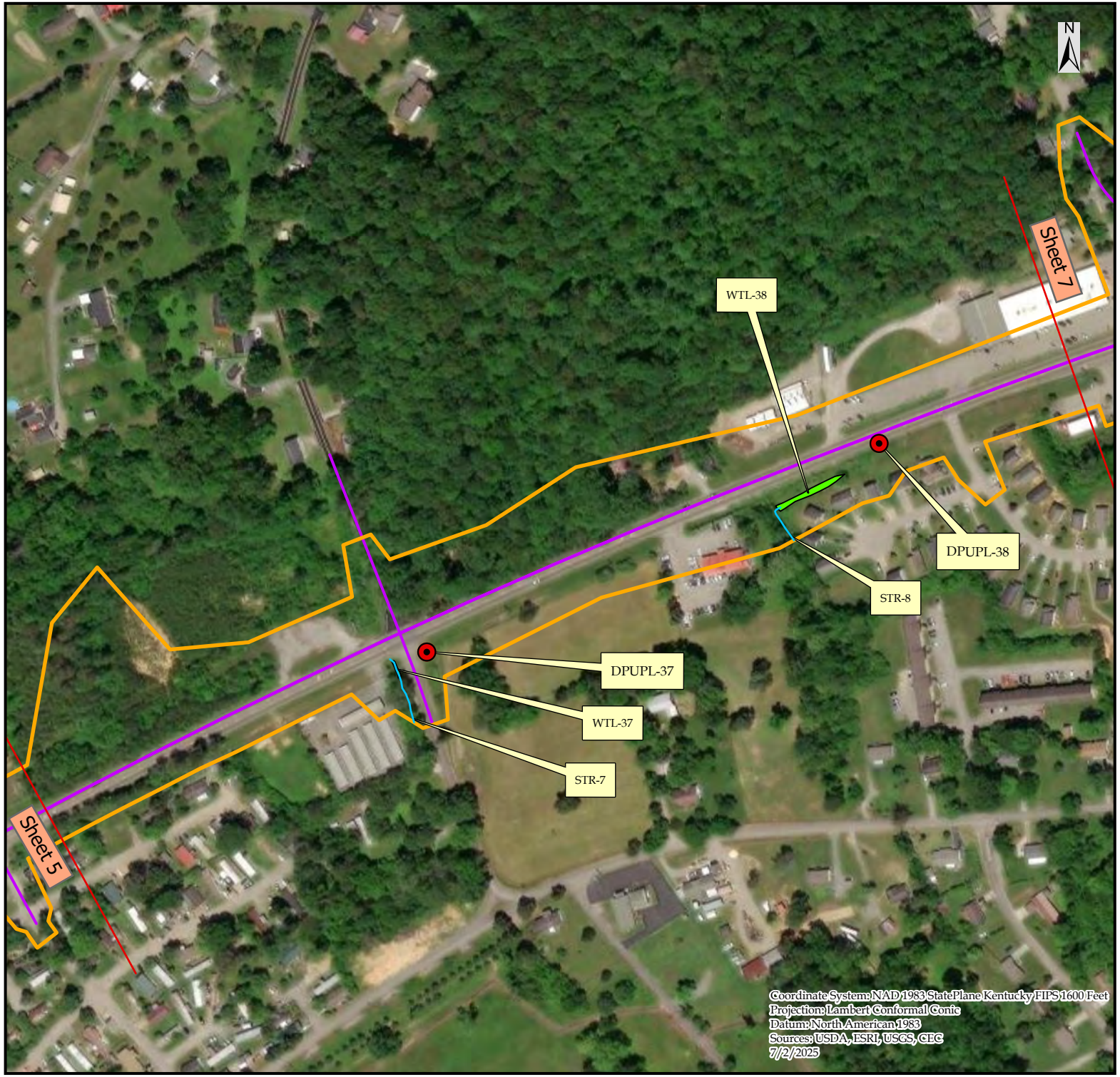

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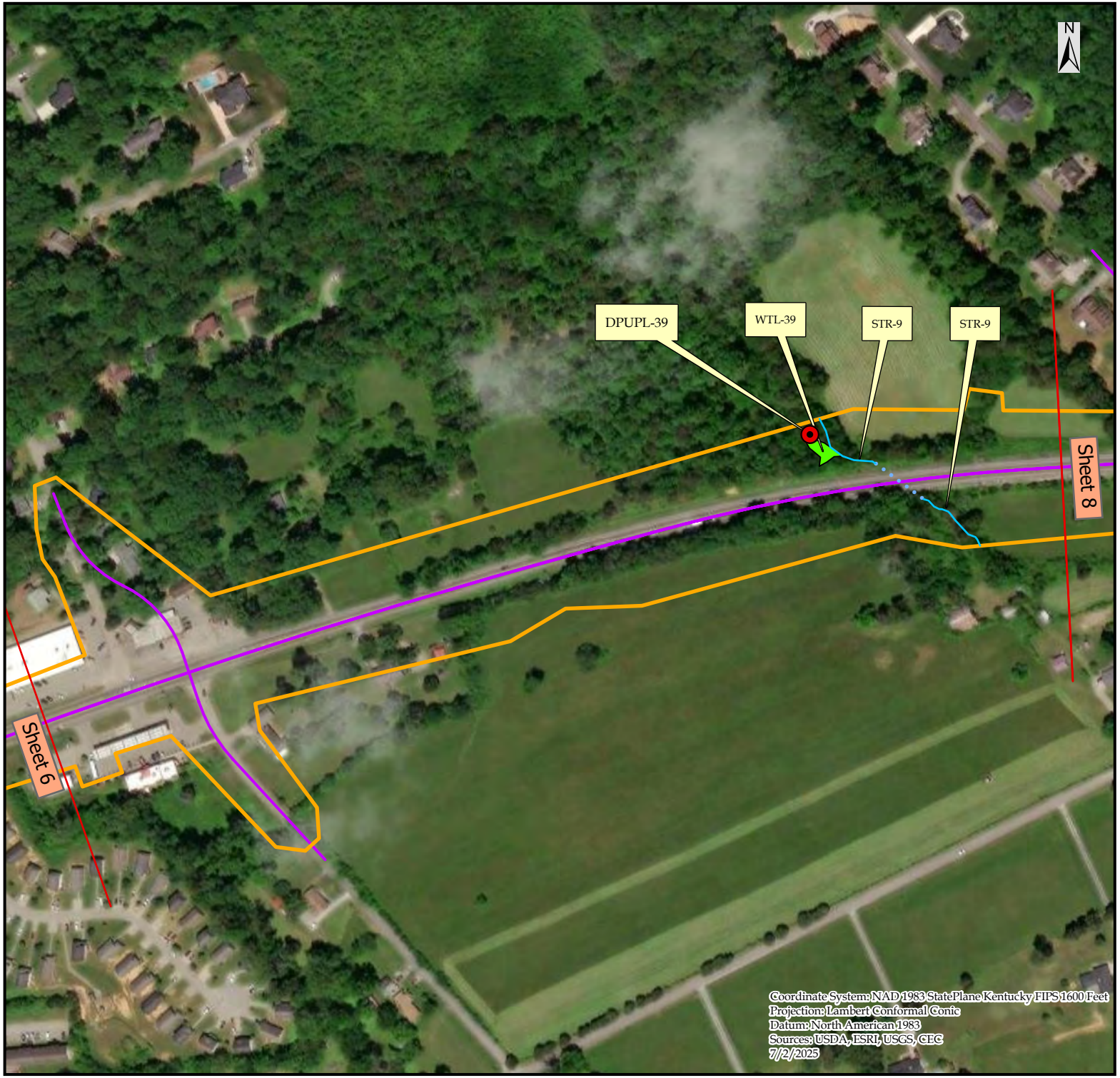

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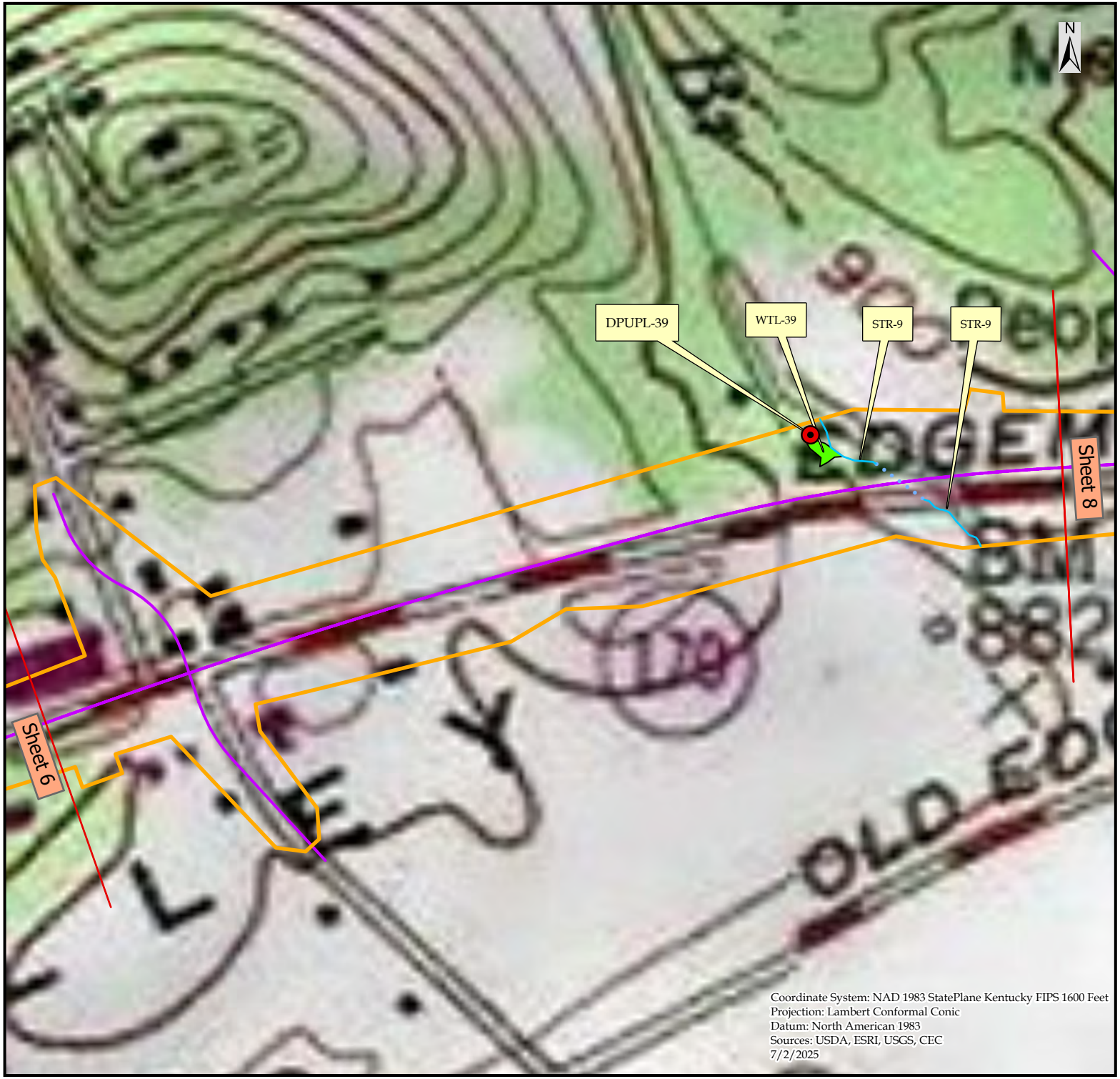

Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, CEC
7/2/2025

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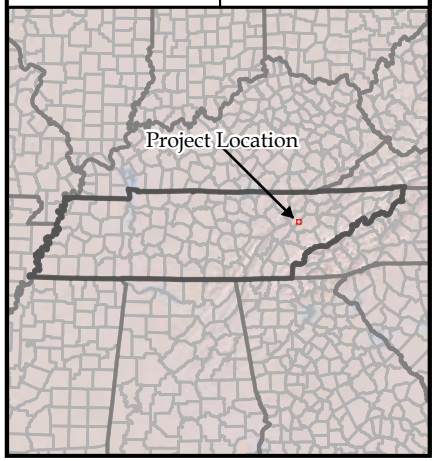

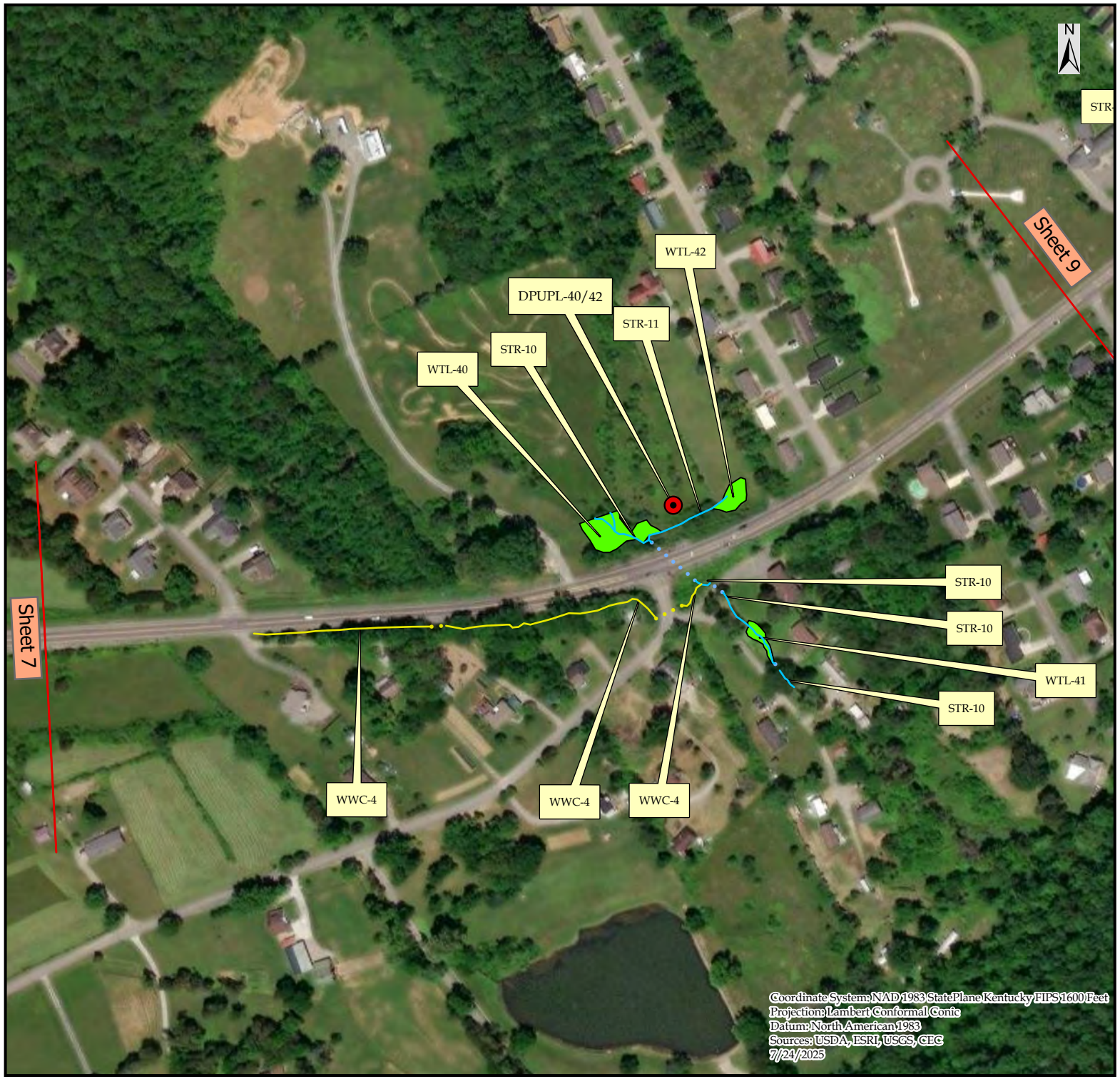

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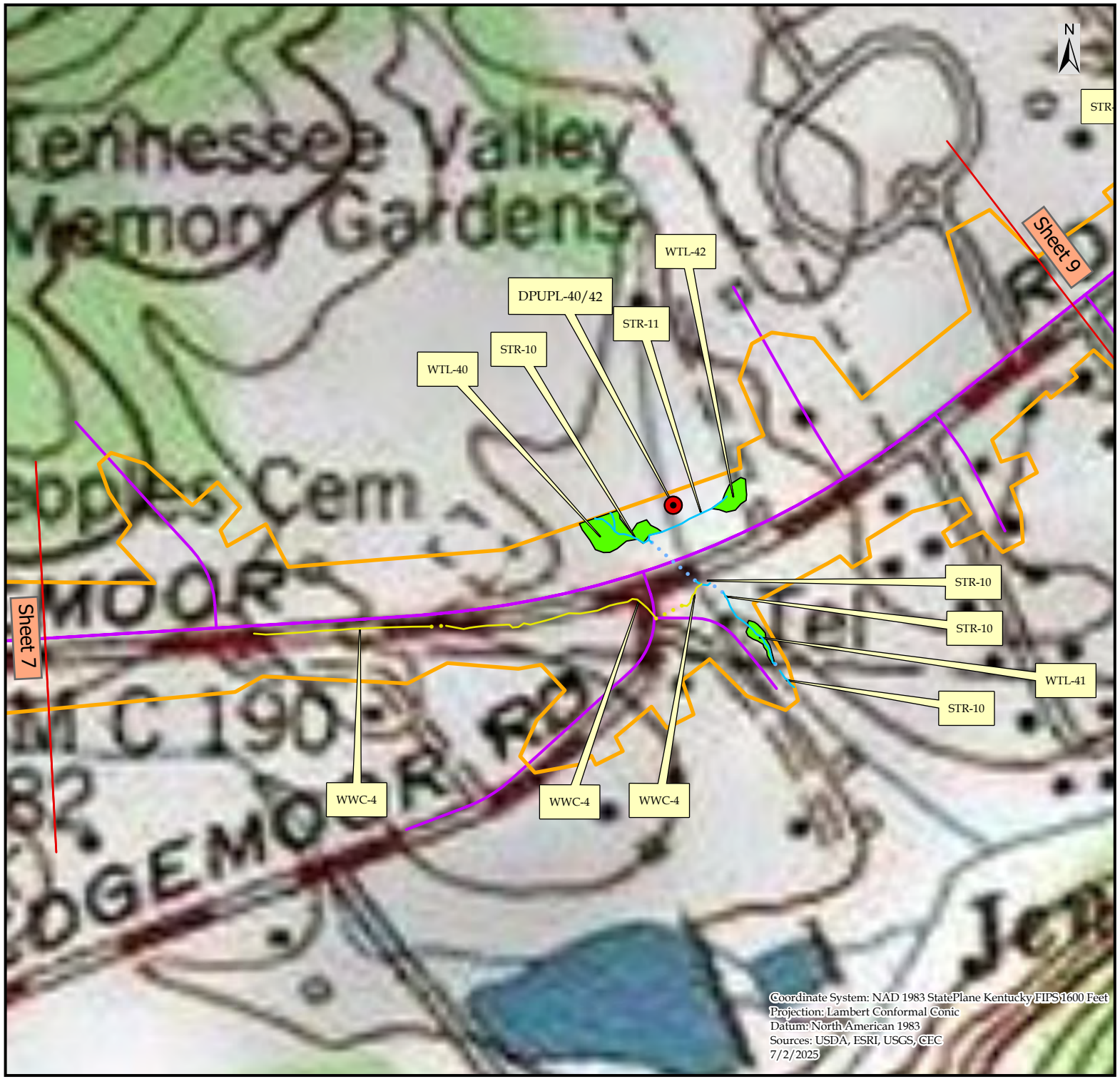

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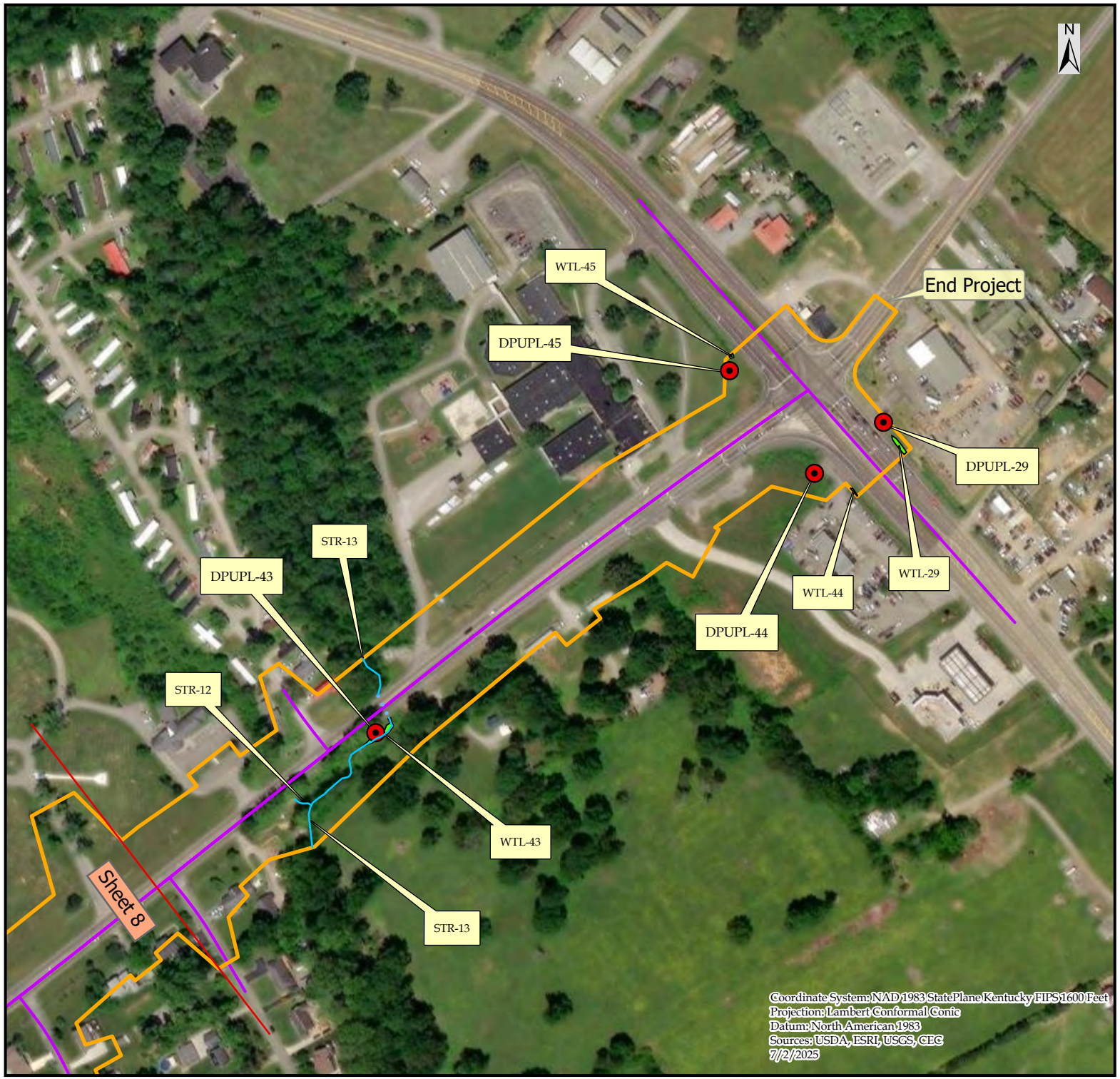

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Project Name: Anderson County, SR-170 from near Melton Lake Drive to SR-9 **PIN:** 124121.02

Water Resource Table for EBR

Based on: ETSA

Date: 12/19/2024

Water Resources (Non-Wetland)					
Label	**Type**	**Latitude**	**Longitude**	**Receiving Waters**	**Quality**
LKE-1*	Lake/Reservoir	36.018456	-84.164506	Clinch River / Melton Hill Reservoir	Not Supporting
STR-4*	Perennial Stream	36.014230	-84.171783	Clinch River / Melton Hill Reservoir	Unassessed
STR-5*	Perennial Stream	36.027183	-84.149505	Unnamed Tirbutary (UNT) to Clinch River / Melton Hill Reservoir	Unassessed
STR-5*	Intermittent Stream	36.027547	-84.149784	UNT to Clinch River / Melton Hill Reservoir	Unassessed
STR-6*	Perennial Stream	36.033098	-84.139682	Worthington Branch	Unassessed
STR-7	Intermittent Stream	36.034209	-84.135512	UNT to Clinch River / Melton Hill Reservoir	Unassessed
STR-8	Intermittent Stream	36.035071	-84.132669	UNT to Clinch River / Melton Hill Reservoir	Unassessed
STR-9*	Perennial Stream	36.037193	-84.123910	Nelson Branch	Unassessed
STR-10*	Perennial Stream	36.037964	-84.118696	Blazer Branch	Unassessed
STR-11	Intermittent Stream	36.038041	-84.118119	STR-10 (UNT to Blazer Branch)	Unassessed
STR-12	Intermittent Stream	36.039767	-84.114184	Blazer Branch	Unassessed
STR-13*	Perennial Stream	36.039836	-84.114009	Blazer Branch	Unassessed
WWC-3	Wet Weather Conveyance/Ephemeral	36.032956	-84.139483	STR-6 (UNT Worthington Branch)	Not Applicable
WWC-4	Wet Weather Conveyance/Ephemeral	36.037518	-84.118750	STR-10 (UNT to Blazer Branch)	Not Applicable
*Feature intersects the ETSA at multiple locations					

Water Resources (Wetland)*					
Label	**Type**	**Latitude**	**Longitude**	**Receiving Waters**	**Quality**
WTL-24	Emergent	36.013287	-84.171492	STR-4 (UNT to Clinch River/Melton Hill Reservoir)	33
WTL-25	Emergent	36.018054	-84.165917	Clinch River / Melton Hill Reservoir	26.5
WTL-26	Emergent	36.025429	-84.152148	None - Isolated	33.75

WTL-27	Emergent	36.026170	-84.151182	None - Isolated	34.25
WTL-28	Forested	36.027585	-84.149855	STR-5 (UNT to Clinton River/Melton Hill Reservoir)	47.5
WTL-29	Shrub	36.041855	-84.109708	None - Isolated	31.75
WTL-30	Emergent	36.027768	-84.149219	None - Isolated	33.75
WTL-31	Emergent	36.028116	-84.149327	None - Isolated	31.75
WTL-32	Emergent	36.027717	-84.148716	None - Isolated	32.25
WTL-33	Emergent	36.027831	-84.148343	None - Isolated	32.25
WTL-34	Emergent	36.030749	-84.144554	None - Isolated	32.25
WTL-35	Forested	36.030661	-84.143103	None - Isolated	47.75
WTL-36	Forested	36.033090	-84.139794	STR-6 (UNT to Worthington Branch)	50.25
WTL-37	Emergent	36.034178	-84.135505	STR-7 (UNT to Clinton River/Melton Hill Reservoir)	29.25
WTL-38	Emergent	36.035261	-84.132270	None - Isolated	31.5
WTL-39	Forested	36.037518	-84.124707	STR-9 (UNT to Nelson Branch)	48.75
WTL-40	Shrub	36.037969	-84.118436	STR-10 (UNT to Blazer Branch)	40.5
WTL-41	Emergent	36.037322	-84.117687	STR-10 (UNT to Blazer Branch)	32.75
WTL-42	Emergent	36.038130	-84.117801	STR-11 (UNT to Blazer Branch)	32.75
WTL-43	Emergent	36.040133	-84.113668	STR-13 (UNT to Blazer Branch)	33.75
WTL-44	Emergent	36.041583	-84.110061	None - Isolated	32.25
WTL-45	Emergent	36.042420	-84.110958	None - Isolated	32.25
*Feature represented by multiple lines/polygons with a contiguous surface connection within the ETSA.					

Note- Features and estimated amounts referenced in this table are based on information available and may change as the project is further refined througout project development.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-04

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-24

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.013283 Long: -84.171491 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 12 to 20 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-24, located right of SR-170 from near STA 205 R to STA 207 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-24

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	30	Y	FAC
2. *Juncus effusus*	15	Y	FACW
3. *Typha latifolia*	15	Y	OBL
4. *Eutrochium fistulosum*	15	Y	FACW
5. *Carex frankii*	5	N	OBL
6. *Rubus allegheniensis*	2	N	FACU
7. *Conoclinium coelestinum*	2	N	FAC
8.			
9.			
10.			
11.			
	84.0 = Total Cover		
50% of total cover: 42.0	20% of total cover: 16.8		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20.00	x 1 =	20.00
FACW species	30.00	x 2 =	60.00
FAC species	32.00	x 3 =	96.00
FACU species	2.00	x 4 =	8.00
UPL species	0.00	x 5 =	0.00
Column Totals:	84.00 (A)		184.00 (B)

Prevalence Index = B/A = 2.19

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	
3-8	10YR 6/2	90	10YR 5/6	10	C	M/PL	SICL	
8-18	10YR 5/4	90	7.5YR 5/3	10	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-04

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-24

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.013246 Long: -84.171685 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 12 to 20 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-24 near STA 205 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-24

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Oxydendrum arboreum*	5	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Lespedeza cuneata*	15	Y	FACU
2. *Verbesina virginica*	15	Y	UPL
3. *Solidago canadensis*	10	N	FACU
4. *Oxalis stricta*	8	N	FACU
5. *Vernonia gigantea*	5	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	53.0 = Total Cover		
50% of total cover: 26.5	20% of total cover: 10.6		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	33.00	x 4 =	132.00
UPL species	20.00	x 5 =	100.00
Column Totals:	58.00 (A)		247.00 (B)

Prevalence Index = B/A = 4.26

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	
3-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/04/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-24 from near STA 205 R to STA 207 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☑ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ trumpetweed	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ broad-leaf cattail	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	1 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.50

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 0.37
- ○ 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 value is the SI for **V7**= 0.61

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.61 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-24

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-24, located on the right side of SR-170 from near STA 205 R to STA 207 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.24
	Quantitative Score (Average of FCIs x 100)	33.0
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	33.0

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/4/2024

1-Station: from plans	STA 207 L to STA 208 R										
2-Map label and name	STR-4										
3-Latitude/Longitude	36.0142299, -84.171783										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (Presense of Fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank	✓	shelving		wracking		
-channel bottom width	8-9 ft			-top of bank width		9-10 ft					
-width and max depth at ordinary high water mark	10 ft, 7 inches										
-width at bankfull	10 ft										
-bank height	LDB - 2 ft			RDB - 2-4 ft							
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: American sycamore, Japanese stilt grass										
	RDB: English ivy, Japanese stilt grass, Christmas fern										
-particle size distribution %	Silt/Sand:	40	Gravel:	10	Cobble:	50	Boulder:	0	Bedrock:	0	
5-photo numbers	5,6										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes		no	✓							
8-ETW	yes		no	✓							
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									
10-Notes	STR-4 is a heavily manipulated perennial stream located northwest of the intersection of SR-170 and Centennial Road. STR-4 originates northwest of the ETSA and flows southeast underneath SR-170 via a concrete box culvert. STR-4 continues southeast of the ETSA to its confluence with the Clinch River/Melton Hill Reservoir.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-4 (Unnamed Tributary to Clinch River)	Date/Time: 10/4/2024 10:07 AM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-4 located left and right of SR-170 near STA 207 L to STA 208 R	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.0142299, -84.171783
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~290 acres	County: Anderson
Soil Type(s) / Geology : Fullerton-Pailo complex, 12 to 20 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-4 has a stream has a defined bed and bank, hydric soils in channel, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-04

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-25

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.018054 Long: -84.165902 Datum: WGS84

Soil Map Unit Name: Collegedale-Rock outcrop complex, 20 to 35 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-25, located left and right of SR-170 near STA 230 L & R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ✓ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 16
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-25

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Y	FAC
2. *Acer saccharinum*	15	Y	FACW
3.			
4.			
5.			
6.			
7.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	20	Y	OBL
2. *Impatiens capensis*	15	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20.00	x 1 =	20.00
FACW species	30.00	x 2 =	60.00
FAC species	20.00	x 3 =	60.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		140.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator A10 (2 cm Muck) present; parameter met.

soils unconsolidated below 6in.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-04

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-25

Investigator(s): I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 8-15

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.018069 Long: -84.165847 Datum: WGS84

Soil Map Unit Name: Water NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-25 near STA 230 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-25

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Y	FAC
2. *Cornus florida*	15	Y	FACU
3. *Fagus grandifolia*	15	Y	FACU
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Lonicera maackii*	50	Y	UPL
2. *Cornus florida*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	65.0 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Lonicera maackii*	15	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.57 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	35.00	x 3 =	105.00
FACU species	45.00	x 4 =	180.00
UPL species	65.00	x 5 =	325.00
Column Totals:	145.00 (A)		610.00 (B)

Prevalence Index = B/A = 4.21

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					SIL	
4-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/04/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, S. Davis Wetland Name/Location WTL-25 near STA 230 L & R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☑ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☑ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☑ Boxelder	☑ broad-leaf cattail	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ jewelweed	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.25 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.25 (TDEN) V6 0.25 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-25

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-25, located on the left and right sides of SR-170 from near STA 230 L & R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.22
	Function: Retain Particulates	--
	Function: Plant Community	0.17
	Function: Wildlife Community	0.17
	Quantitative Score (Average of FCIs x 100)	26.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	26.5

Ecology Field Data Sheet: **Other Resource Features**

(Caves/Rock Houses; Potential Sinkholes; Specialized Habitats; Other)

Project: Anderson County; SR-170 from near Melton Lake Drive to SR-9 **PIN #:** 124121.02

Date of survey: 10/28/2024 **Biologist(s):** I. Bentley **Affiliation:** Copperhead

1-Station: from plans	STA 230 to STA 241 L & R	
2-Map label	LKE-1	
3-Lat/Long	36.019166,-84.163547	
4-Potential impact size		
5-Feature name	Clinch River / Melton Hill Reservoir	
6-Feature description:		
~~w~~hat is the feature	Impoundment of the Clinch River, named the Melton Hill Reservoir	
portion affected	E and W of SR-170 at varying widths depending on the location within ETSA.	
connection to other features	Abutted by WTL-15.	
photo number(s)	9	
other information	The Melton Hill Reservoir is included in the 303d list and is listed as Non-Supporting.	
7- HUC code & name if applicable (12-digit)	060102070403, Clinch River - Wolf Creek	
8-Notes	Nomenclature (LKE-1) was retained for all points where the reservoir intersects the ETSA.	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-26

Investigator(s): D. Hunter, I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.025428 Long: -84.152139 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point located within WTL-26, located right of SR-170 near STA 278 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-26

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Rubus pensilvanicus*	15	Y	FAC
2. *Juncus effusus*	15	Y	FACW
3. *Rumex crispus*	15	Y	FAC
4. *Diodia virginiana*	15	Y	FACW
5. *Eupatorium serotinum*	3	N	FAC
6. *Boehmeria cylindrica*	3	N	FACW
7. *Erechtites hieracifolius*	3	N	UPL
8. *Epilobium coloratum*	3	N	FACW
9.			
10.			
11.			
	72.0 = Total Cover		
50% of total cover: 36.0	20% of total cover: 14.4		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	15	Y	FACU
2.			
3.			
4.			
5.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	36.00	x 2 =	72.00
FAC species	33.00	x 3 =	99.00
FACU species	15.00	x 4 =	60.00
UPL species	3.00	x 5 =	15.00
Column Totals:	87.00 (A)		246.00 (B)

Prevalence Index = B/A = 2.83

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	100					CL	
6-12	10YR 5/1	82	7.5YR 4/6	18	C	M	CL	
12-18	10YR 5/4	60	7.5YR 4/4	40	C	M	C	Disturbed horizon

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-26/27

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.025515 Long: -84.152470 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within uplands adjacent to WTL-26 near STA 277 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-26/27

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Digitaria ciliaris*	25	Y	FAC
2. *Schedonorus arundinaceus*	15	Y	FACU
3. *Acalypha virginica*	15	Y	FACU
4. *Diodia virginiana*	10	N	FACW
5. *Paspalum laeve*	10	N	FAC
6. *Plantago rugelii*	5	N	FACU
7. *Setaria pumila*	5	N	FAC
8. *Plantago lanceolata*	5	N	UPL
9.			
10.			
11.			
	90.0 = Total Cover		
50% of total cover: 45.0	20% of total cover: 18.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	10.00	x 2 =	20.00
FAC species	40.00	x 3 =	120.00
FACU species	35.00	x 4 =	140.00
UPL species	5.00	x 5 =	25.00
Column Totals:	90.00 (A)		305.00 (B)

Prevalence Index = B/A = 3.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-26/27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	100					SIL	
3-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter, I. Bentley Wetland Name/Location WTL-26 near STA 278 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Virginia buttonweed	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ common rush	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	2 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.53

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 — 0.53
- ○ 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 value is the SI for **V7**= 0.73

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.73 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-26

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-26, located on the right side of SR-170 near STA 278 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.25
	Function: Wildlife Community	0.25
	Quantitative Score (Average of FCIs x 100)	33.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	33.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-27

Investigator(s): D. Hunter, I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.026182 Long: -84.151180 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL27, located right of SR-170 near STA 282 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 8

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-27

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Scirpus cyperinus*	15	Y	FACW
2. *Scirpus georgianus*	15	Y	OBL
3. *Juncus effusus*	15	Y	FACW
4. *Carex lurida*	15	Y	OBL
5. *Boehmeria cylindrica*	15	Y	FACW
6. *Carex vulpinoidea*	15	Y	OBL
7. *Epilobium coloratum*	3	N	FACW
8. *Ludwigia alternifolia*	3	N	FACW
9. *Eupatorium serotinum*	3	N	FAC
10. *Mimulus ringens*	3	N	OBL
11. *Rosa palustris*	3	N	OBL
	105.0 = Total Cover		
50% of total cover: 52.5	20% of total cover: 21.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	3	N	FAC
2.			
3.			
4.			
5.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	51.00	x 1 =	51.00
FACW species	51.00	x 2 =	102.00
FAC species	6.00	x 3 =	18.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	108.00 (A)		171.00 (B)

Prevalence Index = B/A = 1.58

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/2	90	7.5R 4/6	10	C	M	L	
9-18	5YR 4/4	100					C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter, I. Bentley Wetland Name/Location WTL-27 near STA 282 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ woolgrass	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ shallow sedge	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	4 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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. 75 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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-27

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-27, located on the right side of SR-170 near STA 282 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.26
	Function: Wildlife Community	0.26
	Quantitative Score (Average of FCIs x 100)	34.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	34.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Anderson County EBR 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-28 PSS

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.027422 Long: -84.149891 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL29, located left of SR-170 near STA 288 L.
All parameters met; area is considered a palustrine scrub/shrub (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-28 PSS

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	25	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	20	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20.0 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Typha latifolia*	30	Y	OBL
2. *Juncus effusus*	25	Y	FACW
3. *Carex lurida*	25	Y	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80.0 = Total Cover		
50% of total cover: 40.0	20% of total cover: 16.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	3	N	FACU
2.			
3.			
4.			
5.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75.00	x 1 =	75.00
FACW species	50.00	x 2 =	100.00
FAC species	0.00	x 3 =	0.00
FACU species	3.00	x 4 =	12.00
UPL species	0.00	x 5 =	0.00
Column Totals:	128.00 (A)		187.00 (B)

Prevalence Index = B/A = 1.46

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only

SOIL Sampling Point: DPWTL-28 PSS

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y 4/2	95	7.5YR 5/4	5	C	M/PL	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-28/30

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.027614 Long: -84.149419 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within uplands adjacent to WTL-28, and WTL-30. Data point located near STA 289 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-28/30

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Rosa multiflora*	10	Y	FACU
2. *Albizia julibrissin*	5	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Paspalum laeve*	10	Y	FAC
2. *Allium vineale*	10	Y	FACU
3. *Verbesina virginica*	10	Y	UPL
4. *Symphyotrichum pilosum*	5	N	FAC
5. *Vernonia gigantea*	5	N	FAC
6. *Rubus pensilvanicus*	5	N	FAC
7. *Juncus effusus*	5	N	FACW
8.			
9.			
10.			
11.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	3	Y	FAC
2. *Toxicodendron radicans*	2	Y	FAC
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.86 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	5.00	x 2 =	10.00
FAC species	30.00	x 3 =	90.00
FACU species	20.00	x 4 =	80.00
UPL species	15.00	x 5 =	75.00
Column Totals:	70.00 (A)		255.00 (B)

Prevalence Index = B/A = 3.64

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-28/30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SL	
2-16	10YR 4/4	100					SL	
16-18	5YR 5/4	90	10YR 5/6	5	C	M	CL	
			7.5YR 6/2	5	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/08/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter, I. Bentley Wetland Name/Location WTL-28 near STA 288 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☑ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☑ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☑ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☑ Boxelder	☐ _____	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.53

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 — 0.53
- ○ 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 value is the SI for **V7**= 0.73

*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. 10 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 1.00 (SCOV) V7 0.73 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.50 (TDEN) V6 0.25 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-28

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-28, located on the left side of SR-170 near STA 288 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.43
	Function: Retain Particulates	--
	Function: Plant Community	0.55
	Function: Wildlife Community	0.42
	Quantitative Score (Average of FCIs x 100)	47.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	47.5

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-5 (Intermittent portion)	Date/Time: 10/7/2024 12:37 PM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-5 located left and right of SR-170 from near STA 288 L to STA 288 R	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.027547, -84.149784
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~85 acres	County: Anderson
Soil Type(s) / Geology : Fullerton-Pailo complex, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions N/A	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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

Justification / Notes :

STR-5 has a stream has a defined bed and bank, and adjacent wetlands are present and provide subsurface flow. In addition, gilled salamanders, water striders (Gerridae), and fish species (Cyprinidae) are present within the channel. The channel appears to have intermittent flow, but secondary indicators were examined to confirm.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	1
4. Sorting of soil textures or other substrate	0	1	2	3	0.5
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	1
11. Grade controls	0	0.5	1	1.5	0
12. Natural valley or drainageway	0	0.5	1	1.5	1
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 6.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	1
15. Water in channel and >48 hours since sig. rain	0	1	2	3	1
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1.5
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 10)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	3
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	1
25. Macrobenthos (record type & abundance)	0	1	2	3	2
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	1

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 23

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Adjacent wetlands are present providing subsurface flow. In addition, gilled salamanders and water striders (Gerridae) are present within the channel. The channel appears to have intermittent flow and, based on secondary indicators, is an intermittent stream.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-5 (Perennial portion)	Date/Time: 10/7/2024 12:37 PM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-5 located left and right of SR-170 from near STA 288 L to STA 288 R	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.027183, -84.149505
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~90 acres	County: Anderson
Soil Type(s) / Geology : Udorthents, 0 to 25 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-5 has a stream has a defined bed and bank, hydric soils in channel, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/7/2024

1-Station: from plans	STA 288 L to STA 288 R										
2-Map label and name	STR-5										
3-Latitude/Longitude	36.027547, -84.149784										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream	✓	ephemeral stream		wwc				
-HD score (if applicable)	23										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank	✓	shelving		wracking		
-channel bottom width	2-3 ft		-top of bank width		3-4 ft						
-width and max depth at ordinary high water mark	4 ft, 6 inches										
-width at bankfull	4 ft										
-bank height	LDB - 1 ft		RDB - 1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: American sycamore, sugarberry, mustang grape										
	RDB: English ivy, Japanese stilt grass, Christmas fern										
-particle size distribution %	Silt/Sand:	40	Gravel:	10	Cobble:	50	Boulder:	0	Bedrock:	0	
5-photo numbers	18, 19										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes		no	✓							
8-ETW	yes		no	✓							
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									

10-Notes

STR-5 is a moderately manipulated stream located on the northeast side of SR-170 between an unnamed private drive and Old Emory Road. STR-5 originates north of the ETSA as an intermittent stream and flows southwest where it becomes a perennial stream. STR-5 continues southwest of the ETSA where its natural flow has been terminated due to the construction of a water treatment plant.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-30

Investigator(s): D. Hunter, I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.027772 Long: -84.149217 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL30, located left of SR-170 near STA 290 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-30

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex cherokeensis*	15	Y	FACW
2. *Vernonia noveboracensis*	15	Y	FACW
3. *Mimulus alatus*	15	Y	OBL
4. *Coleataenia anceps*	15	Y	FAC
5. *Diodia virginiana*	3	N	FACW
6. *Rumex crispus*	3	N	FAC
7. *Acalypha virginica*	3	N	FACU
8. *Symphyotrichum pilosum*	3	N	FAC
9. *Chamaecrista fasciculata*	3	N	FACU
10. *Cyperus strigosus*	3	N	FACW
11. *Juncus effusus*	3	N	FACW
	81.0 = Total Cover		
50% of total cover: 40.5	20% of total cover: 16.2		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	15	Y	FACU
2.			
3.			
4.			
5.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	18.00	x 2 =	36.00
FAC species	42.00	x 3 =	126.00
FACU species	6.00	x 4 =	24.00
UPL species	15.00	x 5 =	75.00
Column Totals:	96.00 (A)		276.00 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/2	90	7.5R 4/6	10	C	M	L	
14-18	10YR 5/4	100					C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter, I. Bentley Wetland Name/Location WTL-30 near STA 290 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Cherokee sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ beaked cut-throat grass	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	2 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.53

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 — 0.53
- ○ 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 value is the SI for **V7**= 0.73

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.73 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-30

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-30, located on the left side of SR-170 near STA 290 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.25
	Function: Wildlife Community	0.25
	Quantitative Score (Average of FCIs x 100)	33.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	33.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-31

Investigator(s): D. Hunter, I. Bentley Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.028112 Long: -84.149318 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-31, located left of SR-170 near STA 291 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-31

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *no rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Arthraxon hispidus*	15	Y	FAC
2. *Vernonia noveboracensis*	15	Y	FACW
3. *Carex lurida*	15	Y	OBL
4. *Paspalum urvillei*	15	Y	FAC
5. *Microstegium vimineum*	3	N	FAC
6. *Rumex crispus*	3	N	FAC
7. *Acalypha virginica*	3	N	FACU
8. *Symphyotrichum pilosum*	3	N	FAC
9. *Schedonorus arundinaceus*	3	N	FACU
10. *Cyperus strigosus*	3	N	FACW
11. *Paspalum laeve*	3	N	FAC
	81.0 = Total Cover		
50% of total cover: 40.5	20% of total cover: 16.2		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Pueraria montana*	15	Y	UPL
2.			
3.			
4.			
5.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	18.00	x 2 =	36.00
FAC species	42.00	x 3 =	126.00
FACU species	6.00	x 4 =	24.00
UPL species	15.00	x 5 =	75.00
Column Totals:	96.00 (A)		276.00 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/2	90	7.5R 4/6	10	C	M	L	
9-11	5YR 5/6	100					C	
11-18	10YR 4/2	100					CL	Gravel in matrix

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-31

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.028025 Long: -84.149075 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within uplands adjacent to WTL-31 near STA 291 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-31

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Cynodon dactylon*	25	Y	FACU
2. *Paspalum laeve*	25	Y	FAC
3. *Schedonorus arundinaceus*	25	Y	FACU
4. *Trifolium repens*	20	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95.0 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	25.00	x 3 =	75.00
FACU species	70.00	x 4 =	280.00
UPL species	0.00	x 5 =	0.00
Column Totals:	95.00 (A)		355.00 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-UPL31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/4	100					SL	
12-18	7.5YR 5/3	95	10YR 5/6	5	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter, I. Bentley Wetland Name/Location WTL-31 near STA 291 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ ironweed	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ shallow sedge	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ Vasey's grass
☐ _____	☐ _____	0 Number native herbaceous spp.		☑ Small carpetgrass

2. Using the number of dominants in Groups 1, 2, and 3 above, calculate a quality index (Q) using the following formula: [(1.0 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.33

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 0.17
- ○ 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 value is the SI for **V7**= 0.41

*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. 75 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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.41 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-31

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-31, located on the left side of SR-170 near STA 291 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.21
	Function: Wildlife Community	0.21
	Quantitative Score (Average of FCIs x 100)	31.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	31.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-07

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-32

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.027694 Long: -84.148771 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-32, located right of SR-170 near STA 290 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-32

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex frankii*	30	Y	OBL
2. *Juncus effusus*	30	Y	FACW
3. *Solidago canadensis*	10	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	5	Y	FACU
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	30.00	x 2 =	60.00
FAC species	0.00	x 3 =	0.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	75.00 (A)		150.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					SICL	
4-10	10YR 6/2	90	10YR 5/4	10	C	M/PL	SICL	
10-18	7.5YR 5/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-32/33

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.027811 Long: -84.148461 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-33 near STA 290 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-32/33

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Paspalum laeve*	20	Y	FAC
2. *Allium vineale*	10	Y	FACU
3. *Andropogon virginicus*	10	Y	FACU
4. *Symphyotrichum ericoides*	8	N	FACU
5. *Trifolium repens*	8	N	FACU
6. *Solidago canadensis*	8	N	FACU
7. *Eupatorium altissimum*	5	N	UPL
8. *Plantago lanceolata*	5	N	UPL
9.			
10.			
11.			
	74.0 = Total Cover		
50% of total cover: 37.0	20% of total cover: 14.8		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	10	Y	FAC
2.			
3.			
4.			
5.			
	10.0 = Total Cover		
50% of total cover: 5.0	20% of total cover: 2.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	30.00	x 3 =	90.00
FACU species	49.00	x 4 =	196.00
UPL species	10.00	x 5 =	50.00
Column Totals:	89.00 (A)		336.00 (B)

Prevalence Index = B/A = 3.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-32/33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					SIL	
4-8	10YR 4/2	100					SIL	Gravel
8-18	7.5YR 4/6	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/07/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-32 near STA 290 R

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Frank's sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ common rush	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.44

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 0.22
- ○ 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 value is the SI for **V7**= 0.47

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.47 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-32

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-32, located on the right side of SR-170 near STA 290 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.22
	Function: Wildlife Community	0.22
	Quantitative Score (Average of FCIs x 100)	32.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-07

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-33

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.027804 Long: -84.148335 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-33, located right of SR-170 near STA 292 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-33

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted Trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex frankii*	30	Y	OBL
2. *Juncus effusus*	30	Y	FACW
3. *Solidago canadensis*	10	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	5	Y	FACU
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	30.00	x 2 =	60.00
FAC species	0.00	x 3 =	0.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	75.00 (A)		150.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					SICL	
4-10	10YR 6/2	90	10YR 5/4	10	C	M/PL	SICL	
10-18	7.5YR 5/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/07/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-33 near STA 292 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Frank's sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ lamp rush	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.44

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 0.22
- ○ 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 value is the SI for **V7**= 0.47

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.47 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-33

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-33, located on the right side of SR-170 near STA 292 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.22
	Function: Wildlife Community	0.22
	Quantitative Score (Average of FCIs x 100)	32.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.25

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: DPWTL-34

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.0307608 Long: -84.1445492 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-34, located left of SR-170 near STA 308 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-34

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. Eleocharis obtusa	85	Y	OBL
2. Persicaria pensylvanica	15	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.0 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		115.00 (B)

Prevalence Index = B/A = 1.15

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/2	90	7.5YR 4/6	10	C	M	L	
9-10	5YR 5/6	100					C	
10-18	10YR 4/2	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-34

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.030811 Long: -84.144672 Datum: WGS84

Soil Map Unit Name: Udorthents, 0 to 25 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-34 near STA 307 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-34

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Paspalum laeve*	20	Y	FAC
2. *Allium vineale*	10	Y	FACU
3. *Andropogon virginicus*	10	Y	FACU
4. *Symphyotrichum ericoides*	8	N	FACU
5. *Trifolium repens*	8	N	FACU
6. *Solidago canadensis*	8	N	FACU
7. *Eupatorium altissimum*	5	N	UPL
8. *Plantago lanceolata*	5	N	UPL
9.			
10.			
11.			
	74.0 = Total Cover		
50% of total cover: 37.0	20% of total cover: 14.8		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	10	Y	FAC
2.			
3.			
4.			
5.			
	10.0 = Total Cover		
50% of total cover: 5.0	20% of total cover: 2.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	30.00	x 3 =	90.00
FACU species	49.00	x 4 =	196.00
UPL species	10.00	x 5 =	50.00
Column Totals:	89.00 (A)		336.00 (B)

Prevalence Index = B/A = 3.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					SIL	
4-8	10YR 4/2	100					SIL	Gravel
8-18	7.5YR 4/6	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/07/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-34 near STA 308 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ blunt spikerush	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.17
- ○ 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 value is the SI for **V7**= 0.41

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.41 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-34

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-34, located on the left side of SR-170 near STA 308 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.21
	Function: Wildlife Community	0.21
	Quantitative Score (Average of FCIs x 100)	31.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	31.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-35

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.030670 Long: -84.143108 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Data point taken within WTL-35, located right of SR-170 near STA 311 R.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 8

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-35

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus rubra*	38	Y	FAC
2. *Nyssa sylvatica*	38	Y	FAC
3. *Acer rubrum*	15	N	FAC
4. *Juniperus virginiana*	15	N	FACU
5.			
6.			
7.			
	106.0 = Total Cover		
50% of total cover: 53.0	20% of total cover: 21.2		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	15	Y	FACW
2. *Ligustrum vulgare*	15	Y	FACU
3. *Liquidambar styraciflua*	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Geum virginianum*	3	N	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Bignonia capreolata*	15	Y	FAC
2. *Pueraria montana*	3	N	UPL
3. *Toxicodendron radicans*	3	N	FAC
4.			
5.			
	21.0 = Total Cover		
50% of total cover: 10.5	20% of total cover: 4.2		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	127.00	x 3 =	381.00
FACU species	30.00	x 4 =	120.00
UPL species	3.00	x 5 =	15.00
Column Totals:	175.00 (A)		546.00 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					L	
4-18	10YR 5/2	90	7.5YR 4/6	10	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-35

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.030775 Long: -84.142694 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-35 near STA 311 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-35

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	25	Y	FACU
2. *Liriodendron tulipifera*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ligustrum sinense*	25	Y	FACU
2. *Liriodendron tulipifera*	10	Y	FACU
3. *Liquidambar styraciflua*	5	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	75	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75.0 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Toxicodendron radicans*	3	Y	FAC
2. *Bignonia capreolata*	3	Y	FAC
3. *Parthenocissus quinquefolia*	3	Y	FACU
4.			
5.			
	9.0 = Total Cover		
50% of total cover: 4.5	20% of total cover: 1.8		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	86.00	x 3 =	258.00
FACU species	78.00	x 4 =	312.00
UPL species	0.00	x 5 =	0.00
Column Totals:	164.00 (A)		570.00 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					SIL	
3-9	10YR 4/4	100					SIL	
9-18	7.5YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-35 near STA 311 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☑ Green ash	☑ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☑ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☑ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☐ _____	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.53

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 — 0.53
- ○ 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 value is the SI for **V7**= 0.73

*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). This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 0.50 (SCOV) V7 0.73 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.50 (TDEN) V6 0.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-35

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-35, located on the right side of SR-170 near STA 311 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.43
	Function: Retain Particulates	--
	Function: Plant Community	0.55
	Function: Wildlife Community	0.42
	Quantitative Score (Average of FCIs x 100)	47.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	47.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-36

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.033089 Long: -84.139773 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-36, located left of SR-170 near STA 324 L.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1
Water Table Present?	Yes ✓	No _____	Depth (inches): 8
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 4

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-36

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus rubra*	15	Y	FAC
2. *Acer rubrum*	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of total cover: 7.5	20% of total cover: 6.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ligustrum vulgare*	38	Y	FACU
2. *Alnus serrulata*	15	Y	OBL
3. *Carpinus caroliniana*	15	Y	FAC
4. *Acer saccharum*	3	N	FACU
5. *Acer negundo*	3	N	FAC
6.			
7.			
8.			
9.			
	74.0 = Total Cover		
50% of total cover: 37.0	20% of total cover: 14.8		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	63	Y	FAC
2. *Leersia virginica*	15	N	FACW
3. *Boehmeria cylindrica*	3	N	FACW
4. *Lobelia siphilitica*	3	N	FACW
5. *Polystichum acrostichoides*	3	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	87.0 = Total Cover		
50% of total cover: 43.5	20% of total cover: 17.4		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Toxicodendron radicans*	15	Y	FAC
2. *Hedera helix*	3	N	FACU
3.			
4.			
5.			
	18.0 = Total Cover		
50% of total cover: 9.0	20% of total cover: 3.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	21.00	x 2 =	42.00
FAC species	96.00	x 3 =	288.00
FACU species	47.00	x 4 =	188.00
UPL species	0.00	x 5 =	0.00
Column Totals:	179.00 (A)		533.00 (B)

Prevalence Index = B/A = 2.98

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	85	7.5YR 4/6	15	C	M	SIL	
8-18	10YR 4/1	90	10YR 5/8	10	C	M	SICL	Gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-36

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.033056 Long: -84.139877 Datum: WGS84

Soil Map Unit Name: Fullerton-Pailo complex, 5 to 12 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-36 near STA 324 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-36

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	85	Y	FACU
2. *Juglans nigra*	3	N	FACU
3. *Juniperus virginiana*	3	N	FACU
4.			
5.			
6.			
7.			
	91.0 = Total Cover		
50% of total cover: 45.5	20% of total cover: 18.2		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ligustrum vulgare*	38	Y	FACU
2. *Acer saccharum*	3	N	FACU
3. *Acer negundo*	3	N	FAC
4. *Fraxinus pennsylvanica*	3	N	FACW
5.			
6.			
7.			
8.			
9.			
	47.0 = Total Cover		
50% of total cover: 23.5	20% of total cover: 9.4		
Herb Stratum (Plot size: 5' Radius)			
1. *Polystichum acrostichoides*	15	Y	FACU
2. *Microstegium vimineum*	3	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	18.0 = Total Cover		
50% of total cover: 9.0	20% of total cover: 3.6		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Hedera helix*	85	Y	FACU
2.			
3.			
4.			
5.			
	85.0 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	3.00	x 2 =	6.00
FAC species	6.00	x 3 =	18.00
FACU species	232.00	x 4 =	928.00
UPL species	0.00	x 5 =	0.00
Column Totals:	241.00 (A)		952.00 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/08/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-36 near STA 324 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☑ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☑ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☑ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ brookside alder	☐ Tall fescue
☐ Nuttall oak	☑ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.50

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 — 0.50
- ○ 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 value is the SI for **V7**= 0.71

*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. 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).
   This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 1.00 (SCOV) V7 0.71 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.75 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 From SR-62 to near Melton Lake Drive PIN 124121.01 WTL-36

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-36, located on the left side of SR-170 near STA 324 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.46
	Function: Retain Particulates	--
	Function: Plant Community	0.60
	Function: Wildlife Community	0.45
	Quantitative Score (Average of FCIs x 100)	50.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	50.25

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley, D. Hunter	**Affiliation:**	Copperhead	**Date:**	10/8/2024

1-Station: from plans	STA 324 L to STA 323 R										
2-Map label and name	STR-6										
3-Latitude/Longitude	36.033098, -84.139682										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (Presense of Fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank	✓	shelving		wracking		
-channel bottom width	4-5 ft			-top of bank width		5-6 ft					
-width and max depth at ordinary high water mark	6 ft, 6 inches										
-width at bankfull	6 ft										
-bank height	LDB - 1-2 ft			RDB - 1-2 ft							
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: European privet, sugarberry, mustang grape										
	RDB: English ivy, Japanese stilt grass, Christmas fern, American hornbeam										
-particle size distribution %	Silt/Sand:	30	Gravel:	10	Cobble:	60	Boulder:	0	Bedrock:	0	
5-photo numbers	28, 29										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes			no	✓						
8-ETW	yes			no	✓						
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									
10-Notes	STR-6 is a heavily manipulated perennial stream located on the north and south sides of SR-170 between Chesterfield Lane and Royal Street. STR-6 originates north of the ETSA and flows underneath SR-170 via a concrete box culvert. STR-6 continues southwest of the ETSA toward its confluence with Worthington Branch.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-6 (Unnamed Tributary to Worthington Branch)	Date/Time: 10/8/2024 9:46 AM
Assessors/Affiliation: I. Bentley, D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-6 located left and right of SR-170 fro near STA 324 L to STA 323 R	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.033098, -84.139682
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~70 acres	County: Anderson
Soil Type(s) / Geology : Fullerton-Pailo complex, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-6 has a stream has a defined bed and bank, hydric soils in channel, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	10/8/2024

1-Station: from plans	STA 324 L to STA 327 L									
2-Map label and name	WWC-3									
3-Latitude/Longitude	36.032956, -84.139483									
4-Feature description:										
-channel identification	perennial stream		intermittent stream		ephemeral stream		wwc	✓		
-HD score (if applicable)	14.5									
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris		scour		veg absent, bent, matted	✓
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining	
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank		shelving		wracking	
-channel bottom width	1-2 ft		-top of bank width		2-3 ft					
-width and max depth at ordinary high water mark	3 ft, 8 inches									
-width at bankfull	3 ft									
-bank height	LDB - <1 ft		RDB - <1 ft							
-riffle/pool complex or other specialized habitat present?	No									
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Morell's honeysuckle, box elder									
	RDB: Morell's honeysuckle									
-particle size distribution %	Silt/Sand: -		Gravel: -		Cobble: -		Boulder: -		Bedrock: -	
5-photo numbers	32									
6-HUC -8 Code & Name	06010207, Lower Clinch									
7-Assessed	yes			no	✓					
8-ETW	yes			no	✓					
9-303 (d) List	yes		siltation		habitat:		other:			
	no	✓								
10-Notes	WWC-3 is a wet weather conveyance channel located north of SR-170 between Chesterfield Lane and Royal Street. WWC-3 originates from a culvert beneath an access road north of Royal Street and flows west to its confluence with STR-7. The WWC-3 channel bed is mostly concrete-lined and the banks are dominated by upland vegetation.									

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-3	Date/Time: 10/8/2024 9:49 AM
Assessors/Affiliation: D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: WWC-3 located left of SR-170 from near STA 324 L to STA 327 L	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.032956, -84.139483
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~52 acres	County: Anderson
Soil Type(s) / Geology : Fullerton-Pailo complex, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 = WWC

Secondary Indicator Score (if applicable) = 14.5

Justification / Notes :

WWC-3 originates at a culvert emerging from beneath commercial driveway and terminates at STR-6.

A continuous bed/bank structure is present throughout the entire feature. WWC-3 begins as roadside ditch and channelization becomes more apparent within a forested area where the elevation gradient increases. No biotic components (i.e., macrobenthos) observed within the channel. Several structures grade controls (i.e., rock sills and root wads) were observed throughout the feature.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 10)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2.5
2. Sinuous channel	0	1	2	3	0.5
3. In-channel structure: riffle-pool sequences	0	1	2	3	2
4. Sorting of soil textures or other substrate	0	1	2	3	2
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0.5
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	0.5
11. Grade controls	0	0.5	1	1.5	1.5
12. Natural valley or drainageway	0	0.5	1	1.5	.5
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 1)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5	0
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1
19. Hydric soils in channel bed or sides of channel	No=0				

C. Biology (Subtotal = 3.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	1.5
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	1	2	3	0
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	0

[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 :

Though WWC-3 has a defined bed/bank structure, the channel lacks in hydrological and biological parameters.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/8/2024

1-Station: from plans	STA 337 R										
2-Map label and name	STR-7										
3-Latitude/Longitude	36.033098, -84.139682										
4-Feature description:											
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc				
-HD score (if applicable)	21.5										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris		scour		veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank		shelving		wracking		
-channel bottom width	1-2 ft		-top of bank width		2-3 ft						
-width and max depth at ordinary high water mark	3 ft, 8 inches										
-width at bankfull	3 ft										
-bank height	LDB - 1 ft		RDB - 1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Canada goldenrod, Japanese stilt grass										
	RDB: English ivy, Japanese stilt grass, sweetgum										
-particle size distribution %	Silt/Sand: 80		Gravel: 15		Cobble: 5		Boulder: 0		Bedrock: 0		
5-photo numbers	33, 34										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes			no	✓						
8-ETW	yes			no	✓						
9-303 (d) List	yes			siltation			habitat:		other:		
	no	✓									
10-Notes	STR-7 is a moderately manipulated intermittent stream located southwest of the intersection of SR-170 and Foust Carney Road. STR-7 originates from a roadside drainage ditch and flows southwest of the ETSA toward its confluence with Worthington Branch.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-7 (Unnamed Tributary to Worthington Branch)	Date/Time: 10/8/2024 9:00 AM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-7 located right of SR-170 near STA 337 R	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.034209, -84.135512
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~120 acres	County: Anderson
Soil Type(s) / Geology : Colbert-Lyerly-Rock outcrop complex, 5-20 percent slopes Source: NRCS	
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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

Justification / Notes :

STR-7 has a stream has a defined bed and bank and forms southeast of Edgemoor Road where multiple drainage ditches/upland swales contribute flow diverted from SR-170 via a series of culverts. A few aquatic snails and midges observed within the channel. In addition, substrate sorting, grade controls, head cuts, fiberous roots were observed within the channel. Recent deposition of alluvial material was also present and hydric soils were present throughout channel.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	2	3	2
4. Sorting of soil textures or other substrate	0	1	2	3	1.5
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	1
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	1
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	1
11. Grade controls	0	0.5	1	1.5	1
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 4)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5	1
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1.5
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 6.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2.5
21. Rooted plants in the thalweg [1]	3	2	1	0	1.5
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	1	2	3	1
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	1.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 22

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

STR-7 has a stream has a defined bed and bank and forms southeast of Edgemoor Road where multiple drainage ditches/upland swales contribute flow diverted from SR-170 via a series of culverts. A few aquatic snails and midges observed within the channel. In addition, substrate sorting, grade controls, head cuts, fiberous roots were observed within the channel. Recent deposition of alluvial material was also present and hydric soils were present throughout channel.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-37

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.034170 Long: -84.135506 Datum: WGS84

Soil Map Unit Name: Colbert-Lyerly-Rock outcrop complex, 5 to 20 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-37, located right of SR-170 near STA 337 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-37

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Salix nigra*	30	Y	OBL
2. *Populus alba*	3	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	33.0 = Total Cover		
50% of total cover: 16.5	20% of total cover: 6.6		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex vulpinoidea*	15	Y	OBL
2. *Ludwigia palustris*	10	Y	OBL
3. *Leersia virginica*	10	Y	FACW
4. *Cyperus esculentus*	5	N	FACW
5. *Boehmeria cylindrica*	5	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Campsis radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55.00	x 1 =	55.00
FACW species	20.00	x 2 =	40.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	3.00	x 5 =	15.00
Column Totals:	83.00 (A)		125.00 (B)

Prevalence Index = B/A = 1.51

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					L	Gravely
4-18	10YR 5/2	70	10YR 4/6	30	C	M	CL	Gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-37

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.034256 Long: -84.135262 Datum: WGS84

Soil Map Unit Name: Colbert-Lyerly-Rock outcrop complex, 5 to 20 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within uplands adjacent to WTL-37 near STA 338 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-37

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Paspalum laeve*	40	Y	FAC
2. *Schedonorus arundinaceus*	40	Y	FACU
3. *Setaria parviflora*	15	N	FAC
4. *Trifolium repens*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.0 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	55.00	x 3 =	165.00
FACU species	45.00	x 4 =	180.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		345.00 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					L	
4-18	10YR 4/6	80	7.5YR 5/8	20	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-37 near STA 337 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☑ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☑ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ fox sedge	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ white grass	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	1 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 — 0.66
- ○ 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 value is the SI for **V7**= 0.81

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 1.00 (SCOV) V7 0.81 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 0.50 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-37

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-37, located on the right side of SR-170 near STA 337 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.27
	Function: Retain Particulates	--
	Function: Plant Community	0.20
	Function: Wildlife Community	0.20
	Quantitative Score (Average of FCIs x 100)	29.25
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	29.25

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/8/2024

1-Station: from plans	STA 346 R										
2-Map label and name	STR-8										
3-Latitude/Longitude	36.035071, -84.132669										
4-Feature description:											
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc				
-HD score (if applicable)	23.5										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris		scour		veg absent, bent, matted	✓	
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank		shelving		wracking		
-channel bottom width	1-2 ft		-top of bank width		2-3 ft						
-width and max depth at ordinary high water mark	3 ft, 3 inches										
-width at bankfull	3 ft										
-bank height	LDB - <1 ft		RDB - <1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: sweet gum, field blackberry										
	RDB: English ivy, Japanese stilt grass										
-particle size distribution %	Silt/Sand:	95	Gravel:	5	Cobble:	0	Boulder:	0	Bedrock:	0	
5-photo numbers	37, 38										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes				no	✓					
8-ETW	yes				no	✓					
9-303 (d) List	yes				siltation		habitat:		other:		
	no	✓									
10-Notes	STR-8 is a moderately manipulated intermittent stream located southwest of the intersection of SR-170 and Mooncrest Lane. STR-8 originates from a roadside drainage ditch and flows south of the ETSA.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-8	Date/Time: 10/8/2024 2:08 PM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-8 located right of SR-170 near STA 346 R	
HUC (12 digit): 060102070403, Clinch River-Wolf Creek	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.035071, -84.132669
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~115 acres	County: Anderson
Soil Type(s) / Geology : Swafford loam, 2 to 5 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-8 forms downstream of WTL-38 and has a continuous bed and bank structure with hydric soils throughout. STR-8 appears to be heavily manipulated due to the presence of fabric lining the channel, bed, and banks. In addition, leeches (Subclass Hirudinida) were observed within the pools of the channel. Fibrous roots were absent throughout the channel and rooted plants were rarely seen.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2
2. Sinuous channel	0	1	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	2	3	2
4. Sorting of soil textures or other substrate	0	1	2	3	2.5
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	1
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	1
11. Grade controls	0	0.5	1	1.5	1
12. Natural valley or drainageway	0	0.5	1	1.5	1
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 6)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	2
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 6)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	1	2	3	0
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	1

[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 :

STR-8 forms downstream of WTL-38 and has a continuous bed and bank structure with hydric soils throughout. STR-8 appears to be heavily manipulated due to the presence of fabric lining the channel, bed, and banks. In addition, leeches (Subclass Hirudinida) were observed within the pools of the channel. Fibrous roots were absent throughout the channel and rooted plants were rarely seen.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-38

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.035263 Long: -84.132276 Datum: WGS84

Soil Map Unit Name: Swafford loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-38, located right of SR-170 near STA 348 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-38

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	20	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	20.0 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Liriodendron tulipifera*	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Juncus effusus*	20	Y	FACW
2. *Rubus allegheniensis*	15	Y	FACU
3. *Solidago canadensis*	10	N	FACU
4. *Symphyotrichum pilosum*	10	N	FAC
5. *Clematis virginiana*	5	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	8	Y	FACU
2.			
3.			
4.			
5.			
	8.0 = Total Cover		
50% of total cover: 4.0	20% of total cover: 1.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	40.00	x 2 =	80.00
FAC species	15.00	x 3 =	45.00
FACU species	38.00	x 4 =	152.00
UPL species	0.00	x 5 =	0.00
Column Totals:	93.00 (A)		277.00 (B)

Prevalence Index = B/A = 2.98

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 3 (Prevalence Index) present with a calculated Prevalence Index of 3.0 or less and documented presence of wetland hydrology and hydric soils; parameter met.

SOIL Sampling Point: DPWTL-38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					SICL	
4-9	10YR 6/1	95	10YR 5/6	5	C	M/PL	SICL	
9-18	7.5YR 4/4	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/08/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-38 from near STA 346 to STA 348 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☑ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☑ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ common rush	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☑ Tulip poplar	☑ Allegheny blackberry	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.53

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 — 0.53
- ( ) 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 value is the SI for **V7**= 0.73

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.25 (TSIZE) V5 0.00 (SCOV) V7 0.73 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.50 (TDEN) V6 0.75 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-38

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-38, located right of SR-170 from near STA 346 to STA 348 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.32
	Function: Retain Particulates	--
	Function: Plant Community	0.22
	Function: Wildlife Community	0.22
	Quantitative Score (Average of FCIs x 100)	31.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	31.5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-39

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.037513 Long: -84.124724 Datum: WGS84

Soil Map Unit Name: Hamblen silt loam, 0 to 2 percent slopes, occasionally flooded, hydric minor component NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-39, located left of SR-170 near STA 371 L.
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1
Water Table Present?	Yes ✓	No _____	Depth (inches): 8
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 1

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-39

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	15	Y	FACU
2. *Celtis laevigata*	15	Y	FACW
3.			
4.			
5.			
6.			
7.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Fraxinus pennsylvanica*	38	Y	FACW
2. *Ligustrum vulgare*	15	Y	FACU
3. *Lonicera morrowii*	15	Y	FACU
4. *Rosa multiflora*	3	N	FACU
5. *Acer negundo*	3	N	FAC
6.			
7.			
8.			
9.			
	74.0 = Total Cover		
50% of total cover: 37.0	20% of total cover: 14.8		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	63	Y	FAC
2. *Leersia virginica*	15	N	FACW
3. *Boehmeria cylindrica*	3	N	FACW
4. *Persicaria pensylvanica*	3	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	84.0 = Total Cover		
50% of total cover: 42.0	20% of total cover: 16.8		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Toxicodendron radicans*	15	Y	FAC
2. *Hedera helix*	3	N	FACU
3.			
4.			
5.			
	18.0 = Total Cover		
50% of total cover: 9.0	20% of total cover: 3.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	74.00	x 2 =	148.00
FAC species	81.00	x 3 =	243.00
FACU species	51.00	x 4 =	204.00
UPL species	0.00	x 5 =	0.00
Column Totals:	206.00 (A)		595.00 (B)

Prevalence Index = B/A = 2.89

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100			C	M	SIL	
2-12	10YR 4/1	90	10YR 5/8	10	C	M	SICL	Gravelly
12-18	10YR 4/2	100					SCL	Gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Multiple hydric soil indicators present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-39

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.037623 Long: -84.124767 Datum: WGS84

Soil Map Unit Name: Hamblen silt loam, 0 to 2 percent slopes, occasionally flooded, hydric minor component NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-39 near STA 371 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-39

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus rubra*	38	Y	FAC
2. *Acer saccharum*	38	Y	FACU
3. *Juniperus virginiana*	15	N	FACU
4. *Juglans nigra*	3	N	FACU
5.			
6.			
7.			
	94.0 = Total Cover		
50% of total cover: 47.0	20% of total cover: 18.8		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Acer negundo*	38	Y	FAC
2. *Fraxinus pennsylvanica*	15	Y	FACW
3. *Lonicera morrowii*	15	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	68.0 = Total Cover		
50% of total cover: 34.0	20% of total cover: 13.6		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	95	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95.0 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Toxicodendron radicans*	3	N	FAC
2.			
3.			
4.			
5.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	174.00	x 3 =	522.00
FACU species	71.00	x 4 =	284.00
UPL species	0.00	x 5 =	0.00
Column Totals:	260.00 (A)		836.00 (B)

Prevalence Index = B/A = 3.22

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPUPL-39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/08/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-39 near STA 371 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☑ Green ash	☑ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☑ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ sugarberry	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ sugar maple	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ Morrow's honeysuckle
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.33

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 0.25
- ○ 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 value is the SI for **V7**= 0.50

*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. 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).
   This value is the SI for **V8**= 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 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**

   This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.50 (TSIZE) V5 1.00 (SCOV) V7 0.50 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.75 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-39

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Forested wetland, WTL-39, located on the left side of SR-170 near STA 371 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.47
	Function: Retain Particulates	--
	Function: Plant Community	0.56
	Function: Wildlife Community	0.42
	Quantitative Score (Average of FCIs x 100)	48.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	48.75

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/8/2024

1-Station: from plans	STA 371 L to STA 375 R										
2-Map label and name	STR-9										
3-Latitude/Longitude	36.037193, -84.123910										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (Presense of Fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓	
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent	✓	natural line impressed on bank		shelving		wracking		
-channel bottom width	6-7 ft		-top of bank width		7-8 ft						
-width and max depth at ordinary high water mark	8 ft, 6 inches										
-width at bankfull	8 ft										
-bank height	LDB - 1 ft				RDB - 1 ft						
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: sweet gum, field blackberry										
	RDB: English ivy, Japanese stilt grass										
-particle size distribution %	Silt/Sand: 95		Gravel: 5		Cobble: 0		Boulder: 0		Bedrock: 0		
5-photo numbers	45, 46										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes		no	✓							
8-ETW	yes		no	✓							
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									
10-Notes	STR-9 is a moderately manipulated perennial stream located north and south of SR-170, between S Dogwood Road and Mockingbird Hill Lane. STR-9 originates north of the ETSA and flows southwest of the ETSA toward its confluence with Nelson Branch.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-9 (Blazer Branch, Unnamed Tributary to Nelson Branch)	Date/Time: 10/8/2024 12:32 PM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-9 located left and right of SR-170 from near STA 371 L to STA 375 R	
HUC (12 digit): 060102070102, Bull Run Creek Lower	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.037193, -84.123910
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~102 acres	County: Anderson
Soil Type(s) / Geology : Hamblen silt loam, 0-2% slopes, occasionally flooded	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☐ Moderate ☑ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-9 has a stream has a defined bed and bank, hydric soils in channel, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/09/2024

1-Station: from plans	STA 381 R to STA 391 R								
2-Map label and name	WWC-4								
3-Latitude/Longitude	36.037518, -84.118750								
4-Feature description:									
-channel identification	perennial stream		intermittent stream		ephemeral stream		wwc	✓	
-HD score (if applicable)	15.5								
-OHWM indicators	bed & banks		deposition		presence of litter debris		scour		veg absent, bent, matted ✓
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining
	change in soil character ✓		leaf litter disturb or absent		natural line impressed on bank		shelving		wracking
-channel bottom width	1-2 ft		-top of bank width		2-3 ft				
-width and max depth at ordinary high water mark	3 ft, 2 inches								
-width at bankfull	3 ft								
-bank height	LDB - <1 ft		RDB - <1 ft						
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: easten red cedar, eastern poison ivy, english ivy								
	RDB: english ivy, red maple								
-particle size distribution %	Silt/Sand: -		Gravel: -		Cobble: -		Boulder: -		Bedrock: -
5-photo numbers	47								
6-HUC -8 Code & Name	06010207, Lower Clinch								
7-Assessed	yes			no	✓				
8-ETW	yes			no	✓				
9-303 (d) List	yes		siltation		habitat:		other:		
	no ✓								
10-Notes	WWC-4 is a wet weather conveyance channel located on the south side of SR-170 from Mockingbird Hill Lane to Old Edgemoor Lane. WWC-4 provides roadside drainage and flows east through a series of culverts to its confluence with a roadside drainage ditch.								

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-4	Date/Time: 10/9/24 10:35 AM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: WWC-4 located right of SR-170 from near STA 381 R to STA 391 R	
HUC (12 digit): 060102070102, Bull Run Creek-Lower	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.037518, -84.118750
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~13 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	☐	WWC ✓
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 = WWC

Secondary Indicator Score (if applicable) = 15.5

Justification / Notes :

Five to ten isopods were observed within a pool at top of channel and macroinvertebrates appeared to be absent throughout the remainder of the channel. A defined bed/bank structure was continuous throughout entire feature. Hydric soils were found within the bed sporadically and no plants were rooted within the channel. No evidence of sediment was observed on leaves near the channel.

The hydrology of WWC-4 is driven entirely by runoff culverted beneath Old Edgemoor Road.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2.5
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	1
4. Sorting of soil textures or other substrate	0	1	2	3	1
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0.5
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0.5
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 4)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	1.5
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5	0
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 5.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	2
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	1	2	3	1
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	0.5

[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 :

Macroinvertebrates (Isopoda) are present only within a pool near the top portion of the channel but were not observed elsewhere. The entire channel has a defined bed/bank structure; however, sinuosity is lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-40

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.037962 Long: -84.118429 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-40, located from near STA 389 to STA 390 L.
All parameters met; area is considered a palustrine scrub/shrub (PSS) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-40

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus rubra*	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ligustrum sinense*	15	Y	FACU
2. *Diospyros virginiana*	3	N	FAC
3. *Pyrus calleryana*	3	N	UPL
4. *Rosa multiflora*	3	N	FACU
5.			
6.			
7.			
8.			
9.			
	24.0 = Total Cover		
50% of total cover: 12.0	20% of total cover: 4.8		
Herb Stratum (Plot size: 5' Radius)			
1. *Microstegium vimineum*	63	Y	FAC
2. *Rubus pensilvanicus*	38	Y	FAC
3. *Vernonia noveboracensis*	38	Y	FACW
4. *Conoclinium coelestinum*	15	N	FAC
5. *Juncus coriaceus*	3	N	FACW
6. *Lobelia siphilitica*	3	N	FACW
7. *Solidago altissima*	3	N	FACU
8.			
9.			
10.			
11.			
	163.0 = Total Cover		
50% of total cover: 81.5	20% of total cover: 32.6		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Pueraria montana*	38	Y	UPL
2. *Lonicera japonica*	15	Y	FACU
3. *Euonymus fortunii*	3	N	UPL
4.			
5.			
	56.0 = Total Cover		
50% of total cover: 28.0	20% of total cover: 11.2		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	44.00	x 2 =	88.00
FAC species	134.00	x 3 =	402.00
FACU species	36.00	x 4 =	144.00
UPL species	44.00	x 5 =	220.00
Column Totals:	258.00 (A)		854.00 (B)

Prevalence Index = B/A = 3.31

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					L	
4-12	10YR 4/1	92	10YR 5/8	8	C	M/PL	CL	
12-18	10YR 4/2	80	10YR 4/6	20	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-40/41/42

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.038113 Long: -84.118262 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: R4SBC

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands between WTL-40 and WTL-42 near STA 390 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-40/41/42

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Juniperus virginiana*	15	Y	FACU
2. *Pyrus calleryana*	15	Y	UPL
3. *Diospyros virginiana*	3	N	FAC
4. *Ligustrum sinense*	3	N	FACU
5. *Fraxinus pennsylvanica*	3	N	FACW
6.			
7.			
8.			
9.			
	39.0 = Total Cover		
50% of total cover: 19.5	20% of total cover: 7.8		
Herb Stratum (Plot size: 5' Radius)			
1. *Coleataenia longifolia*	15	Y	FACU
2. *Solidago altissima*	15	Y	FACU
3. *Rubus pensilvanicus*	15	Y	FAC
4. *Andropogon virginicus*	15	Y	FACU
5. *Conoclinium coelestinum*	15	Y	FAC
6. *Agrimonia parviflora*	15	Y	FACW
7. *Lespedeza cuneata*	3	N	FACU
8. *Setaria pumila*	3	N	FAC
9.			
10.			
11.			
	96.0 = Total Cover		
50% of total cover: 48.0	20% of total cover: 19.2		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	38	Y	FACU
2.			
3.			
4.			
5.			
	38.0 = Total Cover		
50% of total cover: 19.0	20% of total cover: 7.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	18.00	x 2 =	36.00
FAC species	36.00	x 3 =	108.00
FACU species	104.00	x 4 =	416.00
UPL species	15.00	x 5 =	75.00
Column Totals:	173.00 (A)		635.00 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-40/41/42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					L	
4-18	10YR 4/6	90	7.5YR 5/4	10	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/08/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-40 from near STA 389 to STA 390 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☑ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☑ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☑ Slippery elm	☐ Red maple	☑ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☑ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ Pennsylvania blackberry	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ New York ironweed	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☑ kudzu
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.28

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 0.22
- ○ 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 value is the SI for **V7**= 0.46

*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. 10 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.25 (TSIZE) V5 1.00 (SCOV) V7 0.46 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.50 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-40

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Scrub-shrub wetland, WTL-40, located left of SR-170 near from near STA 389 to STA 390 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.46
	Function: Retain Particulates	--
	Function: Plant Community	0.33
	Function: Wildlife Community	0.33
	Quantitative Score (Average of FCIs x 100)	40.5
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	40.5

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	10/9/2024

1-Station: from plans	STA 389 L to STA 391 R										
2-Map label and name	STR-10										
3-Latitude/Longitude	36.037964, -84.118696										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (Presense of Fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓	
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent	✓	natural line impressed on bank		shelving		wracking		
-channel bottom width	2-3 ft		-top of bank width		3-4 ft						
-width and max depth at ordinary high water mark	4 ft, 6 inches										
-width at bankfull	4 ft										
-bank height	LDB - 1 ft		RDB - 1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: lamp rush, blue mist flower, rice cut grass										
	RDB: rice cut grass, bearded beggarticks, American bittercress										
-particle size distribution %	Silt/Sand:	70	Gravel:	20	Cobble:	10	Boulder:	0	Bedrock:	0	
5-photo numbers	50, 51										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes				no	✓					
8-ETW	yes				no	✓					
9-303 (d) List	yes				siltation		habitat:		other:		
	no	✓									
10-Notes	STR-10 is a heavily manipulated perennial stream located north and south of SR-170 between Old Edgemoor Lane and Tori Kait Lane. STR-10 originates within the ETSA and flows southeast of the ETSA to its confluence with Blazer Branch.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-10 (Unnamed Tributary to Blazer Branch)	Date/Time: 10/9/2024 9:30 AM
Assessors/Affiliation: D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-10 located left and right of SR-170 from near STA 389 L to STA 391 R	
HUC (12 digit): 060102070102, Bull Run Creek Lower	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.037964, -84.118696
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~280 acres	County: Anderson
Soil Type(s) / Geology : Capshaw silt loam, 2 to 5 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-10 has a stream has a defined bed and bank, hydric soils in channel, heavy incisions along the route of the stream, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-10

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-41

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.037311 Long: -84.117713 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-41, located right of SR-170 near STA 391 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 9

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-41

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Bidens aristosa*	30	Y	FACW
2. *Leersia oryzoides*	30	Y	OBL
3. *Cardamine rotundifolia*	15	N	OBL
4. *Juncus effusus*	5	N	FACW
5. *Persicaria longiseta*	5	N	FAC
6. *Veronica anagallis-aquatica*	3	N	OBL
7. *Mimulus ringens*	3	N	OBL
8. *Conoclinium coelestinum*	3	N	FAC
9. *Persicaria hydropiperoides*	3	N	OBL
10. *Symphyotrichum racemosum*	3	N	FACW
11.			
	100.0 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	54.00	x 1 =	54.00
FACW species	38.00	x 2 =	76.00
FAC species	8.00	x 3 =	24.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	100.00 (A)		154.00 (B)

Prevalence Index = B/A = 1.54

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only

SOIL

Sampling Point: DPWTL-41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/1	100					MM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ✓ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator A1 (Histosol) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/10/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-41 near STA 391 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ bearded beggarticks	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ rice cut grass	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-41

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-41, located on the right side of SR-170 near STA 391 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	10/9/2024

1-Station: from plans	STA 390 L to STA 392 L										
2-Map label and name	STR-11										
3-Latitude/Longitude	36.038041, -84.118119										
4-Feature description:											
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc				
-HD score (if applicable)	23										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓	
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent	✓	natural line impressed on bank		shelving		wracking		
-channel bottom width	0-1 ft		-top of bank width		0-1 ft						
-width and max depth at ordinary high water mark	1 ft, 2 inches										
-width at bankfull	1 ft										
-bank height	LDB - 1 ft		RDB - 1 ft								
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: yellow poplar, eastern poison ivy, box elder										
	RDB: Japanese stilt grass, eastern poison ivy										
-particle size distribution %	Silt/Sand:	85	Gravel:	5	Cobble:	10	Boulder:	0	Bedrock:	0	
5-photo numbers	52, 53										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes				no	✓					
8-ETW	yes				no	✓					
9-303 (d) List	yes				siltation		habitat:		other:		
	no	✓									
10-Notes	STR-11 is a moderately manipulated intermittent stream located north of SR-170, between Old Edgemoor Lane and Tori Kait Lane. STR-11 originates within the ETSA and flows west to its confluence with STR-12 (Unnamed Tributary to Blazer Branch).										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-11 (Unnamed Tributary to Blazer Branch)	Date/Time: 10/9/2024 11:02 AM
Assessors/Affiliation: D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-11 located left of SR-170 from near STA 390 L to STA 392 L	
HUC (12 digit): 060102070102, Bull Run Creek Lower	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.038041, -84.118119
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~102 acres	County: Anderson
Soil Type(s) / Geology : Capshaw silt loam, 2 to 5 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	✓	Stream ☐
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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

Justification / Notes :

STR-11 has a stream has a defined bed and bank and hydric soils in channel. In addition, there was presence of aquatic snails, flowing water, and a lack of leaf litter even after abscission has begun in many tree species.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	1
4. Sorting of soil textures or other substrate	0	1	2	3	0.5
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	1.5	.5
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 9)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	1
15. Water in channel and >48 hours since sig. rain	0	1	2	3	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	1
17. Sediment on plants or on debris	0	0.5	1	1.5	1
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1.5
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 8.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	3
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0.5
25. Macrobenthos (record type & abundance)	0	1	2	3	1
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	1

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 23

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Adjacent wetlands are present providing subsurface flow. In addition, aquatic snails are present within the channel (abundant, single species). The channel appears to have intermittent flow and, based on secondary indicators, is an intermittent stream.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-08

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-42

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.038134 Long: -84.117802 Datum: WGS84

Soil Map Unit Name: Capshaw silt loam, 2 to 5 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-42 located left of SR-170 near STA 392 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-42

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Ulmus rubra*	3	N	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		
Herb Stratum (Plot size: 5' Radius)			
1. *Schedonorus arundinaceus*	63	Y	FACU
2. *Scirpus georgianus*	38	Y	OBL
3. *Eupatorium perfoliatum*	38	Y	FACW
4. *Vernonia noveboracensis*	15	N	FACW
5. *Symphyotrichum racemosum*	15	N	FACW
6. *Bidens aristosa*	3	N	FACW
7. *Conoclinium coelestinum*	3	N	FAC
8. *Juncus effusus*	3	N	FACW
9. *Solidago altissima*	3	N	FACU
10.			
11.			
	181.0 = Total Cover		
50% of total cover: 90.5	20% of total cover: 36.2		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Lonicera japonica*	3	N	FACU
2.			
3.			
4.			
5.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

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: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38.00	x 1 =	38.00
FACW species	74.00	x 2 =	148.00
FAC species	6.00	x 3 =	18.00
FACU species	69.00	x 4 =	276.00
UPL species	0.00	x 5 =	0.00
Column Totals:	187.00 (A)		480.00 (B)

Prevalence Index = B/A = 2.57

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	95	7.5YR 5/4	5	C	M/PL	SIL	
8-18	10YR 5/1	92	10YR 5/8	8	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/08/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-42 near STA 392 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ tall false rice grass	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ common boneset	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	1 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-42

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-42, located left of SR-170 near STA 392 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	I. Bentley	**Affiliation:**	Copperhead	**Date:**	10/9/2024

1-Station: from plans	STA 404 R										
2-Map label and name	STR-12										
3-Latitude/Longitude	36.039767, -84.114184										
4-Feature description:											
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc				
-HD score (if applicable)	30.5										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank		shelving		wracking		
-channel bottom width	0-1 ft		-top of bank width		1-2 ft						
-width and max depth at ordinary high water mark	2 ft, 2 inches										
-width at bankfull	2 ft										
-bank height	LDB - 1 ft				RDB - 1 ft						
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: lamp rush, blue mist flower										
	RDB: bearded beggarticks, American bittercress										
-particle size distribution %	Silt/Sand:	60	Gravel:	20	Cobble:	20	Boulder:	0	Bedrock:	0	
5-photo numbers	56, 57										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes				no	✓					
8-ETW	yes				no	✓					
9-303 (d) List	yes				siltation		habitat:		other:		
	no	✓									
10-Notes	STR-12 is a heavily manipulated intermittent stream located southeast of the intersection of SR-170 and Woodhaven Memorial Gardens Cemetery Road. STR-12 originates from a culvert underneath SR-170 and flows southeast of the ETSA toward its confluence with Blazer Branch										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-12 (Unnamed Tributary to Blazer Branch)	Date/Time: 10/9/2024 11:40 AM
Assessors/Affiliation: I. Bentley / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-12 located right of SR-170 near STA 404 R	
HUC (12 digit): 060102070102, Bull Run Creek Lower	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.039767, -84.114184
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~153 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-12 has a stream has a defined bed and bank and the presence of macrobenthos including crayfish (Cambaridae) and isopods (Asellidae) were present within the channel. Flowing water within the channel was observed near the confluence with STR-13 (perennial stream). In addition, a groundwater connection underneath the adjacent culvert appears to provide intermittent flow; therefore, secondary indicators were evaluated.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	0.5
3. In-channel structure: riffle-pool sequences	0	1	2	3	1
4. Sorting of soil textures or other substrate	0	1	2	3	2
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	1.5
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	1.5
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	1
11. Grade controls	0	0.5	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	1.5	.5
13. At least second order channel on existing USGS or NRCS map	No=0				

B. Hydrology (Subtotal = 8.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	2
15. Water in channel and >48 hours since sig. rain	0	1	2	3	2.5
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0
17. Sediment on plants or on debris	0	0.5	1	1.5	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	1
19. Hydric soils in channel bed or sides of channel	Yes=1.5				

C. Biology (Subtotal = 10.5)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	3
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	3
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0.5
25. Macrobenthos (record type & abundance)	0	1	2	3	1.5
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	0.5

[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 :

STR-12 has a stream has a defined bed and bank and the presence of macrobenthos including crayfish (Cambaridae) and isopods (Asellidae) were present within the channel. Flowing water within the channel was observed near the confluence with STR-13 (perennial stream). In addition, a groundwater connection underneath the adjacent culvert appears to provide intermittent flow.

Ecology Field Data Sheet: **Water Resources**

Project: Anderson County, SR-170 from near Melton Lake Drive to SR-9					
Biologist:	D. Hunter	**Affiliation:**	Copperhead	**Date:**	10/9/2024

1-Station: from plans	STA 404 R to STA 407 L										
2-Map label and name	STR-13										
3-Latitude/Longitude	36.039836, -84.114009										
4-Feature description:											
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc				
-HD score (if applicable)	N/A Primary Indicator 6 (Presense of Fish) recorded										
-OHWM indicators	bed & banks	✓	deposition		presence of litter debris	✓	scour		veg absent, bent, matted		
	change in plant community		destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining		
	change in soil character	✓	leaf litter disturb or absent		natural line impressed on bank	✓	shelving		wracking		
-channel bottom width	6-7 ft			-top of bank width		7-8 ft					
-width and max depth at ordinary high water mark	8 ft, 6 inches										
-width at bankfull	8 ft										
-bank height	LDB - 1 ft			RDB - 1 ft							
-riffle/pool complex or other specialized habitat present?	No										
-dominant riparian species: ----------(LDB /RDB)----------	LDB: American sycamore, sugarberry, mustang grape										
	RDB: English ivy, Japanese stilt grass, Christmas fern										
-particle size distribution %	Silt/Sand:	40	Gravel:	10	Cobble:	50	Boulder:	0	Bedrock:	0	
5-photo numbers	58, 59										
6-HUC -8 Code & Name	06010207, Lower Clinch										
7-Assessed	yes			no	✓						
8-ETW	yes			no	✓						
9-303 (d) List	yes		siltation		habitat:		other:				
	no	✓									
10-Notes	STR-13 is a heavily manipulated perennial stream located on the northeast and southwest sides of SR-170 between Woodhaven Memorial Gardens Cemetery Road and the access road to Claxton Elementary School. STR-13 originates north of the ETSA and flows southwest underneath SR-170 via a concrete box culvert. STR-13 continues southwest of the ETSA to its confluence with Blazer Branch.										

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-13 (Unnamed Tributary to Blazer Branch)	Date/Time: 10/9/2024 12:17 PM
Assessors/Affiliation: D. Hunter / Copperhead Environmental Consulting	Project ID : 124121.02
Site Name/Description: Anderson County, SR-170 from near Melton Lake Drive to SR-9	
Site Location: STR-13 located left and right of SR-170 from near STA 404 R to STA 407 L	
HUC (12 digit): 060102070102, Bull Run Creek Lower	Lat/Long:
Previous Rainfall (7-days) : ~2"	36.039836, -84.114009
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐	
Source of recent & seasonal precip data : USACE Antecedent Precipitation Tool (APT)	
Watershed Size : ~153 acres	County: Anderson
Soil Type(s) / Geology : Collegedale silt loam, 5 to 12 percent slopes	Source: NRCS
Surrounding Land Use : Roadway, Disturbed forest, light suburban/urban.	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☐ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream ☐
6. Presence of fish (except *Gambusia*)	☐	Stream ✓
7. Presence of naturally occurring ground water table connection	✓	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	✓	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 :

STR-13 has a stream has a defined bed and bank, hydric soils in channel, and presence of fish (Lepomis sp.).

Primary Indicator 6 used for determination; secondary indicators not evaluated.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-43

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.040135 Long: -84.113661 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-43, located right of SR-170 from near STA 406 to STA STA 407 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-43

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	25	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Liquidambar styraciflua*	15	Y	FAC
2. *Juniperus virginiana*	5	Y	FACU
3. *Albizia julibrissin*	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Persicaria punctata*	25	Y	OBL
2. *Persicaria longiseta*	20	Y	FAC
3. *Eragrostis frankii*	10	N	FACW
4. *Impatiens capensis*	10	N	FACW
5. *Juncus effusus*	5	N	FACW
6. *Rubus allegheniensis*	3	N	FACU
7.			
8.			
9.			
10.			
11.			
	73.0 = Total Cover		
50% of total cover: 36.5	20% of total cover: 14.6		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25.00	x 1 =	25.00
FACW species	50.00	x 2 =	100.00
FAC species	40.00	x 3 =	120.00
FACU species	8.00	x 4 =	32.00
UPL species	0.00	x 5 =	0.00
Column Totals:	123.00 (A)		277.00 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 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 ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	
3-7	7.5YR 6/2	90	10YR 5/4	10	C	M/PL	SICL	
7-18	7.5YR 4/4							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-43

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 16-25

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.040189 Long: -84.113627 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-43 near STA 406 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-43

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	15	Y	FACW
2. *Liriodendron tulipifera*	15	Y	FACU
3. *Acer rubrum*	10	Y	FAC
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *Lonicera maackii*	10	Y	UPL
2. *Juniperus virginiana*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Herb Stratum (Plot size: 5' Radius)			
1. *Rubus allegheniensis*	15	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *Pueraria montana*	20	Y	UPL
2. *Lonicera japonica*	10	Y	FACU
3.			
4.			
5.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	10.00	x 3 =	30.00
FACU species	45.00	x 4 =	180.00
UPL species	30.00	x 5 =	150.00
Column Totals:	100.00 (A)		390.00 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compact fill

Depth (inches): 9

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/09/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel I. Bentley, D. Hunter Wetland Name/Location WTL-43 from near STA 406 to STA STA 407 R

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.

V1: Wetland Depth (WETDEPTH)

☐	1. Wetland depth not impacted (SI = 1.0)		
	- no fill material or sediment	- outlet unaltered	- no excavation
	- no ditches/drainage tiles	- runoff/input unaltered	
☐	2. Wetland depth slightly impacted (SI = 0.75)		
	- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
	- portion of site with ditches/drainage tiles	- runoff/input increased	
☑	3. Wetland depth moderately impacted (SI = 0.5)		
	- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	4. Wetland depth significantly impacted (SI = 0.25)		
	- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
	- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐	5. Wetland depth severely impacted (SI = 0.1)		
	- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
	- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☑ 3 – 5 in. (SI = 0.25)
☐ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☑ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☑ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ dotted smartweed	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ low smartweed	☐ Phragmites
☐ Overcup oak	☐ _____	1 Number of native shrub spp.		☑ Persian silk tree
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.55

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 — 0.55
- ○ 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 value is the SI for **V7**= 0.74

*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. 75 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).
   This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.25 (TSIZE) V5 1.00 (SCOV) V7 0.74 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 1.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-43

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-43, located right of SR-170 from near STA 406 to STA STA 407 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.25
	Function: Wildlife Community	0.25
	Quantitative Score (Average of FCIs x 100)	33.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	33.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-44

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.0415939 Long: -84.1100714 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-44, located right of SR-170 near STA 417 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-44

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5' Radius)			
1. *Tridens flavus*	30	Y	FACU
2. *Boehmeria cylindrica*	25	Y	FACW
3. *Cyperus esculentus*	15	N	FACW
4. *Cyperus strigosus*	10	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40.00	20% of total cover: 16.00		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	50.00	x 2 =	100.00
FAC species	0.00	x 3 =	0.00
FACU species	30.00	x 4 =	120.00
UPL species	0.00	x 5 =	0.00
Column Totals:	80.00 (A)		220.00 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DPWTL-44

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	
3-7	7.5YR 6/2	90	10YR 5/4	10	C	M/PL	SICL	
7-18	7.5YR 4/4							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-44

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.041701 Long: -84.110351 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-44 near STA 417 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-44

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5' Radius)			
1. *Coleataenia longifolia*	70	Y	FACU
2. *Solidago altissima*	15	Y	FACU
3. *Setaria pumila*	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.00 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	33.00	x 3 =	99.00
FACU species	86.00	x 4 =	344.00
UPL species	0.00	x 5 =	0.00
Column Totals:	134 (A)		473.00 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DPUPL-44

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					L	
4-18	10YR 4/6	90	7.5YR 5/4	10	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/09/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-44 near STA 418 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ purpletop	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ false nettle	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-44

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-44, located left of SR-170 near STA 418 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-45

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.042406 Long: -84.110955 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-45, located right of SR-170 near STA 418 L.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-45

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5' Radius)			
1. *Carex frankii*	50	Y	OBL
2. *Cyperus esculentus*	30	Y	FACW
3. *Lobelia siphilitica*	15	N	FACW
4. *Cyperus strigosus*	10	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105 = Total Cover		
50% of total cover: 52.5	20% of total cover: 21.00		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50.00	x 1 =	50.00
FACW species	55.00	x 2 =	110.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	105 (A)		160.00 (B)

Prevalence Index = B/A = 1.52

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or wetter; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	
3-7	7.5YR 6/2	90	10YR 5/4	10	C	M/PL	SICL	
7-18	7.5YR 4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-45

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.042326 Long: -84.110967 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-45 near STA 417 L.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-45

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5' Radius)			
1. *Schedonorus arundinacea*	70	Y	FACU
2. *Trifolium pratense*	15	Y	FACU
3. *Setaria pumila*	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.00 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	33.00	x 3 =	99.00
FACU species	86.00	x 4 =	344.00
UPL species	0.00	x 5 =	0.00
Column Totals:	134 (A)		473.00 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					L	
4-18	10YR 4/6	90	7.5YR 5/4	10	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/09/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-45 near STA 418 L

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ purpletop	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☑ yellow nutsedge	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 66.00

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 0.33
- ○ 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 value is the SI for **V7**= 0.57

*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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-45

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-45, located left of SR-170 near STA 418 L. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation)	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.23
	Function: Wildlife Community	0.23
	Quantitative Score (Average of FCIs x 100)	32.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	32.75

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Dr to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPWTL-29

Investigator(s): I. Bentley, D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.041855 Long: -84.109708 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point taken within WTL-29, located right of SR-170 near STA 418 R.
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPWTL-29

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5' Radius)			
1. *Symphyotrichum racemosum*	63	Y	FACW
2. *Bidens aristosa*	15	N	FACW
3. *Boehmeria cylindrica*	15	N	FACW
4. *Mikania scandens*	3	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	96.00 = Total Cover		
50% of total cover: 48.00	20% of total cover: 19.20		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	96.00	x 2 =	192.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	96.00 (A)		192.00 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DPWTL-29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SIL	
3-7	7.5YR 6/2	90	10YR 5/4	10	C	M/PL	SICL	
7-18	7.5YR 4/4							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-170 from near Melton Lake Drive to SR-9 PN 124121.02 City/County: Anderson County Sampling Date: 2024-10-09

Applicant/Owner: Tennessee Department of Transportation State: Tennessee Sampling Point: DPUPL-29

Investigator(s): D. Hunter Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.041855 Long: -84.109708 Datum: WGS84

Soil Map Unit Name: Collegedale silt loam, 5 to 12 percent slopes NWI classification: None

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 _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point taken within uplands adjacent to WTL-29 near STA 418 R.
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DPUPL-29

Tree Stratum (Plot size: 30' Radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' Radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5' Radius)			
1. *Coleataenia longifolia*	70	Y	FACU
2. *Solidago altissima*	15	Y	FACU
3. *Setaria pumila*	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.00 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' Radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	15.00	x 2 =	30.00
FAC species	33.00	x 3 =	99.00
FACU species	86.00	x 4 =	344.00
UPL species	0.00	x 5 =	0.00
Column Totals:	134 (A)		473.00 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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** ___ **No** ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DPUPL-29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					L	
4-18	10YR 4/6	90	7.5YR 5/4	10	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators 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:

Hydric soil indicators absent; parameter lacking.

HGM FUNCTIONAL ASSESSMENT
SEASONALLY INUNDATED DEPRESSION WETLANDS

Date: 10/09/2024 Project Name Anderson County, SR-170 from near Melton Lake Drive to SR-9

Field Personnel D. Hunter Wetland Name/Location WTL-29 near STA 418 R

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.

V1: Wetland Depth (WETDEPTH)

☐ 1. Wetland depth not impacted (SI = 1.0)		
- no fill material or sediment	- outlet unaltered	- no excavation
- no ditches/drainage tiles	- runoff/input unaltered	
☐ 2. Wetland depth slightly impacted (SI = 0.75)		
- portion of site with minimal fill material or sediment	- outlet lowered/raised	- minor excavation
- portion of site with ditches/drainage tiles	- runoff/input increased	
☑ 3. Wetland depth moderately impacted (SI = 0.5)		
- portion of site with moderate fill material or sediment	- outlet lowered/raised	- moderate excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 4. Wetland depth significantly impacted (SI = 0.25)		
- portion of site with significant fill material or sediment	- outlet lowered/raised	- significant excavation
- portion of site with ditches/drainage tiles	- increased hydroperiod	
☐ 5. Wetland depth severely impacted (SI = 0.1)		
- excessive fill material or sediment	- outlet removed/blocked	- entire wetland affected
- 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 0
B = Percentage permeable land (e.g., park, golf course, pasture, hay, orchard, tree farm, or similar) 0
C = Percentage low density residential, construction, or similar 100
D = Percentage high density residential, or similar 0
E = Percentage urban, commercial, industrial, or similar 0

V2 = (A x 1.0) + (B x 0.75) + (C x 0.5) + (D x 0.25) + (E x 0.01)/(100) = 0.50

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) ☐ 3 – 5 in. (SI = 0.25)
☑ < 3 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 to Group 1 or 2 species based on the scientific literature or professional judgement. 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)
☐ Water oak	☐ Pin oak	☐ American elm	☐ Green ash	☐ European/Chinese privet
☐ Bur oak	☐ Shumard oak	☐ Slippery elm	☐ Red maple	☐ Japanese honeysuckle
☐ Willow oak	☐ Bald cypress	☐ Sweetgum	☐ Silver maple	☐ Japanese stiltgrass
☐ Swamp chestnut oak	☐ Water tupelo	☐ Blackgum	☐ Black willow	☐ Purple loosestrife
☐ Cherrybark oak	☐ S. black gum	☐ Silky dogwood	☐ Sycamore	☐ Giant reed
☐ Swamp white oak	☐ Persimmon	☐ Boxelder	☑ white oatfield aster	☐ Tall fescue
☐ Nuttall oak	☐ Am. hornbeam	☐ Tulip poplar	☐ _____	☐ Phragmites
☐ Overcup oak	☐ _____	0 Number of native shrub spp.		☐ _____
☐ _____	☐ _____	0 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 x # of checked dominants in Group 1) + (0.66 x # of checked dominants in Group 2) + (0.0 x # of checked dominants in Group 3)]/ total # of checked dominants in all groups = 0.66

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 0.17
- ○ 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 value is the SI for **V7**= 0.41

*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. 75 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). This value is the SI for **V8**= 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 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**

This value is the SI for **V9**= 0.01

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.50 (WETDEPTH) V3 0.00 (TSIZE) V5 0.00 (SCOV) V7 0.41 (COMP) V9 0.01 (BUFFER)

V2 0.50 (WSHEDINT) V4 0.00 (TDEN) V6 1.00 (GVC) V8 0.25 (ORGANIC)

TRAM Summary Worksheet

Project: SR-170 from near Melton Lake Drive to SR-9 PIN 124121.02 WTL-29

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	☐
	2. **ETW**	☐
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	☐
	COMMENTS/NOTES: Emergent wetland, WTL-46, located right of SR-170 near STA 419 R. Feature heavily influenced by surrounding land use (roadway and parking areas with mowed/maintained vegetation).	
Quantitative Rating scores	Function: Hydrologic Regime	0.50
	Function: Biogeochemical Processes	0.35
	Function: Retain Particulates	--
	Function: Plant Community	0.21
	Function: Wildlife Community	0.21
	Quantitative Score (Average of FCIs x 100)	31.75
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	31.75

Photo Number: 1

10/4/2024

Description:
Overview of the right-of-way (ROW) at the west end of the Environmental Technical Study Area (ETSA) near STA 195 L, facing northeast

Photo Number: 2

10/4/2024

Description:
Another overview of the ROW at the west end of the ETSA near STA 195 L, facing southwest.

Photo Number: 3

10/28/2024

Description:
Overview of WTL-24 (PEM), located right of SR-170 from STA 205 - 207, facing east.

Photo Number: 4

10/4/2024

Description:
Photo of DPUPL-24, located right of SR-170 near STA 205 facing north.

Photo Number: 5

10/4/2024

Description:
Downstream view of STR-4, located left and right of SR-170 between STA 207 and STA 208, facing southwest.

Photo Number: 6

10/4/2024

Description:
Upstream view of STR-4, located left and right of SR-170 between STA 207 and STA 208, facing northeast.

Photo Number: 7

10/4/2024

Description:
Overview of WTL-25 (PEM), located left and right of SR-170 near STA 230, facing northeast.

Photo Number: 8

10/4/2024

Description:
Photo of DPUPL-25, located left of SR-170 near STA 229 facing east.

Photo Number: 9

10/28/2024

Description:
Overview of LKE-01, located left and right of SR-170, from STA 230 to STA 241 facing northwest.

Photo Number: 10

10/7/2024

Description:
Representative photo of ROW along the left side of SR-170 near STA 270, facing southwest.

Photo Number: 11

10/7/2024

Description:
Representative photo of ROW along the left side of SR-170 near STA 270, facing northeast.

Photo Number: 12

10/7/2024

Description:
Overview of WTL-26 (PEM), located right of SR-170 near STA 278, facing northwest.

Photo Number: 13

10/7/2024

Description:
Overview of WTL-27 (PEM), located right of SR-170 near STA 282, facing west.

Photo Number: 14

10/10/2024

Description:
Photo of DPUPL-27, located right of SR-170 near STA 281 facing west.

Photo Number: 15

10/28/2024

Description:
Overview of WTL-28 (PSS), located left of SR-170 near STA 288, facing north.

Photo Number: 16

10/7/2024

Description:
Overview of WTL-28 (PFO), located on the left side of SR-170 near STA 288, facing east.

Photo Number: 17

10/10/2024

Description:
Photo of DPUPL-28/30, located left of SR-170 near STA 289 facing east.

Photo Number: 18

10/7/2024

Description:
Downstream view of STR-5, located on the left and right of SR-170 near STA 288, facing southeast.

Photo Number: 19

10/7/2024

Description:
Upstream view of STR-5, located on the left and right of SR-170 near STA 288, facing northwest.

Photo Number: 20

10/7/2024

Description:
Overview of WTL-30 (PEM), located left of SR-170 near STA 290, facing east.

Photo Number: 21

10/7/2024

Description:
Overview of WTL-31 (PEM), located left of SR-170 near STA 291, facing east.

Photo Number: 22

10/10/2024

Description:
Photo of DPUPL-31, located left of SR-170 near STA 291 facing west.

Photo Number: 23

10/7/2024

Description:
Overview of WTL-33 (PEM), located right of SR-170 near STA 292, facing south.

Photo Number: 24

10/10/2024

Description:
Photo of DPUPL-32/33, located right of SR-170 near STA 292 facing north.

Photo Number: 25

10/10/2024

Description:
Overview of WTL-34 (PEM), located left of SR-170 near STA 308, facing north.

Photo Number: 26

10/10/2024

Description:
Overview of WTL-35 (PFO), located on the right side of SR-170 near STA 311, facing north.

Photo Number: 27

10/8/2024

Description:
Photo of DPUPL-35, located right of SR-170 near STA 313 facing north.

Photo Number: 28

10/8/2024

Description:
Downstream view of STR-6, located left and right of SR-170 between STA 323 and STA 324, facing southwest.

Photo Number: 29

10/8/2024

Description:
Upstream view of STR-6, located left and right of SR-170 between STA 323 and STA 324, facing northeast.

Photo Number: 30

10/28/2024

Description:
Overview of WTL-36 (PFO), located left of SR-170 near STA 324, facing east.

Photo Number: 31

10/8/2024

Description:
Photo of DPUPL-36, located left of SR-170 near STA 324 facing north.

Photo Number: 32

10/8/2024

Description:
Overview of WWC-3, located left of SR-170 between STA 324 and STA 327, facing west.

Photo Number: 33

10/8/2024

Description:
Downstream view of STR-7, located right of SR-170 near STA 337, facing south.

Photo Number: 34

10/8/2024

Description:
Upstream view of STR-7, located right of SR-170 near STA 337, facing south.

Photo Number: 35

10/8/2024

Description:
Overview of WTL-37 (PEM), located on the right side of SR-170 near STA 337, facing west.

Photo Number: 36

10/10/2024

Description:
Photo of DPUPL-37, located right of SR-170 near STA 338 facing north.

Photo Number: 37

10/8/2024

Description:
Downstream view of STR-8, located right of SR-170 near STA 346, facing southeast.

Photo Number: 38

10/8/2024

Description:
Upstream view of STR-8, located right of SR-170 near STA 346, facing northwest.

Photo Number: 39

10/8/2024

Description:
Overview of WTL-38 (PEM), located right of SR-170 between STA 346 and STA 348, facing south.

Photo Number: 40

10/10/2024

Description:
Photo of DPUPL-38, located right of SR-170 near STA 349 facing north.

Photo Number: 41

10/9/2024

Description:
Representative photo of ROW along the right side of SR-170 near STA 360, facing southwest.

Photo Number: 42

10/9/2024

Description:
Representative photo of ROW along the right side of SR-170 near STA 360, facing northeast.

Photo Number: 43

10/28/2024

Description:
Overview of WTL-39 (PFO), located left of SR-170 near STA 371, facing east.

Photo Number: 44

10/8/2024

Description:
Photo of DPUPL-39, located left of SR-170 near STA 371 facing north.

Photo Number: 45

10/8/2024

Description:
Downstream view of STR-9, located left and right of SR-170 between STA 371 and 375, facing southeast.

Photo Number: 46

10/8/2024

Description:
Upstream view of STR-9, located left and right of SR-170 between STA 371 and 375, facing northwest.

Photo Number: 47

10/9/2024

Description:
Overview of WWC-4, located right of SR-170 between STA 381 and STA 391, facing north.

Photo Number: 48

10/28/2024

Description:
Overview of WTL-40 (PSS), located left of SR-170 between STA 389 and 390, facing south.

Photo Number: 49

10/9/2024

Description:
Photo of DPUPL-40/42, located left of SR-170 near STA 391 facing north.

Photo Number: 50

10/9/2024

Description:
Downstream view of STR-10, located left and right of SR-170 between STA 389 and 391, facing south.

Photo Number: 51

10/9/2024

Description:
Upstream view of STR-10, located left and right of SR- between STA 389 and 391, facing north.

Photo Number: 52

10/9/2024

Description:
Downstream view of STR-11, located left of SR-170 between STA 390 and 392, facing southwest.

Photo Number: 53

10/9/2024

Description:
Upstream view of STR-11, located left of SR-170 between STA 390 and 392, facing northeast.

Photo Number: 54

10/9/2024

Description:
Overview of WTL-42 (PEM), located left of SR-170 near STA 392, facing south.

Photo Number: 55

10/9/2024

Description:
Overview of WTL-41 (PEM), located left of SR-170 near STA 391, facing east.

Photo Number: 56

10/9/2024

Description:
Downstream view of STR-12, located right of SR-170 near STA 404, facing east.

Photo Number: 57

10/9/2024

Description:
Upstream view of STR-12, located right of SR-170 near STA 404, facing west.

Photo Number: 58

10/9/2024

Description:
Downstream view of STR-13, located left and right of SR-170 between STA 404 and 407, facing south.

Photo Number: 59

10/9/2024

Description:
Upstream view of STR-13, , located left and right of SR-170 between STA 404 and 407, facing north.

Photo Number: 60

10/9/2024

Description:
Overview of WTL-43 (PEM), located right of SR-170 between STA 406 and 407, facing east.

Photo Number: 61

10/9/2024

Description:
Photo of DPUPL-43, located right of SR-170 near STA 406 facing west.

Photo Number: 62

10/9/2024

Description:
Overview of WTL-44 (PEM), located right of SR-170 near STA 418, facing east.

Photo Number: 63

10/9/2024

Description:
Overview of WTL-45 (PEM), , located left of SR-170 near STA 418, facing northeast.

Photo Number: 64

10/9/2024

Description:
Overview of WTL-29 (PEM), located right of SR-170 near STA 419, facing east.

Photo Number: 65

10/9/2024

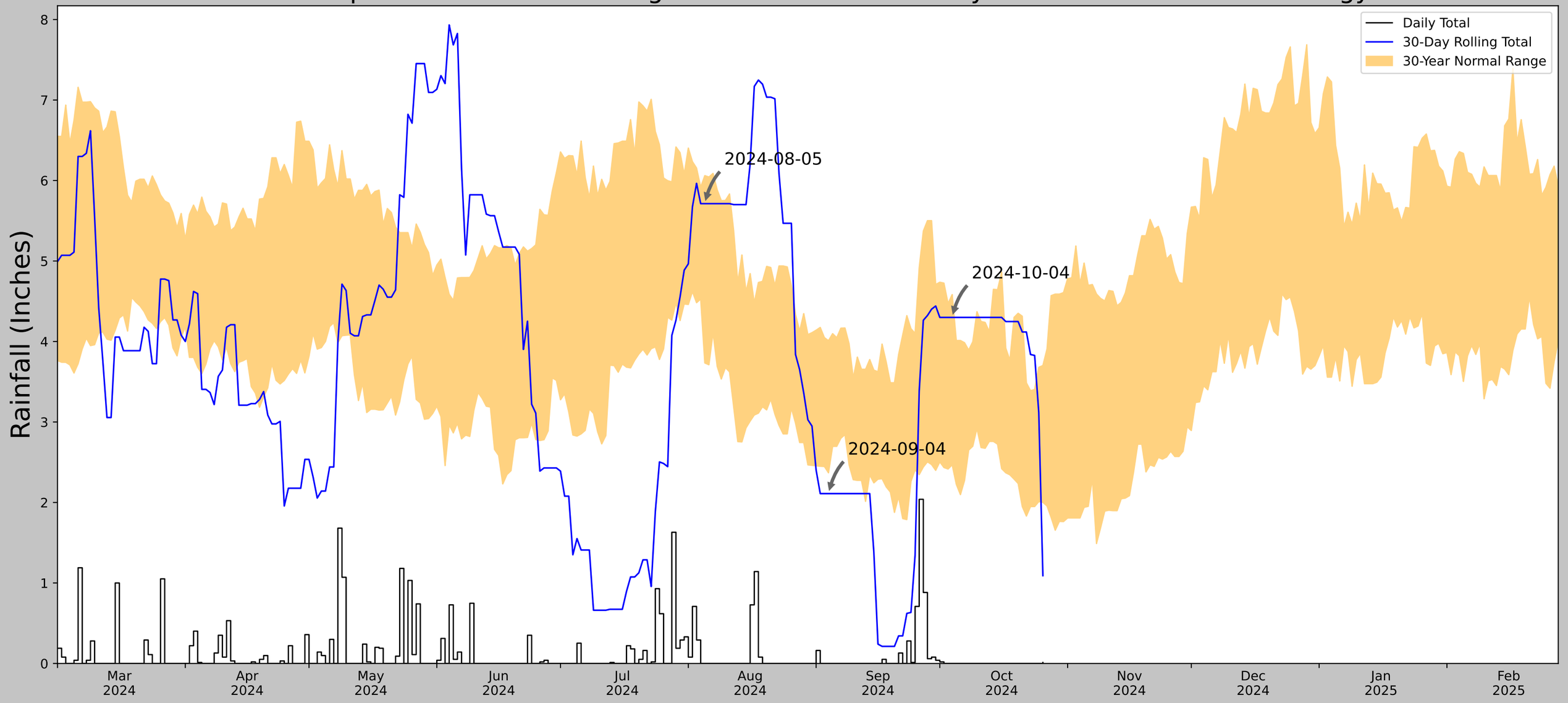
Description:
Overview of the ROW at the east end of the ETSA near STA 415 L, facing northeast.

Photo Number: 66

10/9/2024

Description:
Overview of the ROW at the east end of the ETSA near STA 415 L, facing northeast.

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.020764, -84.160872
Observation Date	2024-10-04
Elevation (ft)	848.88
Drought Index (PDSI)	Mild wetness (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-04	2.46811	4.583465	4.299213	Normal	2	3	6
2024-09-04	2.368504	4.009843	2.110236	Dry	1	2	2
2024-08-05	3.733071	6.061024	5.712599	Normal	2	1	2
Result							Normal Conditions - 10

US Army Corps of Engineers

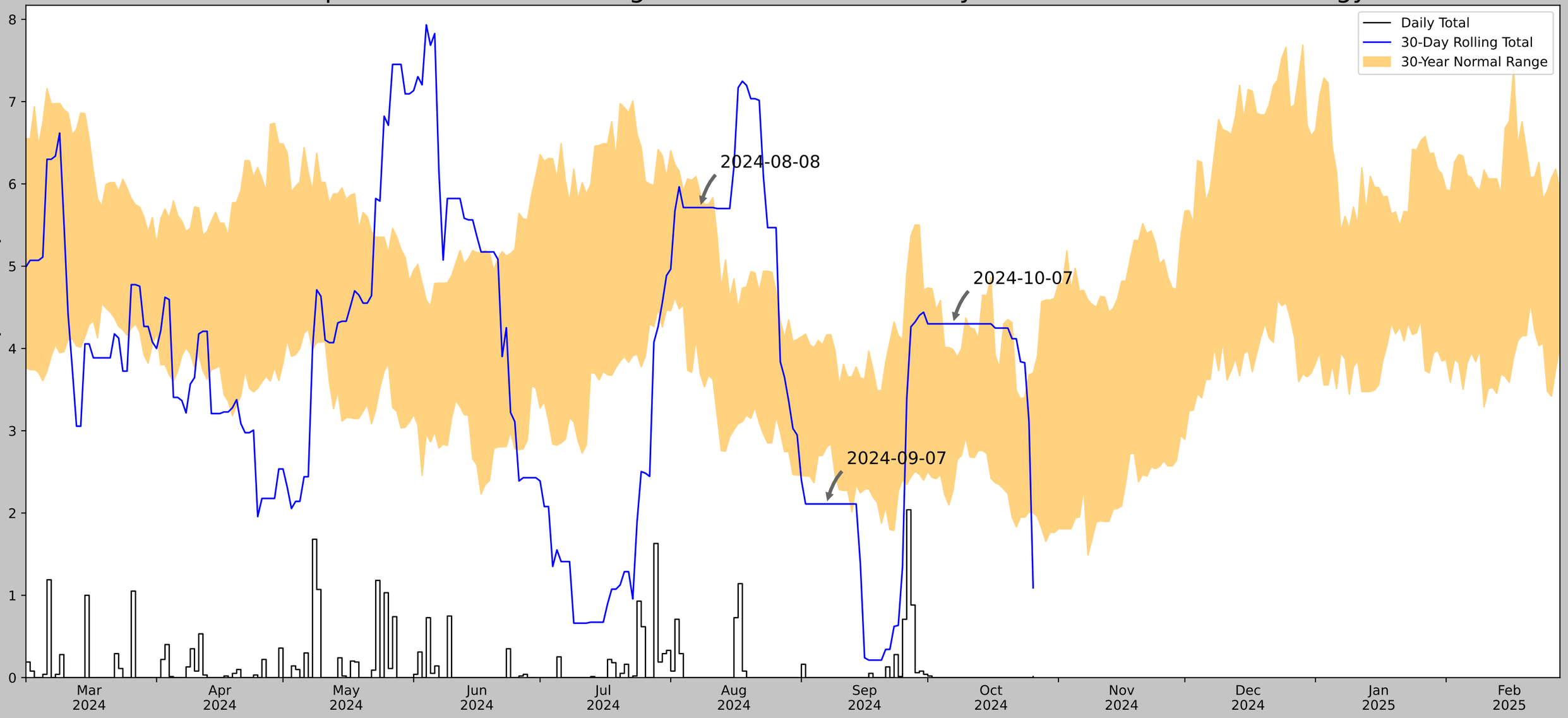
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	4.067	51.054	2.038	9463	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	1888	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.020764, -84.160872
Observation Date	2024-10-07
Elevation (ft)	848.88
Drought Index (PDSI)	Mild wetness (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-07	2.273622	3.985039	4.299213	Wet	3	3	9
2024-09-07	2.798032	4.165748	2.110236	Dry	1	2	2
2024-08-08	3.691732	5.885433	5.712599	Normal	2	1	2
Result							Normal Conditions - 13

US Army Corps of Engineers

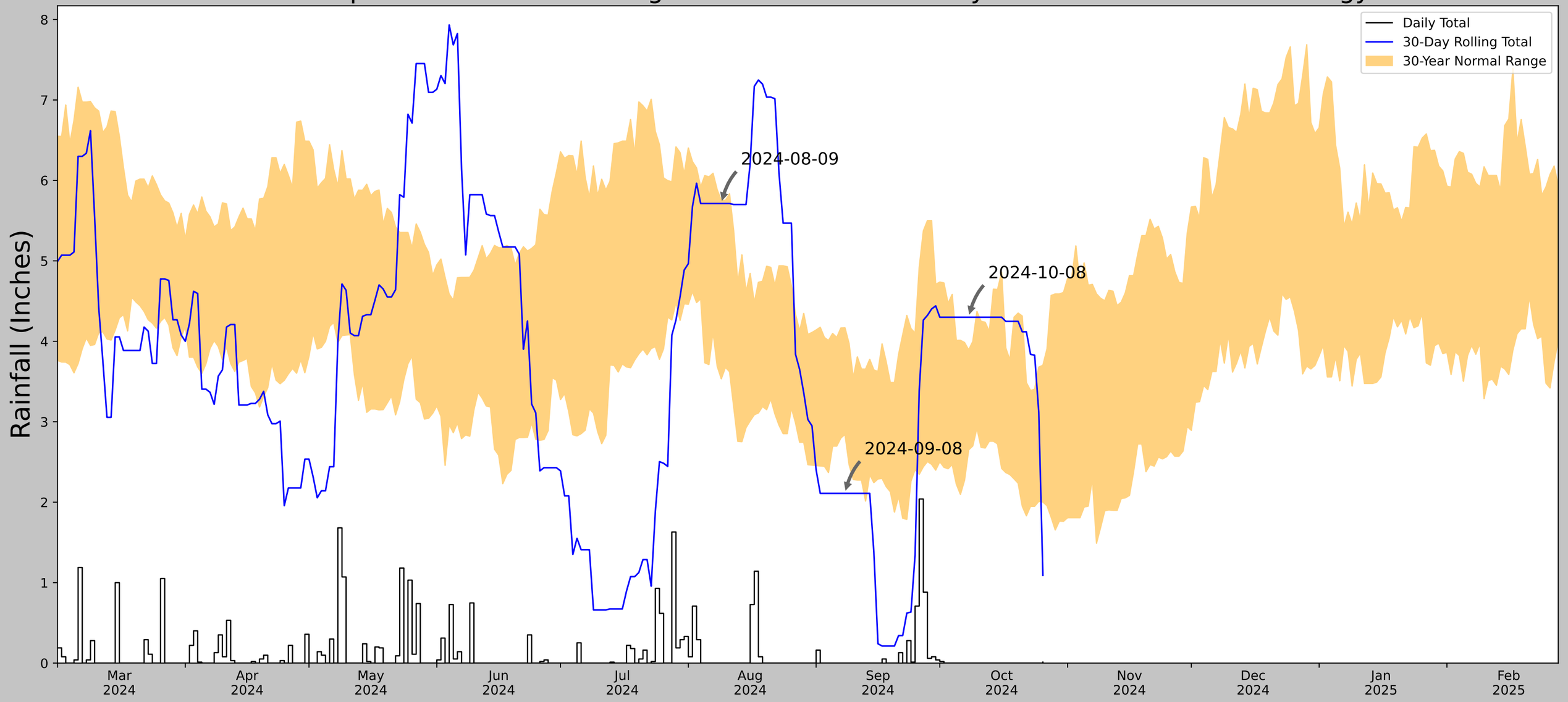
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	4.067	51.054	2.038	9463	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	1888	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.020764, -84.160872
Observation Date	2024-10-08
Elevation (ft)	848.88
Drought Index (PDSI)	Mild wetness (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-08	2.650787	3.893307	4.299213	Wet	3	3	9
2024-09-08	2.843307	4.167717	2.110236	Dry	1	2	2
2024-08-09	3.533465	5.75	5.712599	Normal	2	1	2
Result							Normal Conditions - 13

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	4.067	51.054	2.038	9463	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	1888	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Coordinates	36.020764, -84.160872
Observation Date	2024-10-09
Elevation (ft)	848.88
Drought Index (PDSI)	Mild wetness (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-09	2.699213	3.998032	4.299213	Wet	3	3	9
2024-09-09	2.466142	3.970866	2.110236	Dry	1	2	2
2024-08-10	3.675591	5.752362	5.712599	Normal	2	1	2
Result							Normal Conditions - 13

US Army Corps of Engineers

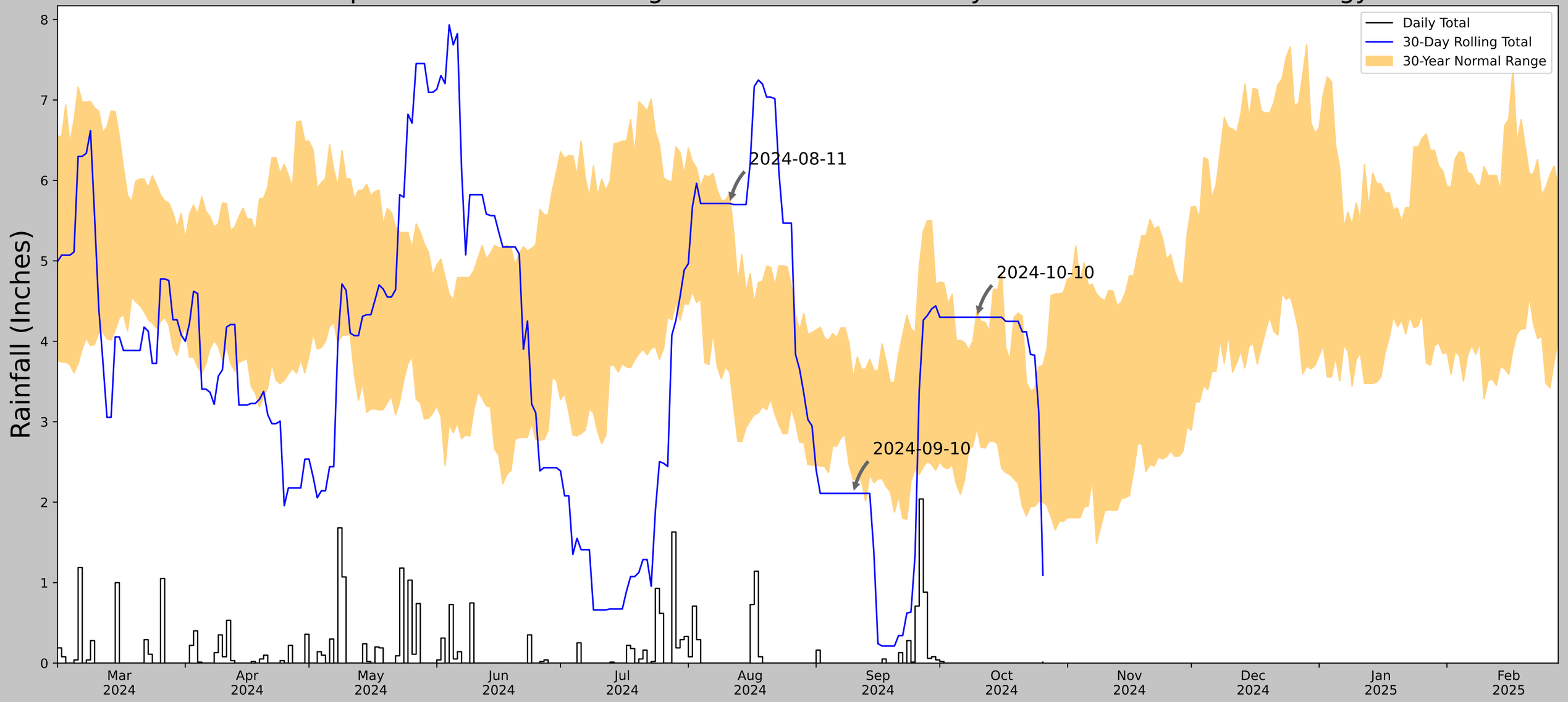
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	4.067	51.054	2.038	9463	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	1888	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.020764, -84.160872
Observation Date	2024-10-10
Elevation (ft)	848.88
Drought Index (PDSI)	Mild wetness (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-10	2.922047	4.370866	4.299213	Normal	2	3	6
2024-09-10	2.283071	3.544882	2.110236	Dry	1	2	2
2024-08-11	3.622835	5.833465	5.712599	Normal	2	1	2
Result							Normal Conditions - 10

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OAK RIDGE ASOS	36.0231, -84.2336	899.934	4.067	51.054	2.038	9463	90
OAK RIDGE 5.7 NE	36.0212, -84.2234	854.003	0.585	45.931	0.29	2	0
OAK RIDGE ATDD	35.9981, -84.2192	1019.029	1.906	119.095	1.085	1888	0

Tennessee Ecological Services Field Office

FWS Log No: 2024-014450.02

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act. If project design changes are made or new information becomes available, please submit new plans for review.

DANIEL ELBERT Digitally signed by DANIEL ELBERT
Date: 2025.07.30 08:49:38 -05'00'

Field Supervisor Date

Outlook

FW: Informal Consultation Concurrence: TDOT PIN 124121.02 Anderson County, SR-170, From Melton Lake Drive to SR-9

From Erick Hunt-Hawkins <Erick.Hunt-Hawkins@tn.gov>
Date Fri 8/15/2025 12:57 PM
To Choudhry, Abdul <Abdul.Choudhry@aecom.com>; Rachel Head <rachel.head@tn.gov>; Magsanoc, Ray <ray.magsanoc@aecom.com>; Dawood, Laura <Laura.Dawood@aecom.com>

1 attachment (554 KB)
20250729_2024-0144503_SR-170NewBridge_Andersoncounty Reply_signed.pdf;

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This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

TN TDOT Department of Transportation

Erick K. Hunt-Hawkins | NEPA Team Lead
Environmental Division | Environmental Quality and NEPA Section
James K. Polk Building, 9th Floor
505 Deaderick Street, Suite 900, Nashville, TN 37243
Work: (615) 253-5163
Email: Erick.Hunt-Hawkins@tn.gov

From: Dennis Crumby <Dennis.Crumby@tn.gov>
Sent: Monday, August 4, 2025 9:03 AM
To: Erick Hunt-Hawkins <Erick.Hunt-Hawkins@tn.gov>
Cc: Brenden W. Barney <Brenden.W.Barney@tn.gov>
Subject: FW: Informal Consultation Concurrence: TDOT PIN 124121.02 Anderson County, SR-170, From Melton Lake Drive to SR-9

Morning Erick. I've forwarded the email response from USFWS to Brenden, along with the stamped concurrence from the Service.
Let me know if there is any additional info I can provide.

TN TDOT Department of Transportation

Dennis Crumby / Ecology Section

Environmental Division
James K. Polk BLDG., Suite 900
505 Deaderick Street
Nashville, TN 37242-0334
p. 615-253-2465 c. 615-761-8513
dennis.crumby@tn.gov

From: DeVore, Christopher <Christopher_DeVore@fws.gov>
Sent: Thursday, July 31, 2025 3:26 PM
To: Brenden W. Barney <Brenden.W.Barney@tn.gov>
Cc: Harris, Abigail N <abigail_harris@fws.gov>; Dennis Crumby <Dennis.Crumby@tn.gov>; Rita M. Thompson <Rita.M.Thompson@tn.gov>; Sikula, Nicole R <nicole_sikula@fws.gov>
Subject: [EXTERNAL] Informal Consultation Concurrence: TDOT PIN 124121.02 Anderson County, SR-170, From Melton Lake Drive to SR-9

Hi Brenden,

Thank you for coordinating on the SR-170 proposed bridge replacement over the Clinch River in Anderson County (PIN: 124121.02). Our digitally signed statement of concurrence is attached.

Thank you for your diligent coordination on this project. If you have any questions, please don't hesitate to contact me.

Christopher DeVore
Transportation Biologist
Tennessee Ecological Services Field Office
U.S. Fish and Wildlife Service

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

WILL REID
COMMISSIONER

BILL LEE
GOVERNOR

July 28,2025

To:
Chris DeVore
U.S. Fish and Wildlife Service
Tennessee Ecological Services Field Office
446 Neal Street
Cookeville, TN 38501

From:
Brenden Barney
Ecology Team Lead
Tennessee Department of Transportation

Subject: Effects Determination for Spectaclecase (*Margaritifera monodonta*), Indiana bat (*Myotis sodalis*), and tricolored bat (*Perimyotis septentrionalis*) – Proposed Activity at PIN 124121.02 Anderson County, SR-170, From Melton Lake Drive to SR-9 / ETK project 2024-0144503

Dear Mr. DeVore,
In accordance with Section 7 of the Endangered Species Act (ESA), this correspondence provides an effects determination for the Spectaclecase mussel (*Margaritifera monodonta*), Indiana bat (*Myotis sodalis*), and tricolored bat (*Perimyotis septentrionalis*) related to the proposed project at River Mile (RM) 48 on the Clinch River, near Oak Ridge, Anderson County, Tennessee.

Project Description
TDOT proposes to widen SR-170, from Melton Lake Drive to SR-9. The project includes a proposed new bridge over the Clinch River that will include in-water construction activities across the main channel of the Clinch River at approximately RM 48. This segment of the river lies 32.4 miles downstream of Norris Dam (subject to year round cold water realeses) and within the backwater influence of Melton Hill Reservoir, approximately 23.5 miles upstream of Melton Hill Dam.

Species Overview

Attribute	Information
Common Name	Spectaclecase
Scientific Name	*Margaritifera monodonta* (formerly *Cumberlandia monodonta*)
ESA Status	Endangered (77 FR 14914; March 13, 2012)

Attribute	Information
Recovery Priority	5 (High threat; low to moderate recovery potential)
Known TN Range	Tennessee River, Nolichucky River, Duck River, Clinch River (River mile 152 -202)
Habitat	Large rivers with moderate to fast current; stable gravel/cobble/boulder substrate

The species is known from limited locations in the upper Clinch River, including Kyles Ford and Grissom Island, located between RMs 152–202, over 100 miles upstream of RM 48.

Survey Data Near RM 48
A mussel survey conducted in 2014 by Dinkins Biological Consulting at RMs 50.7–51.1, just upstream of the project area, revealed:

- No live mussels found at any of 13 transects
- 30 relic shells of five common species (e.g., *Elliptio crassidens*, *Cyclonaias tuberculata*)
- No Spectaclecase observed (live or shell)
- Riverbed densely colonized by zebra mussels (Dreissena polymorpha)
- Substrate was heterogeneous but dominated by silt and embedded gravel, especially downstream

Habitat Suitability at RM 48
Benthic sampling completed by TVA biologists in 2019 at RM 47.85 and 48.55 revealed only 3 types of bivalves, including Asian clams (*Corbicula fluminea*), zebra mussels (*Dreissena polymorpha*) and fingernail clams (*Pisidium sp*).

Habitat Characteristic	Assessment at RM 48
Flow regime	Reservoir backwater—reduced current
Substrate	Mixed silt, gravel, and cobble; degraded by zebra mussels and Asian clams
Water depth/clarity	>5 meters; limited light and benthic productivity
Connectivity to Spectaclecase populations	Very low; over 100 miles downstream of known occurrences
Suitability for Spectaclecase	Poor to unsuitable

The 2019 USFWS 5-Year Review classified the Clinch River population as "weakened" with small numbers, likely declining, and limited to upstream reaches. TDOT personal communication with regional malacologists (Matthew Reed and Todd Amacher, TVA Aquatic Ecologists), both indicated that the species is likely extirpated from this stretch of Melton Hill Reservoir and the records are historical. Additionally, no live mussels were observed during surveys conducted by G.R. Dinkins in the Clinch River (August 2023) between River Miles 15 and 19.

Effects Assessment

Evaluation Factor	Assessment
Critical Habitat	Not designated for this species
Direct Impacts	None anticipated due to species absence
Habitat Impacts	Minor and temporary; site is already highly degraded

Determination

Based on:

- Norris Dam (constructed in 1936) year round cold water realeases
- Negative survey results for live mussels near RM 52 & RM 15-19
- Absence of Spectaclecase in upstream and nearby reaches
- Degraded, impounded habitat conditions
- Distance and lack of hydrologic connectivity to known populations
- Evedence that near proposed area habitat has been colonized by invasive Zebra mussel

Based on the information provided in this assessment using the best available data to date TDOT concludes that the proposed project at RM 48 is **Not Likely to Adversely Affect** the Spectaclecase mussel (*Margaritifera monodonta*).

Additional Effects Determinations for this project:
The Service informed TDOT that the project lies within a summer area for the federally endangered Indiana bat (*Myotis sodalis*) and within swarming habitat for the proposed endangered tricolored bat (Perimyotis subflavus). Because tree removal is anticipated on the SR-170 widening project, TDOT has requested that the following Environmental Commitment be made active and included on project construction plans:

- ***All necessary tree clearing within project limits will be completed between November 16 and March 31.***

Based on the seasonal tree clearing commitment, TDOT has determined that the SR-170 widening project (PIN 124121.02) is **Not Likely to Adversely Affect** the Indiana bat or tricolored bat.

Supporting References

Citation	Source
USFWS (2019)	*Spectaclecase (Cumberlandia monodonta) 5-Year Review*
Dinkins, G. R. (2014)	*Mussel Survey – Clinch River at Oak Ridge Rowing Association*
Parmalee & Bogan (1998)	*Freshwater Mussels of Tennessee*
M. Reed and T. Amacher (2025)	*Tennessee Valley Authority (Personal Communication)*
Dinkins, G. R. (2023)	*Mussel Survey at Clinch River Mile 15-19*

Please let us know if you need additional information or documentation to support this determination.
Sincerely,

Brenden Barney
Ecology Team Lead
Tennessee Department of Transportation
629-234-773 / Brenden.W.Barney@tn.gov

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
5107 EDMONDSON PIKE
NASHVILLE, TENNESSEE 37211

10/15/2024

Dennis Crumby / Ecology Section
Environmental Division
James K. Polk BLDG., Suite 900
505 Deaderick Street
Nashville, TN 37242-0334
p. 615-253-2465 c. 615-761-8513

RE: PIN 124121.02 Anderson County; SR-170, From near Melton Lake Drive to SR-9 (US-25W, Clinton Highway) (IA) (TMA)

Dear Mr. Crumby,

The Tennessee Wildlife Resources Agency has reviewed the information provided for the proposed project to widen SR-170 from 2 to 4 lanes, with median and/or center turn lane in Anderson County, Tn. You have requested that we provide your office with a list of threatened or endangered species that may be present in the vicinity of the proposed project.

Widening will occur within the proposed Environmental Technical Study Area and proposed construction includes bicycle/ pedestrian facilities and a new bridge over the Clinch River.

Our databases show documented occurrences of multiple state listed species within 4.0 miles for the project location however, based on the scope of work and location of the project our agency does not anticipate significant adverse impacts to these species provided that all applicable TDEC and US EPA approved Erosion Prevention/Silt Control measures and Best Management Practices be planned for, implemented, monitored, and maintained throughout construction.

Thank you for the opportunity to review and comment on this proposed project. If I may be of further assistance, please contact me at Andy.Barlow@tn.gov.

Sincerely,

Andy Barlow
Wildlife Biologist/Liaison to TDOT and the Federal Highway Administration

From:	Griffith, John
To:	Dennis Crumby
Cc:	Sikula, Nicole R
Subject:	[EXTERNAL] Re: IPaC delivered Official Species List for project: TDOT PIN 124121.02 Anderson County SR-170, From Melton Lake Drive to SR-9
Date:	Tuesday, October 1, 2024 4:11:07 PM

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Dennis,

Thank you for your correspondence regarding the proposed State Route (SR-) 170 widening from Melton Lake Drive to SR-9 in Anderson County, Tennessee. The scope of work would involve widening SR-170 from 2 to 4 lanes, with median and/or center turn lane and bicycle/ pedestrian facilities and construction of a new bridge over the Clinch River. You are requesting a list of federally threatened or endangered species that may be present in the project area.

According to our records, the federally endangered spectaclecase (*Margaritifera monodonta*) may persist in this reach of the Clinch River despite effects from Melton Hill Reservoir below and cold water releases upriver from Norris Dam. If the project scope would involve instream work, a qualified individual should assess impacts to the spectaclecase. The project lies within a summer area for the federally endangered Indiana bat (*Myotis sodalis*) and within swarming habitat for the proposed endangered tricolored bat (*Perimyotis subflavus*). Because tree removal would be required for the project, you should also assess impacts to the Indiana bat and tricolored bat. As a designated representative for the Federal Highway Administration (FHWA), the Tennessee Department of Transportation may submit its assessment and findings directly to this office for review and concurrence. A finding of "may affect" can be addressed through formal consultation by the FHWA, except when the Service concurs, in writing, that a proposed action “is not likely to adversely affect” listed species.

This email will serve as our official project response. Please let me know if we can offer further assistance. Thanks,

John Griffith
Transportation Biologist
U.S. Fish and Wildlife Service
Tennessee Field Office
931-444-1393 (office)
931-261-3755 (cell)

From: Administrator Email <ecosphere_support@ecosphere.fws.gov>
Sent: Tuesday, September 17, 2024 3:03 AM
To: Griffith, John <john_griffith@fws.gov>; Tennessee ES, FWS <tennesseeES@fws.gov>; Sykes,

Robbie <robbie_sykes@fws.gov>; Alexander, Steven <steven_alexander@fws.gov>
Subject: IPaC delivered Official Species List for project: TDOT PIN 124121.02 Anderson County SR-170, From Melton Lake Drive to SR-9

To: IPaC point(s) of contact for Tennessee Ecological Services Field Office
Project Location: Anderson County, Tennessee

IPaC has delivered an official Section 7 species list on behalf of your office. For your convenience, IPaC has created an ETK project (2024-0144503) with a new associated 'Species List Provided' event. A PDF file of the species list document is attached to the event and contact information for the project can be found on the last page of the PDF.

IPaC has automatically set the consultation status to "Closed". If you need to do any additional work in this project (*e.g.*, add staff, add events, change lead office, etc.), you must first change the status to "active" so that you can edit the project. You can access the project via the link, above.

Lead FWS Office:
The Tennessee Ecological Services Field Office is currently designated as the lead office for Section 7 on this project. The following additional offices have jurisdiction and have been notified: None. If another office is the lead office on this project, please access the project (via the link above) and update it. IPaC will not reset the Lead Office once it has been updated by a biologist.

*Projects created in ETK by IPaC have not been assigned to an FWS staff member. To identify the staff assigned to this project, please access the project (via the link above) and add their name(s).

Project Name: Anderson County, SR-170 from near Melton Lake Drive to SR-9 **PIN:** 124121.02

Water Resource Table for NEPA Documentation

Based on: ETSA

Date: 7/24/2025

Table Amounts are based on (choose only one): Estimated extent of resource within ETSA

Water Resources (Non-Wetland)

Label	Type	Latitude	Longitude	Receiving Waters		USACE Jurisdiction	Quality	Amount (Linear Feet)	Amount (Acres)
LAK-1*	Lake/Reservoir	36.018456	-84.164506	Clinch River / Melton Hill Reservoir		Yes	Not Supporting	N/A	4.7
STR-4*	Perennial Stream	36.014230	-84.171783	Clinch River / Melton Hill Reservoir		Yes	Unassessed	925.25	0.149
STR-5*	Perennial Stream	36.027183	-84.149505	Unnamed Tirbutary (UNT) to Clinch River / Melton Hill Reservoir		Yes	Unassessed	219.96	0.019
STR-5*	Intermittent Stream	36.027547	-84.149784	UNT to Clinch River / Melton Hill Reservoir		Yes	Unassessed	64.34	0.006
STR-6*	Perennial Stream	36.033098	-84.139682	Worthington Branch		Yes	Unassessed	289.04	0.04
STR-7	Intermittent Stream	36.034209	-84.135512	UNT to Clinch River / Melton Hill Reservoir		Yes	Unassessed	151	0.01
STR-8	Intermittent Stream	36.035071	-84.132669	UNT to Clinch River / Melton Hill Reservoir		Yes	Unassessed	91.32	0.006
STR-9*	Perennial Stream	36.037193	-84.123910	Nelson Branch		Yes	Unassessed	473.24	0.092
STR-10*	Perennial Stream	36.037964	-84.118696	Blazer Branch		Yes	Unassessed	655.77	0.069
STR-11	Intermittent Stream	36.038041	-84.118119	STR-10 (UNT to Blazer Branch)		Yes	Unassessed	201.93	0.005
STR-12	Intermittent Stream	36.039767	-84.114184	Blazer Branch		Yes	Unassessed	40.91	0.002
STR-13*	Perennial Stream	36.039836	-84.114009	Blazer Branch		Yes	Unassessed	532.79	0.073
WWC-3	Wet Weather Conveyance	36.032956	-84.139483	STR-6 (UNT Worthington Branch)		No	Not Applicable	294.48	0.007
WWC-4	Wet Weather Conveyance	36.037518	-84.118750	STR-10 (UNT to Blazer Branch)		No	Not Applicable	1048.16	0.072
*Feature intersects the ETSA at multiple locations							**Total:**	4,988	5

Water Resources (Wetland)*

Label	Type	Latitude	Longitude	Receiving Waters	TDEC Jurisdiction	USACE Jurisdiction	Quality	Amount (Acres)
WTL-24	Emergent	36.013287	-84.171492	STR-4 (UNT to Clinch River/Melton Hill Reservoir)	Non-Isolated	Yes	Low Resource Value	0.166
WTL-25	Emergent	36.018054	-84.165917	Clinch River / Melton Hill Reservoir	Non-Isolated	Yes	Low Resource Value	0.175
WTL-26	Emergent	36.025429	-84.152148	None - Isolated	Isolated	No	Low Resource Value	0.014
WTL-27	Emergent	36.026170	-84.151182	None - Isolated	Isolated	No	Low Resource Value	0.025
WTL-28	Forested	36.027585	-84.149855	STR-5 (UNT to Clinton River/Melton Hill Reservoir)	Non-Isolated	Yes	Moderate Resource Value	0.173
WTL-29	Shrub	36.041855	-84.109708	None - Isolated	Isolated	No	Low Resource Value	0.008
WTL-30	Emergent	36.027768	-84.149219	None - Isolated	Isolated	No	Low Resource Value	0.011
WTL-31	Emergent	36.028116	-84.149327	None - Isolated	Isolated	No	Low Resource Value	0.022
WTL-32	Emergent	36.027717	-84.148716	None - Isolated	Isolated	No	Low Resource Value	0.017
WTL-33	Emergent	36.027831	-84.148343	None - Isolated	Isolated	No	Low Resource Value	0.043
WTL-34	Emergent	36.030749	-84.144554	None - Isolated	Isolated	No	Low Resource Value	0.006
WTL-35	Forested	36.030661	-84.143103	None - Isolated	Isolated	No	Moderate Resource Value	0.012
WTL-36	Forested	36.033090	-84.139794	STR-6 (UNT to Worthington Branch)	Non-Isolated	Yes	Moderate Resource Value	0.104

WTL-37	Emergent	36.034178	-84.135505	STR-7 (UNT to Clinton River/Melton Hill Reservoir)	Non-Isolated	Yes	Low Resource Value	0.005
WTL-38	Emergent	36.035261	-84.132270	STR-9 (UNT to Nelson Branch)	Non-Isolated	Yes	Low Resource Value	0.044
WTL-39	Forested	36.037518	-84.124707	STR-9 (UNT to Nelson Branch)	Non-Isolated	Yes	Moderate Resource Value	0.044
WTL-40	Shrub	36.037969	-84.118436	STR-10 (UNT to Blazer Branch)	Non-Isolated	Yes	Low Resource Value	0.189
WTL-41	Emergent	36.037322	-84.117687	STR-10 (UNT to Blazer Branch)	Non-Isolated	Yes	Low Resource Value	0.043
WTL-42	Emergent	36.038130	-84.117801	STR-11 (UNT to Blazer Branch)	Non-Isolated	Yes	Low Resource Value	0.069
WTL-43	Emergent	36.040133	-84.113668	STR-13 (UNT to Blazer Branch)	Non-Isolated	Yes	Low Resource Value	0.017
WTL-44	Emergent	36.041583	-84.110061	None - Isolated	Isolated	No	Low Resource Value	0.001
WTL-45	Emergent	36.042420	-84.110958	None - Isolated	Isolated	No	Low Resource Value	0.001
							Total:**	1.189

*Unless described otherwise in the NEPA document; all wetlands are presumed to serve the following functions to varying degrees, based on location: wildlife habitat, flood storage, groundwater recharge, nutrient processing, contaminant filtering, and recreation.

**For the purposes of the NEPA document, Amount is assumed to be Permanent Loss.

Note- Features and estimated amounts referenced in this table are based on information available and may change as the project is further refined througout project development.

Memorandum of Agreements

MEMORANDUM OF AGREEMENT

BETWEEN

TENNESSEE DEPARTMENT OF TRANSPORTATION

AND

FEDERAL HIGHWAY ADMINISTRATION
TENNESSEE DIVISION OFFICE

AND

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF NATURAL AREAS

March 2023

SUBJECT:

This Memorandum of Agreement (MOA) is being instituted between the Tennessee Department of Environment and Conservation Division of Natural Areas (TDEC DNA), the Tennessee Department of Transportation (TDOT), and the Federal Highway Administration, Tennessee Division Office (FHWA) to streamline TDOT projects and activities which typically result in no adverse effects to state listed plant species or their habitats in Tennessee.

PURPOSE:

FHWA is required, pursuant to the Fish and Wildlife Coordination Act, (Title 16 United States Code (U.S.C) 662(a)) to consult with the head of the State agency exercising administration over wildlife resources if any stream or water body is "controlled or modified for any purpose whatever." "Wildlife resources" includes animals as well as "all types of aquatic and land vegetation upon which wildlife is dependent" (16 U.S.C. 666b). TDOT, on behalf of FHWA, coordinates these projects, in part, with TDEC DNA.

TDEC DNA is charged with conserving rare plant species and their habitats as well as administering a system of state natural areas within Tennessee. In this role, TDEC DNA maintains data on the location and status of rare species and natural communities within the state and maintains a list of rare plants classified as endangered, threatened, or as a species of concern. TDEC DNA provides technical

support regarding the use and interpretation of such data and provides written comments (as needed) regarding potential effects to rare plants (sometimes animals), natural communities, and conservation sites for federally funded and state funded projects.

This MOA applies to both State- and Federally funded projects and is intended to define conditions and provide example categories of projects and activities for which project-specific consultation with TDEC DNA is not required. Documentation for projects covered under this MOA will include a copy of this agreement and a statement from the TDOT Ecology staff citing the applicability of this agreement, rather than written correspondence to and from TDEC DNA. This documentation will be included in the Appendices of all applicable environmental documents (e.g., NEPA, TEER) and in the documentation for all applicable permit applications.

SCOPE:

The following conditions and example projects and activities have been evaluated and a conclusion reached by TDEC DNA, FHWA and TDOT that specific work meeting these conditions within these categories will not result in adverse effects to state listed plant species or their habitats. As a result, this MOA constitutes programmatic consultation/coordination between TDEC DNA, FHWA and TDOT.

CONDITIONS FOR COVERAGE UNDER THIS MEMORANDUM

1. Based on a review of the project study area and the TDEC Natural Heritage Database, both of the following criteria must be met:

    - TDOT ecology project review staff have determined that there are no known records of State- or Federally listed plant species within the project study area; and

    - TDOT ecology project review staff or qualified consultants have determined the project area does not contain habitat for State-listed plant species documented within four miles, or if potential habitat is present, an appropriately timed presence/absence survey has been conducted for State-listed plant species with negative results.

OR

2. TDOT ecology project review staff have determined that proposed activity is such

that it would not impact undeveloped areas or natural vegetation outside the current developed footprint. Examples of such projects are listed below as a project type covered under this MOA which can be completed without regard to proximity of known or potential occurrences of rare plant species.

A. Typical bridge repair projects confined to the structure above the waterline and not requiring disturbance of waterways, provided construction debris or other construction-related materials can be prevented from entering the waterway by implementing Best Management Practices (BMP's) or properly installed erosion controls. Activities in this category include the following:

   - Bridge deck repair (scarification, patching, replacement, etc.)
   - Installation and repair of expansion joints
   - Removal and resurfacing of bridge and approach roadway pavement
   - Patching of substructures
   - Removal, replacement, and repair of beams
   - Removal and replacement of bridge deck cantilevers
   - Modification of piers and abutments above the surface of the water
   - Repair and replacement of bridge and approach guardrails
   - Sand blasting, painting, and sealing

B. Installation of impact attenuators on bridge piers, providing substrate work is not involved, and they do not affect flow downstream

C. Bridge inspections, including the portions of the piers under the surface of the water, if no soil or substrate is disturbed

D. Addition of intersection turning lanes provided new lanes are within the developed footprint of the roadway.

E. Installation, replacement, or addition of traffic control signals or information signs. Included are Intelligent Transportation Systems (ITS), fog detection systems, traffic information systems, flashing lights, reflectors, striping, rumble

strips and stripes, signs, and sidewalks provided such work is in the current developed footprint.

F. Turning radius improvement at intersections

G. Removal and replacement of existing pavement, provided that all old pavement is properly disposed of according to current regulations.

H. Installation and repair of guardrails, cable barriers, and jersey barriers

I. Installation of railroad signals, signs, and other improvements at crossings

J. Maintenance of roadway ditches and catch basins, provided that the original size and dimensions are not increased. This category is confined to sloped ditches which only convey water for a short period during storm events. No work under this exception can occur within 50 feet of any stream.

K. Replacement of overpasses which span roadways or railways

L. Placement of riprap adjacent to existing bridge abutments to repair/prevent scour and protect the integrity of the structure. Work may not extend past the top of bank and no equipment or material is allowed in the stream channel.

M. Enhancement of Rest Areas (e.g., repaving, landscaping, sprinkler system installation, lighting, building replacement or additions, sidewalk refurbishing)

N. Addition of intersection lighting

O. Installation of noise walls

P. Removal of vegetation along roads or under bridges provided such work is within the current developed footprint

Q. Items deemed eligible for Transportation Alternatives Set-Aside (or other) funding, including:

- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other

safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.

- Inventory, control, and removal of outdoor advertising

- Construction of turnouts, overlooks, and viewing areas provided such work is within the current developed footprint

- Historic preservation and rehabilitation of historic transportation facilities

- Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to (1) address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff and (2) to reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats

GENERAL PROVISIONS:

Any signatory agency may unilaterally withdraw from this agreement with 30 days written notice. This MOA will be reviewed every five years and revised as appropriate. Revisions may be requested at any time by any signatory agency. All revisions will be made in writing and require the concurrence of the signatory agencies.

AGREEMENT BY:

Tennessee Department of Environment and Conservation, Division of Natural Areas

Roger McCoy (Mar 1, 2023 13:33 CST)

Date: Mar 1, 2023

Roger McCoy, Director TDEC DNA

Tennessee Department of Transportation

Date: Mar 6, 2023

Howard H. Eley, Deputy Governor and Commissioner

Federal Highway Administration, Tennessee Division Office

Date: Mar 20, 2023

Pamela M. Kordenbrock, Division Administrator