



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

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

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

MEMORANDUM

To: Shane Hester
Region 3, CE Manager 2

From: Steve Walker
Environmental Division

Date: 6-24-16

Subject: **Environmental Boundaries For:** Saturn Parkway Extension
from SR-396 to SR-247 at Beechcroft Rd.
PE: 60100-1209-04 **PIN:** 123399.00

An ecological evaluation of the subject project has been conducted with the following results:

SPRINGS/STREAMS

There are two streams within the project limits.

- STR-1 is a perennial stream that flows North to South thru project area.
- STR-2 will not be impacted by project

WETLANDS

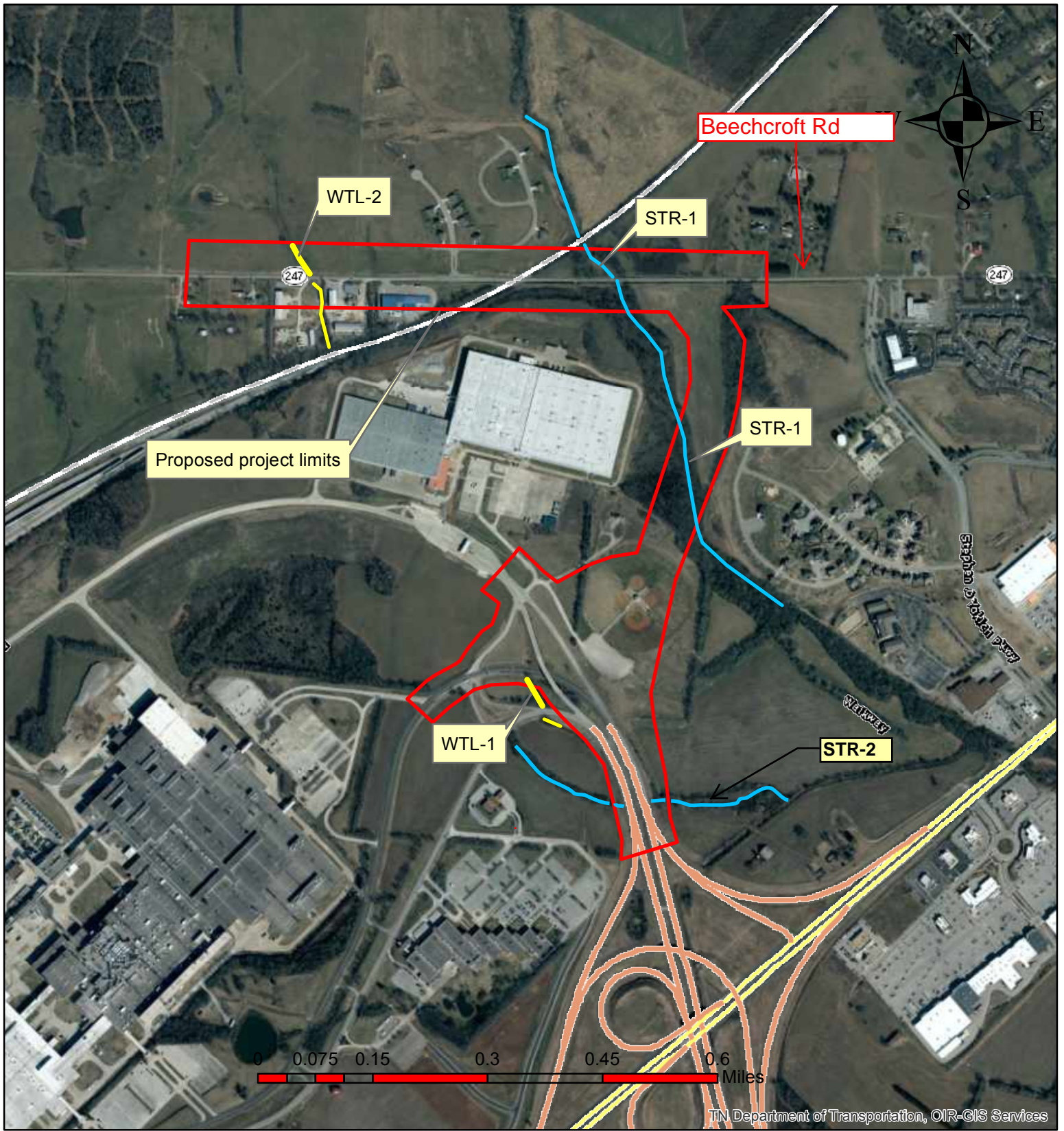
There are two wetlands within project area. WTL-2 will not be impacted by project

PROTECTED SPECIES

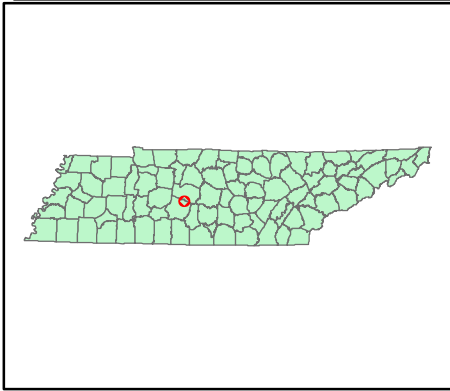
A search of the TDEC rare species database was done on June 6, 2016. A bat survey has been conducted and coordination with USFWS has been initiated. USFWS response will be uploaded to file net once received. STR-1 one is unassessed and has been sent to TDEC for assessment.

Your assistance is appreciated. If you have any questions or comments, please contact Steve Walker in the Environmental Division at 615-253-9908 or steve.a.walker@tn.gov

xc: Shane Hester
Anthony Myers
Melanie Bumpus
John Hewitt
Wesley Peck
Melissa Portel
(see contact list-subject to change)



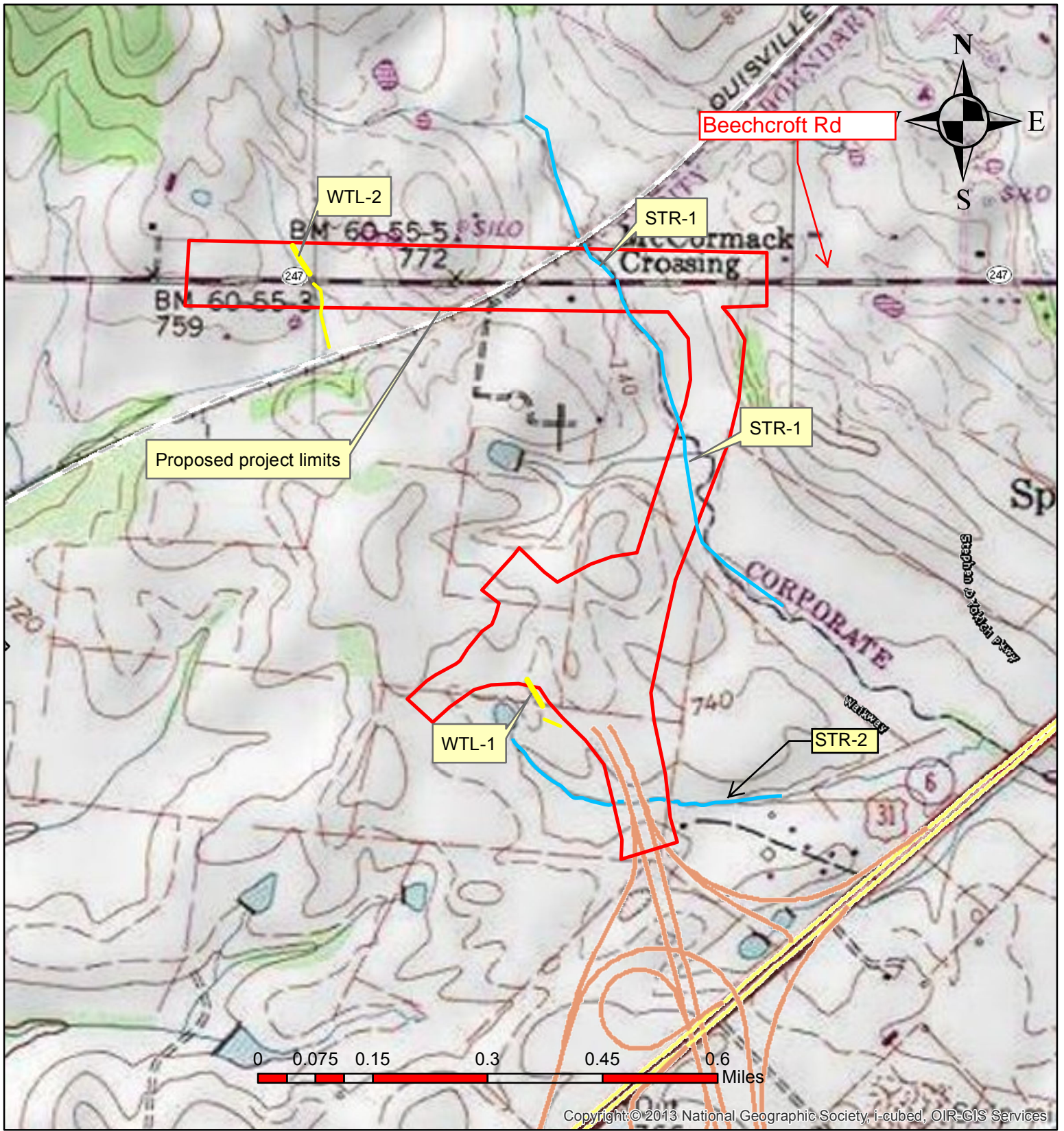
TN Department of Transportation, OIR-GIS Services



Maury County, Saturn Parkway Extension project

P.E. 60100-1209-04
PIN 123399.00





Maury County, Saturn Parkway Extension project

P.E. 60100-1209-04
PIN 123399.00



Ecology Field Data Sheet: Water Resources

Project: Maury County; Saturn Parkway Extension; P.E. 60100-1209-04, PIN 123399.00	
Biologist: Steve Walker	Affiliation: TDOT Ecology
Date: 6-3-16	
1-Station: from plans	
2-Map label and name	STR-1 UNT McCutcheon Creek
3-Latitude/Longitude	35.7482, -86.9468
4-Potential impact	bridge/crossing/runoff
5-Feature description:	
-channel identification	perennial stream <input checked="" type="checkbox"/> intermittent stream <input type="checkbox"/> ephemeral stream <input type="checkbox"/> wwc <input type="checkbox"/>
-HD score (if applicable)	
-OHWM indicators	bed & banks <input checked="" type="checkbox"/> deposition <input type="checkbox"/> presence of litter / debris <input type="checkbox"/> scour <input checked="" type="checkbox"/> veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/> destruction of terrestrial veg <input type="checkbox"/> multiple observed flow events <input type="checkbox"/> sediment sorting <input type="checkbox"/> water staining <input type="checkbox"/>
	change in soil character <input type="checkbox"/> leaf litter disturbed absent <input type="checkbox"/> natural line impressed on bank <input type="checkbox"/> shelving <input type="checkbox"/> wracking <input checked="" type="checkbox"/>
-sinuosity	absent <input type="checkbox"/> weak <input checked="" type="checkbox"/> moderate <input type="checkbox"/> strong <input type="checkbox"/>
-channel bottom width	20 feet
-top of bank width	25 feet
- avg. gradient of stream (%)	2-5 %
-bank height and slope ratio	LDB - 1 foot RDB - 1 foot
-water flow	fast <input type="checkbox"/> moderate <input checked="" type="checkbox"/> slow <input type="checkbox"/> isolated pools <input type="checkbox"/> none <input type="checkbox"/>
-water depth (riffles / pools)	water width (riffles / pools)
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/> Eroding <input checked="" type="checkbox"/> Undercutting <input type="checkbox"/> Sloughing <input type="checkbox"/> Exposed Roots <input type="checkbox"/> RDB: Stable <input type="checkbox"/> Eroding <input checked="" type="checkbox"/> Undercutting <input type="checkbox"/> Sloughing <input type="checkbox"/> Exposed Roots <input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: locust, hackberry, Privet, Box elder RDB: Walnut, Privet, Box Elder
-habitat assessment score	139
epifaunal substrate	6
channel alteration	19
rifle embeddedness	15
frequency of re-ox zones	17
velocity / depth regime	10
bank stability	LDB 7 RDB 7
sediment deposition	15
bank vegetative protection	LDB 10 RDB 10
channel flow status	7
riparian veg zone width	LDB 6 RDB 10
-benthos	yes
-fish	yes
-algae or other aquatic life	yes
6-photo numbers	2 and 3
7-rainfall information	
8-HUC -12 Code & Name	TN06040003034_0310 Unnamed tributary to McCutcheon Creek
9-Confirmed by:	
10-Assessed	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
11-ETW	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
12-303 (d) List	yes <input type="checkbox"/> siltation <input type="checkbox"/> habitat: <input type="checkbox"/> other: <input type="checkbox"/>
	no <input checked="" type="checkbox"/>
13-Notes	STR-1 in wooded area at GM property North of Ball Fields

Ecology Field Data Sheet: Water Resources

Project: Maury County; Saturn Parkway Extension; P.E. 60100-1209-04, PIN 123399.00	
Biologist: Steve Walker	Affiliation: TDOT Ecology
Date: 6-3-16	
1-Station: from plans	
2-Map label and name	STR-1 UNT McCutcheon Creek at Beechcroft Rd
3-Latitude/Longitude	35.7528, -86.9487
4-Potential impact	bridge/crossing/runoff
5-Feature description:	
-channel identification	perennial stream <input checked="" type="checkbox"/> intermittent stream <input type="checkbox"/> ephemeral stream <input type="checkbox"/> wwc <input type="checkbox"/>
-HD score (if applicable)	
-OHWM indicators	bed & banks <input checked="" type="checkbox"/> deposition <input type="checkbox"/> presence of litter / debris <input type="checkbox"/> scour <input checked="" type="checkbox"/> veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/> destruction of terrestrial veg <input type="checkbox"/> multiple observed flow events <input type="checkbox"/> sediment sorting <input type="checkbox"/> water staining <input type="checkbox"/>
	change in soil character <input type="checkbox"/> leaf litter disturbed absent <input type="checkbox"/> natural line impressed on bank <input type="checkbox"/> shelving <input type="checkbox"/> wracking <input checked="" type="checkbox"/>
-sinuosity	absent <input type="checkbox"/> weak <input checked="" type="checkbox"/> moderate <input type="checkbox"/> strong <input type="checkbox"/>
-channel bottom width	12-15 -top of bank width 15-20
- avg. gradient of stream (%)	2-5 %
-bank height and slope ratio	LDB - 5-6 feet RDB - 5-6 feet
-water flow	fast <input type="checkbox"/> moderate <input checked="" type="checkbox"/> slow <input type="checkbox"/> isolated pools <input type="checkbox"/> none <input type="checkbox"/>
-water depth (riffles / pools)	4-6 inches/ 1-1.5 feet water width (riffles / pools) 6-8 feet/ 8- 10 feet
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/> Eroding <input checked="" type="checkbox"/> Undercutting <input type="checkbox"/> Sloughing <input type="checkbox"/> Exposed Roots <input type="checkbox"/>
	RDB: Stable <input type="checkbox"/> Eroding <input checked="" type="checkbox"/> Undercutting <input type="checkbox"/> Sloughing <input type="checkbox"/> Exposed Roots <input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Hackberry, Privet, Box elder, oak RDB: Privet, Box Elder, oak, maple
-habitat assessment score	129
	epifaunal substrate 12 channel alteration 14
	riffle embeddedness 14 frequency of re-ox zones 12
	velocity / depth regime 10 bank stability LDB 6 RDB 6
	sediment deposition 11 bank vegetative protection LDB 6 RDB 8
	channel flow status 13 riparian veg zone width LDB 7 RDB 10
-benthos	yes
-fish	yes
-algae or other aquatic life	yes
6-photo numbers	4 and 5
7-rainfall information	
8-HUC -12 Code & Name	TN06040003034_0310 Unnamed tributary to McCutcheon Creek
9-Confirmed by:	
10-Assessed	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
11-ETW	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
12-303 (d) List	yes <input type="checkbox"/> siltation <input type="checkbox"/> habitat: <input type="checkbox"/> other: <input type="checkbox"/>
	no <input checked="" type="checkbox"/>
13-Notes	STR-1 at Beechcroft Rd.

Ecology Field Data Sheet: Water Resources

Project: Maury County; Saturn Parkway Extension; P.E. 60100-1209-04, PIN 123399.00	
Biologist: Steve Walker	Affiliation: TDOT Ecology
Date: 6-20-16	
1-Station: from plans	
2-Map label and name	STR-2
3-Latitude/Longitude	u/s 35.7429, -86.9489 to d/s 35.7429, -86.9472
4-Potential impact	No Impact
5-Feature description:	
-channel identification	perennial stream <input type="checkbox"/> intermittent stream <input checked="" type="checkbox"/> ephemeral stream <input type="checkbox"/> wwc <input type="checkbox"/>
-HD score (if applicable)	
-OHWM indicators	bed & banks <input checked="" type="checkbox"/> deposition <input checked="" type="checkbox"/> presence of litter / debris <input type="checkbox"/> scour <input checked="" type="checkbox"/> veg absent, bent, matted <input type="checkbox"/>
	change in plant community <input type="checkbox"/> destruction of terrestrial veg <input type="checkbox"/> multiple observed flow events <input type="checkbox"/> sediment sorting <input type="checkbox"/> water staining <input type="checkbox"/>
	change in soil character <input type="checkbox"/> leaf litter disturbed absent <input type="checkbox"/> natural line impressed on bank <input type="checkbox"/> shelving <input type="checkbox"/> wracking <input checked="" type="checkbox"/>
-sinuosity	absent <input type="checkbox"/> weak <input type="checkbox"/> moderate <input checked="" type="checkbox"/> strong <input type="checkbox"/>
-channel bottom width	3-6 feet
	-top of bank width 8 feet
- avg. gradient of stream (%)	2-5 %
-bank height and slope ratio	LDB - 2 feet RDB - 2-3 feet
-water flow	fast <input type="checkbox"/> moderate <input type="checkbox"/> slow <input type="checkbox"/> isolated pools <input checked="" type="checkbox"/> none <input type="checkbox"/>
-water depth (riffles / pools)	NA/ 1-2 feet water width (riffles / pools) 3/6 feet
-bank stability: LDB, RDB	LDB: Stable <input type="checkbox"/> Eroding <input checked="" type="checkbox"/> Undercutting <input type="checkbox"/> Sloughing <input type="checkbox"/> Exposed Roots <input type="checkbox"/>
	RDB: Stable <input type="checkbox"/> Eroding <input checked="" type="checkbox"/> Undercutting <input type="checkbox"/> Sloughing <input type="checkbox"/> Exposed Roots <input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Maple, Privet, Hackberry RDB: Maple, Privet, Hackberry
-habitat assessment score	94
	epifaunal substrate 13 channel alteration 8
	riffle embeddedness 10 frequency of re-ox zones 7
	velocity / depth regime 13 bank stability LDB 3 RDB 3
	sediment deposition 13 bank vegetative protection LDB 7 RDB 7
	channel flow status 2 riparian veg zone width LDB 4 RDB 4
-benthos	Yes
-fish	Yes
-algae or other aquatic life	Yes
6-photo numbers	
7-rainfall information	
8-HUC -12 Code & Name	TN06040003034_0310 UNT to McCutcheon Creek
9-Confirmed by:	
10-Assessed	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
11-ETW	yes <input type="checkbox"/> no <input type="checkbox"/>
12-303 (d) List	yes <input type="checkbox"/> siltation <input type="checkbox"/> habitat: <input type="checkbox"/> other: <input type="checkbox"/>
	no <input type="checkbox"/>
13-Notes	Majority of tributary dry. Some Isolated pools observed that contained fish (Perch species)

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Maury County; Saturn Parkway Extension Map Label: WTL-1

P.E. and PIN: 60100-1209-04 and 123399.00 Date: 6-3-16 Station: _____

Investigator(s): Steve Walker, Greg Harris HUC 12 (code and name): TN06040003034 0310 UNT McCutcheon Creek

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 35.7450 Long: -86.9505 Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>1</u> Buffer (ft.): _____ Approximate Size (ac.): _____ Portion Affected (permanent) (ac.): _____ Portion Affected (temporary) (ac.): _____	Confirmation (by, date): _____ Mitigation (to be included in design): _____ Notes:

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ 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)
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Map Label: WTL-1

	Absolute % Cover	Dominant Species?	Indicator Status	
<u>Tree Stratum</u> (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. <u>Black Willow</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____)				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.
1. <u>Green Bulrush</u>	_____	_____	_____	
2. <u>Cattail</u>	_____	_____	_____	
3. <u>Fox Sedge</u>	_____	_____	_____	
4. <u>Franks Sedge</u>	_____	_____	_____	
5. <u>Umbrella Sedge</u>	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)				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 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____

SOIL

Map Label: WTL-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
10-12 inches	10YR 4/2							

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
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Remarks:
No mottling observed soil is problematic numerous streaks of red clay fill material observed.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Maury County; Saturn Parkway Extension Map Label: WTL-2

P.E. and PIN: 60100-1209-04 and 123399.00 Date: 6-3-16 Station: _____

Investigator(s): Steve Walker, Greg Harris HUC 12 (code and name): TN06040003034 0310 UNT McCutcheon Creek

Landform (hillslope, terrace, etc.): manmade depressional area Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 35.7526 Long: -86.9559 Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>6 and 7</u> Buffer (ft.): _____ Approximate Size (ac.): _____ Portion Affected (permanent) (ac.): _____ Portion Affected (temporary) (ac.): _____	Confirmation (by, date): _____ Mitigation (to be included in design): _____ Notes:

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Map Label: WTL-2

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
<u>Herb Stratum</u> (Plot size: _____)				
1. Green Bulrush	_____	_____	_____	
2. Fescue	_____	_____	_____	
3. Fox Sedge	_____	_____	_____	
4. Franks Sedge	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				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 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
<u>Woody Vine Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Map Label: WTL-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
6-8 inches	10YR 4/1							

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input checked="" type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
---	--

Remarks:
Altered depressional area adjacent to Gas Pipeline at Beechcroft Rd.



Photo 1. WTL-1 looking East. N35.7452, W86.9505



Photo 2. STR-1 looking downstream N35.7482, W86.9468 (In wooded area north of Ball Fields)



Photo 3. STR-1 looking upstream N35.7482, W86.9468 (In wooded area north of Ball Fields)



Photo 4. STR-1 at Beechcroft Rd looking upstream.



Photo 5. STR-1 at Beechcroft Rd looking downstream



Photo 6. WTL-2 North of Beechcroft Rd



Photo 7. WTL-2 south of Beechcroft Rd.



Photo 8. STR-2 u/s of Saturn Pkwy looking West. 35.7429, -86.9489



Photo 9. STR-2 u/s Saturn Pkwy looking East 35.7429, -86.9489



Photo 11. STR-2 d/s Saturn Pkwy looking West. 35.7429, -86.9475

Photo Summary: 6-3-16

Project Description: Maury County; Saturn Parkway Extension Project, P.E. 60100-1209-04, PIN 123399.00



Photo 10. STR-2 d/s Saturn Pkwy looking East 35.7429, -86.9475



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Tennessee ES Office
446 Neal Street
Cookeville, Tennessee 38501

June 13, 2016

Mr. Dennis Crumby
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Subject: FWS# 16-I-0615. Proposed extension of Saturn Parkway from the intersection with State Route (SR) 6 (Main Street) to SR 247 (Beechcroft Road) in Spring Hill; PIN# 123399.00, P.E. 60100-1209-04, Maury County, Tennessee.

Dear Mr. Crumby:

Thank you for your email correspondence dated May 25, 2016, transmitting mist netting survey results for the proposed extension of Saturn Parkway from the intersection with SR 6 to SR 247 in Spring Hill, Maury County, Tennessee. The Tennessee Department of Transportation (TDOT) has determined that the project is “not likely to adversely affect” the federally endangered Indiana bat (*Myotis sodalis*) or the threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) based on negative survey results for these species. Personnel of the U.S. Fish and Wildlife Service (Service) have reviewed the subject proposal and offer the following comments.

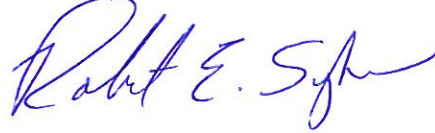
A mist netting survey was performed from May 15 through May 17, 2016, at one site determined to be a suitable netting location. Efforts resulted in the capture of five eastern red bats (*Lasiurus borealis*). Due to negative survey results for the Indiana bat and the NLEB, we concur with TDOT’s determinations of “not likely to adversely affect” for these species. Unless new information otherwise indicates species use of the area, this survey will be valid until April 1, 2019. Although there is no requirement to implement a winter tree cutting timeframe restriction on this project, we would appreciate consideration given to the removal of trees with a DBH (diameter at breast height) of three inches or greater from October 15 through March 31 to further minimize potential for harm.

We are unaware of any federally listed or proposed species that would be impacted by the project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under section 7 of the

Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at john_griffith@fws.gov.

Sincerely,

A handwritten signature in blue ink that reads "Robert E. Sykes". The signature is written in a cursive style with a large initial "R".

for Mary E. Jennings
Field Supervisor



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

June 23' 2016

Dennis Crumby
Tennessee Department of Transportation
Environmental Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-1402

Subject: Maury County: SR-396, Saturn Parkway Extension
P.E. 60100-1209-04 PIN 123399.00

Dear Mr. Crumby:

The Tennessee Wildlife Resources Agency has reviewed your request regarding the SR-396, Saturn Parkway Extension Project in Maury County, Tennessee. Your letter to the Agency requested comments regarding potential impacts to endangered species, wetlands, and other areas of concern we may think pertinent to this proposed project.

It is our understanding from what was sent that this project is not expected to impact any state-listed species that are Deemed-in-Need-of-Management, Threatened, or Endangered.

Based upon these understandings, the TWRA does request that all applicable TDEC and US EPA approved Erosion Prevention/Silt Control measures and Best Management Practices be scheduled, implemented, monitored, and maintained. The TWRA requests that any major changes to the plans, construction methodology, or right-of-way will immediately void this comment and require another review to the changes. The TWRA requests that this comment is put on the construction plans for all to review.

Thank you for the opportunity to review and comment on this proposed project. If you have any further questions, please contact me at 731-293-9776 or Ed.Harsson@tn.gov .

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

Sincerely,

A handwritten signature in blue ink that reads "Ed Harsson". The signature is written in a cursive style with a large, stylized "E" and "H".

Ed Harsson
Wildlife Biologist
Federal Highway Admin. and TN DOT Liaison
731-293-9776
Ed.Harsson@tn.gov

CC: Rob Todd, TWRA NEPA Coordinator
Tim Cleveland, TWRA Region 2 Manager
David Sims, TWRA Region 2 Habitat Biologist
John Griffith, USFWS
Stephanie Whitaker, TDEC

1 mile species

SCIENTIFIC_NAME	COMMON_NAME	FED_PROTECTION	ST_PROTECTION	EO_RANK	HABITAT
Etheostoma luteovinctum	Redband Darter	--	D	Historical	Limestone streams; Nashville Basin & portions of Highland Rim.
Etheostoma luteovinctum	Redband Darter	--	D	Verified extant (viability not assessed)	Limestone streams; Nashville Basin & portions of Highland Rim.
Etheostoma luteovinctum	Redband Darter	--	D	Verified extant (viability not assessed)	Limestone streams; Nashville Basin & portions of Highland Rim.

4 mile species

SCIENTIFIC_NAME	COMMON_NAME	LAST_OBS_DATE	FED_PROTECTION	ST_PROTECTION	EO_RANK
Etheostoma luteovinctum	Redband Darter	1937-04-27	--	D	Historical
Etheostoma luteovinctum	Redband Darter	1993-05-12	--	D	Verified extant (viability not assessed)
Hemitremia flammea	Flame Chub	1937-04	--	D	Historical
Tyto alba	Barn Owl	2008-07-19	--	D	Verified extant (viability not assessed)
Etheostoma luteovinctum	Redband Darter	1994-07-12	--	D	Verified extant (viability not assessed)
Etheostoma luteovinctum	Redband Darter	2009-06-15	--	D	Verified extant (viability not assessed)
Etheostoma luteovinctum	Redband Darter	1937-04-28	--	D	Historical
Phemeranthus calcaricus	Limestone Fame-flower	2007-04-17	--	S	Excellent, good, or fair estimated viability
Etheostoma luteovinctum	Redband Darter	1937-04-27	--	D	Historical
Etheostoma luteovinctum	Redband Darter	1937-04-27	--	D	Historical
Etheostoma luteovinctum	Redband Darter	1993-10-20	--	D	Verified extant (viability not assessed)
Etheostoma luteovinctum	Redband Darter	1986-06-06	--	D	Verified extant (viability not assessed)
Stellaria fontinalis	Water Stitchwort	2007-04-17	--	S	Verified extant (viability not assessed)