

## 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

#### **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<br/>from SR-396 to SR-247 at Beechcroft Rd.<br/>PE: 60100-1209-04PIN: 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 <u>steve.a.walker@tn.gov</u>

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



P.E. 60100-1209-04 PIN 123399.00





## Ecology Field Data Sheet: Water Resources

Brojoct:	Moury	County: Satu	n Dorlaway Ev	tonsion: D.E. 60	100 1200	04 DIN 122200	00				
Biologist:	Stave Walker		ion:	TDOT E	ology	Date:	.00			5 3 16	
		Annat		IDOI E	ology	Date.			(	)-3-10	
1-Station: from plans											
2-Map label and name	STR-1 UNT Mc	R-I UNT McCutcheon Creek									
3-Latitude/Longitude	35.7482, -86.946	8									
4-Potential impact	bridge/crossing/r	unoff									
5-Feature description:	_		1					1			
-channel identification	perennial strear	n 🖌	intermittent	stream	ephen	neral stream		WWC			
-HD score (if applicable)											
-OHWM indicators	bed & banks	depo	osition	debris	of litter /	scour		$\checkmark$	veg abs matted	ent, ben	·, //
	change in plant community	dest terre	ruction of estrial veg	flow ever	observed its	sediment	sorting		water s	taining	
	change in soil character	leaf abse	litter disturbed ent	d natural li impresse	ne d on bank	shelving			wrackin	g	$\checkmark$
-sinuosity	absent		weak	$\checkmark$	mode	ate		stror	ng		
-channel bottom width		20 feet		-top of	bank wid	th			25 feet		
- avg. gradient of stream (%)	2-5 %										
-bank height and slope ratio	LDB -		1 foot		RDB -			<u>1 fo</u>	ot		
-water flow	fast	mode	erate 🗸	slow		isolated pools			none		
-water depth (riffles / pools)	<u> </u>		W	vater width (rif	fles / poc	ols)					
-bank stability: LDB_RDB	LDB: Stable		Eroding	Undercutti	ng	Sloughing		Exp	oosed Roo	ots	
-bank stability. LDD, NDD	RDB: Stable		Eroding	Undercutti	ng	Sloughing		Exp	bosed Ro	ots	
-dominant riparian species:	LDB: locust, ha	ckberry, Prive	t, Box elder								
(LDB /RDB)	RDB: Walnu	t, Privet,	Box Elder	r							
-habitat assessment score		, , ,			139						
	epifaunal substi	ate	6		chann	el alteration		19			
	riffle embedded	ness	15		freque	ency of re-ox zor	nes	17			
	velocity / depth	regime	10		bank s	tability		LDB	7	RDB	7
	sediment depos	ition	15		bank v	egetative prote	ction	LDB	10	RDB	10
	channel flow sta	itus	7		riparia	n veg zone widt	h	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 Unnam	ed tributary to	McCutcheon C	eek						
9-Confirmed by:											
10-Assessed	yes		no	$\checkmark$							
11-ETW	yes		no	$\checkmark$							
12-303 (d) List	yes		siltation		habitat	:		other	:		
	no	$\checkmark$					·				
13-Notes	STR-1 in w	vooded are	ea at GM	property N	orth of	Ball Field	S				

# Ecology Field Data Sheet: Water Resources

Project:	Maury	County; Sat	urn Parkway I	Extensi	on; P.E	. 6010	00-12	09-04	, PIN 123	399.00	)				
Biologist:	Steve Walker	Affilia	tion:		TDO	Г Есо	logy		Date:					6-3-16	
<b>1-Station</b> : from plans															
2-Man label and name	STR-1 UNT M	Cutcheon Cr	eek at Beechci	roft Rd											
3-l atitude/l ongitude	35 7528 -86 94	87	cex at Decener	ion Ru											
4-Potential impact	bridge/crossing/	/runoff													
5-Feature description															
-channel identification	perennial strea	m 🗸	intermitte	nt strea	am		eph	nemer	al stream			wwo			
-HD score (if applicable)							- 1-								
-OHWM indicators	bed & banks	✓ de	position		prese debri	ence c is	of litte	r /	scour			$\checkmark$	veg abs matted	sent, ber	nt,
	change in plan community	t de tei	struction of rrestrial veg		multi flow	ple ob events	oserve s	ed 🗌	sedim	ent so	rting		water s	taining	
	change in soil character	lea ab	af litter disturb sent	ed	natui impr	al line	e on ba	ank	shelvi	ng			wrackir	ng	$\checkmark$
-sinuosity	absent		weak		-	$\checkmark$	mo	derate	5			stro	ng		
-channel bottom width		12-15			-top	ofb	ank v	vidth					15-20		
- avg. gradient of stream (%)	2-5 %														
-bank height and slope ratio	LDB -		5-6 feet				RD	В-			5	5-6 f	eet		
-water flow	fast	ma	oderate 🛛	/	slow				isolated pools				none		
-water depth (riffles / pools)	4-6 inches/ 1-	-1.5 feet		water	width	(riffl	es / p	ools)		6-8	feet	/ 8- 1	) feet		
bank stability I DD DDD	LDB: Stab	le	Eroding	$\checkmark$	Undero	utting	3 [		Sloughi	ing		Ex	posed Ro	ots	
-Dalik Sladilily. LDB, RDB	RDB: Stab	le	Eroding	$\checkmark$	Underd	utting	3 [		Sloughi	ing		Ex	posed Ro	ots	
-dominant riparian species:	LDB: Hackber	ry, Privet, Bo	x elder, oak									•			
(LDB /RDB)	RDB: Prive	t, Box El	der, oak,	mapl	e										
-habitat assessment score		,	, ,			1	29								
	epifaunal subs	trate	12				cha	nnel a	lteration			14			
	riffle embedde	dness	14				free	quenc	y of re-ox	zones		12			
	velocity / depth	n regime	10				bar	nk stat	oility			LDB	6	RDB	6
	sediment depo	sition	11				bar	nk veg	etative pro	otectio	on	LDB	6	RDB	8
	channel flow st	atus	13				ripa	arian v	eg zone v	vidth		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	TN0604000303	4_0310 Unna	med tributary	to McC	Cutchec	n Cre	ek								
9-Confirmed by:															
10-Assessed	yes		no		$\checkmark$										
11-ETW	yes		no		_ <b>√</b>									r	
12-303 (d) List	yes		siltation				hab	itat:				othe	r:		
	no	$\checkmark$													
13-Notes	STR-1 at I	Beechcro	ft Rd.												

## Ecology Field Data Sheet: Water Resources

Broject:	Maury	County: Satur	n Darkway Fy	tension	DE 601	00.120	0.04	DIN 123	300 0	0					
Biologist:	Steve Walker		ion:	т	DOT Eco	ology	19-04,	Date:	399.0	0		6	5-20-16		
		Annat		1	DOT LO	Jiogy		Date.				(	J-20-10		
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, -86.94	72											
4-Potential impact	No Impact														_
5-Feature description:			1												
-channel identification	perennial stream	ו <b>ו</b>	intermitten	t stream	<ul><li>✓</li></ul>	eph	emera	al stream			WWC				Щ
-HD score (if applicable)															_
-OHWM indicators	bed & banks	depo	osition		debris	of litter		scour			$\checkmark$	veg abs matted	sent, be	nt,	
	change in plant community	dest terre	ruction of estrial veg		nultiple o low event	bserve ts	d	sedim	ent so	orting		water s	taining		
	change in soil character	leaf abse	litter disturbe ent	d i	natural lin mpressed	ie d on ba	nk	shelvi	ng			wrackir	ıg		$\checkmark$
-sinuosity	absent		weak			moc	lerate			$\checkmark$	stron	Ig			
-channel bottom width		3-6 feet			-top of b	bank w	ridth		Γ			8 feet			
- avg. gradient of stream (%)	2-5 %						- di ci i i								
-bank height and slope ratio	LDB -		2 feet			RDE	3 -			2	2-3 fe	eet			
-water flow	fast	mode	erate		slow			isolated pools		<b>√</b>		none			
-water depth (riffles / pools)	NA/ 1-2 feet		v	vater w	idth (riff	les / p	ools)		3/6	6 feet					
	LDB: Stable		Eroding	/ Ur	dercuttin	g		Sloughi	ing		Exp	osed Ro	ots		1
-bank stability: LDB, RDB	RDB: Stable		Eroding 🗸	Ur	dercuttin	g [		Sloughi	ing	$\square$	Exp	osed Ro	ots		Ī
-dominant riparian species:	LDB: Maple, Pr	ivet, Hackberr	ry	_							1				_
(LDB /RDB)	RDB: Maple.	Privet. F	Iackberrv												
-habitat assessment score						94									_
	epifaunal substr	ate	13			char	nnel a	lteration			8				
	riffle embedded	ness	10			freq	uency	/ of re-ox	zones	5	7				
	velocity / depth	regime	13			ban	k stab	ility			LDB	3	RDB	3	
	sediment depos	ition	13			ban	k vege	etative pr	otecti	on	LDB	7	RDB	7	
	channel flow sta	tus	2			ripa	rian v	eg zone v	vidth		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	McCutcheor	n Creek											
9-Confirmed by:															
10-Assessed	yes		no		√										
11-ETW	yes		no												
12-303 (d) List	yes		siltation			habit	tat:				other				
	no														
13-Notes	Majority of species)	tributary	dry. Son	ne Iso	lated p	pools	obs	erved	that	con	itaine	ed fisł	n (Pe	rch	

### 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: <u>6-3-16</u> Station:
Investigator(s): Steve Walker, Greg Harris	HUC 12 (code and name): <u>TN06040003034_0310 UNT McCutcheon Creek</u>
Landform (hillslope, terrace, etc.):	al relief (concave, convex, none): Slope (%):
Subregion (I RR or MI RA) Lat: 35,7450	Long: -86.9505 Datum:
Soil Map Unit Name:	NWI classification:
Are elimetic / hudrelegic conditions on the site turical for this time of us	
Are Viewsteller Quille (	
Are Vegetation, Soil, or Hydrology significantly (	disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrology naturally pro SUMMARY OF FINDINGS – Attach site map showing	colematic?(If needed, explain any answers in Remarks.)sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present?       Yes ✓       No         Hydric Soil Present?       Yes ✓       No         Wetland Hydrology Present?       Yes ✓       No	Is the Sampled Area within a Wetland? Yes No
Remarks:	
Photos: 1	Confirmation (by, date):
Approximate Size (ac.):	Notes:
Portion Affected (permanent) (ac.):	NUCES.
Portion Affected (temporary) (ac.):	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓ Surface Water (A1) True Aquatic Pla	ants (B14) Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sulfid	e Odor (C1) Drainage Patterns (B10)
✓ Saturation (A3) Oxidized Rhizos	pheres on Living Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Re-	duced Iron (C4) Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iron Rec	Juction in Tilled Soils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surfa	ace (C7) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in	n Remarks) Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Aquatic Fauna (B13)	Μισιοιοροgraphic Keiler (D4) EΔC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Ves No Denth (inches)	
Water Table Present? Ves No Depth (inches):	
Saturation Present? Yes No Depth (inches)	Wetland Hydrology Present? Yes ✓ No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos	s, previous inspections), if available:
Remarks:	

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

Map Label: WTL-1

	Absolute	Dominant Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size:) 1. Black Willow	<u>% Cover</u>	Species? Status	Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2			Total Number of Dominant
4			
5			Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
6			Provalance Index worksheet:
7			Total 9/ Cover of: Multiply by:
8			
	:	= Total Cover	OBL species x 1 =
Sapling/Shrub Stratum (Plot size:)			FACW species x 2 =
1			FAC species x 3 =
2			FACU species x 4 =
3			UPL species x 5 =
4			Column Totals: (A) (B)
5			Provolonos Indox - P/A -
6			Hydrophytic Vogetation Indicators:
7			A Danid Test for Undershutic Verstation
8			1 - Rapid Test for Hydrophytic Vegetation
9			2 - Dominance Test is >50%
10.			3 - Prevalence Index is ≤3.0'
	- <u></u> -	= Total Cover	<ul> <li>4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</li> </ul>
Herb Stratum (Plot size:)			Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. Green Buirush			(
2. Cattal			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
3. Fox Sedge			be present, unless disturbed or problematic.
4. Franks Sedge			Definitions of Four Vegetation Strata:
5. Umbrella Sedge			
6			<b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or
7			height.
8			
9.			<b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in DBH and greater than 3 28 ft (1 m) tall
10.			
11			Herb – All herbaceous (non-woody) plants, regardless
12			of size, and woody plants less than 3.28 ft tall.
		= Total Cover	Woody vine - All woody vines greater than 3.28 ft in
Woody Vine Stratum (Plot size:)			height.
1			
2			
3			
4			
5.			Hydrophytic
6			Present? Yes No
		- Total Cover	
Pomarka: /Include photo numbers here or on a congrat	ra chaot )		
Remarks. (include proto numbers here of on a separate	e sheet.)		

SOIL

Profile Desc	ription: (Describe to	o the depth	needed to docum	nent the indica	tor or confirm	the absence o	of indicators.)	
Deptn (inchoo)	Color (moint)	0/	Color (moint)	X Features	$a^1$ $baa^2$	Toyturo	Pomorko	
10-12 inces	10VR 4/2	/0		<u> </u>		Texture	Remarks	
10-12 11063	1011( 4/2					·		
				·				
	·			· ·				
·				· ·				
<u> </u>	·			·				
<sup>1</sup> Type: C=Co	oncentration, D=Deple	etion, RM=R	educed Matrix, MS	S=Masked Sand	Grains.	<sup>2</sup> Location: PL=	Pore Lining, M=Matrix.	
Hydric Soil I	ndicators:					Indicat	ors for Problematic H	ydric Soils <sup>°</sup> :
Histosol	(A1)		Dark Surface	e (S7)		2 c	m Muck (A10) <b>(MLRA</b> '	147)
Histic Ep	ipedon (A2)		Polyvalue Be	low Surface (S8	5) <b>(MLRA 147</b> ,	148) Co	ast Prairie Redox (A16)	1
Black His	stic (A3)		Thin Dark Su	Irface (S9) (MLF	RA 147, 148)		(MLRA 147, 148)	( <b>-</b> )
Hydroge	n Sulfide (A4)		Loamy Gleye	ed Matrix (F2)		Pie	edmont Floodplain Soils	(F19)
Stratified	Layers (A5)		Depleted Mat	trix (F3)			(MLRA 136, 147)	
2 cm Mu	CK (A10) <b>(LKK N)</b> L Delevi Derk Surfeee	(111)	Redox Dark :	Surface (F6)		Ke	d Parent Material (TF2)	
Depieted	rk Surfood (A12)	(ATT)	Depleted Dat			Ve	ry Shallow Dark Surfac	e (IFIZ)
Thick Da	ucky Mineral (S1) (L		Redux Depie	SSIULIS (FO)	2) <b>(I PP N</b>	0		)
	147 148)	\i\ <b>i</b>		6)	2) (ERR N,			
Sandy G	leved Matrix (S4)		Umbric Surfa	0) ICP (F13) <b>(MI R/</b>	136 122)	<sup>3</sup> Indic	ators of hydrophytic ve	netation and
Sandy R	edox (S5)		Piedmont Flo	odolain Soils (F	(19) (MI RA 14	.8) we	tland hydrology must be	nresent
Stripped	Matrix (S6)					un un	ess disturbed or proble	matic.
Restrictive L	ayer (if observed):						p.000	
Type:								
Depth (inc	:hes):					Hydric Soil F	Present? Yes <u>✓</u>	No
Remarks:						1		
No mottling o	bserved soil is proble	matic nume	rous streaks of rec	l clav fill materia	l observed.			

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### WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Maury County; S	aturn Parkv	vay Extensior	n			Map Label: WTL-2
P.E. and PIN: 60100-1209-04	1 and 12339	9.00			Date: 6-3-16	Station:
Investigator(s): Steve Walker	, Greg Harri	S	HUC	12 (code and name):	TN06040003034_031	0 UNT McCutcheon Creek
Landform (hillslope, terrace, e	tc.): manm	ade depressi	onal area Local rel	lief (concave, convex, n	ione):	Slope (%):
Subregion (LRR or MLRA):		Lat	: 35.7526	Long: -8	6.9559	Datum:
Soil Map Unit Name:				0	NWI classificat	tion:
Are climatic / hvdrologic condi	tions on the	site typical f	or this time of year?	(es ✓ No	(If no. explain in Rei	marks.)
Are Vegetation Soil	√ . or H	vdrology 🗸	significantly distur	rbed? Are "Norm	al Circumstances" pre	esent? Yes No
Are Vegetation Soil	, or H	vdrology <u> </u>	naturally problem	atic? (If needed	explain any answers	in Remarks.)
SUMMARY OF FINDING	GS – Att	ach site n	nap showing san	npling point locat	ions, transects,	important features, etc.
Hydrophytic Vegetation Pres Hydric Soil Present? Wetland Hydrology Present?	ent?	Yes ✓ Yes ✓ Yes ✓	No No No	Is the Sampled Area within a Wetland?	Yes_✓	No
Remarks:				Confirmation (by date		
Photos: <u>6 and 7</u> Buffer (ft.): Approximate Size (ac.): Portion Affected (permane Portion Affected (temporal	≥nt) (ac.): ry) (ac.):		- - - -	Mitigation (to be inclue Notes:	ed in design):	
HYDROLOGY						
Primary Indicators (minimum         ✓       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 Ae         _       Water-Stained Leaves (         _       Aquatic Fauna (B13)	<u>of one is re</u> rial Imager B9)	<u>&gt;quired; chec</u>    y (B7)	k all that apply) True Aquatic Plants ( Hydrogen Sulfide Od Oxidized Rhizospher Presence of Reduced Recent Iron Reductic Thin Muck Surface (( Other (Explain in Rei	(B14) lor (C1) res on Living Roots (C3 d Iron (C4) on in Tilled Soils (C6) C7) marks)	Secondary Indicate Surface Soil C Sparsely Vege Drainage Patte Dry-Season W Crayfish Burro Saturation Visi Stunted or Stre Geomorphic P Shallow Aquita Microtopograp FAC-Neutral T	racks (B6) racks (B6) etated Concave Surface (B8) erns (B10) es (B16) fater Table (C2) ws (C8) ble on Aerial Imagery (C9) essed Plants (D1) osition (D2) ard (D3) hic Relief (D4) fest (D5)
Field Observations:	Vee	No	Donth (inches);			
Water Table Present?	Yes	No	_ Depth (inches):			
Saturation Present?	Yes	No	_ Depth (inches):	Wetland	I Hydrology Present	? Yes∕ No
(includes capillary fringe) Describe Recorded Data (str Remarks:	eam gauge	, monitoring v	well, aerial photos, pre	evious inspections), if a	vailable:	

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

Map Label: WTL-2

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	% Cover	Species?	Status	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: (	(A)
2.					
3				Total Number of Dominant	D)
۰					, D)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: (	(A/B)
6				Brovolonco Index workshoot	
7					
8				I otal % Cover of: Multiply by:	
	:	= Total Cove	er	OBL species x 1 =	
Sapling/Shrub Stratum (Plot size:)				FACW species x 2 =	
1.				FAC species x 3 =	
2				FACU species x 4 =	
2					
3					(D)
4					(D)
5				Prevalence Index = $B/A =$	
6				Hydrophytic Vagetation Indicators:	
7				nyurophytic vegetation indicators:	
8.				1 - Rapid Test for Hydrophytic Vegetation	
0				2 - Dominance Test is >50%	
10				3 - Prevalence Index is ≤3.0 <sup>1</sup>	
10				4 - Morphological Adaptations <sup>1</sup> (Provide suppo	orting
Horb Stratum (Plot size:		= Total Cove	er	data in Remarks or on a separate sheet)	•
Green Bulrush				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	)
2. Fescue				<sup>1</sup> Indicators of hydric soil and wetland hydrology mu	ict
3. Fox Sedge				be present, unless disturbed or problematic.	131
4. Franks Sedge				Definitions of Four Vegetation Strata	
5.				Deminions of Four Vegetation Strata.	
6				Tree - Woody plants, excluding vines, 3 in. (7.6 cm	n) or
7				more in diameter at breast height (DBH), regardles	ss of
<i>I</i>		<u> </u>		neight.	
8		<u> </u>		Sapling/Shrub – Woody plants, excluding vines, le	ess
9		<u> </u>		than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
10				Here All barbassays (non-woody) planta regard	1000
11				of size, and woody plants less than 3.28 ft tall	less
12.					
		- Total Cove	٥r	Woody vine - All woody vines greater than 3.28 ft	t in
Woody Vine Stratum (Plot size:)				height.	
1.					
2					
2					
3					
4		<u> </u>		Hydrophytic	
5				Vegetation	
6				Present? Yes No	
	:	= Total Cove	er		
Remarks: (Include photo numbers here or on a separate s	heet )				
Remarko. (molidae prioto nambero nere el en a separate e	1000.)				

SOIL

Color (moist)       %       Color (moist)       %       Type       Loc <sup>2</sup> Texture       Remarks         6-8 inches       10YR 4/1	Depth	Matrix		Redo	x Feature	S			
6-8 inches 10YR 4/1	(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	e Remarks
Type:       C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location:       PL=Pore Lining, M=Matrix.         tydric Soil Indicators:       Indicators for Problematic Hydric S         Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147, 148)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Very Shallow Dark Surface (TF1)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetatio wetland hydrology must be prese unless disturbed or problematic.         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese unless disturbed or problematic.         Estrictive Layer (If Observed):       Type:       Hidro Estrective Layer (Yes <u>V</u> No         Deplet (Inches):       Depleted Diark Soliface (F13) (MLRA 148)       Wetland hydrology must be prese unless disturbed or problematic. <td>6-8 inches</td> <td>10YR 4/1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	6-8 inches	10YR 4/1							
Type:       C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         tydric Soil Indicators:       Indicators for Problematic Hydric S         Histos (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147, 148)         Histos Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓       Depleted Matrix (F2)       Piedmont Floodplain Soils (F19)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F7)       Wery Shallow Dark Surface (TF1)       Piedmont Floodplain Soils (F12) (LRR N,         MLRA 147, 148)       MLRA 160)       Sandy Mucky Mineral (S1) (LIR N,       ✓       Indicators of hydrophytic vegetatio wetland hydrology must be prese unless disturbed or problematic.         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148) <sup>3</sup> Indicators of hydrophytic vegetatio.         Stratified Layers (If observed):       Type:									
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         tydric Soil Indicators:       Indicators for Problematic Hydric S									
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         Hydric Soil Indicators:       Indicators for Problematic Hydric S         Histosol (A1)						·			
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         Hydric Soil Indicators:       Indicators for Problematic Hydric S         Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147, 148)         Histosol (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Praine Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F7)       Very Shallow Dark Surface (TF1:         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N, <sup>3</sup> Indicators of hydrophytic vegetation wetland hydrology must be pressed unless disturbed or problematic.         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       unless disturbed or problematic.         Stripped Matrix (S6)       Type:									
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         tydric Soil Indicators:       Indicators for Problematic Hydric S									
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         Hydric Soil Indicators:       Indicators for Problematic Hydric S         Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       ✓       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetatio wetland hydrology must be prese unless disturbed or problematic.         Restrictive Layer (if observed):       Type:									
Hydric Soil Indicators:       Indicators for Problematic Hydric S         Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       ✓ Iron-Manganese Masses (F12) (LRR N,       3Indicators of hydrophytic vegetatio         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122)       3Indicators of pydrophytic vegetatio         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Stripped Matrix (S6)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Type:	<sup>1</sup> Type: C=C	oncentration, D=Depl	etion, RM=	-Reduced Matrix. M	S=Masked	d Sand Gr	ains.	<sup>2</sup> Location:	PL=Pore Lining, M=Matrix.
Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A12)       Redox Depressions (F8)	Hydric Soil	Indicators:		,				In	dicators for Problematic Hydric Soils
Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Very Shallow Dark Surface (TF1)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       ✓       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetatio         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Stripped Matrix (S6)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Type:	Histosol	(A1)		Dark Surface	e (S7)				2 cm Muck (A10) (MLRA 147)
Black Histic (A3)	Histic Er	oipedon (A2)		Polyvalue Be	low Surfa	ce (S8) <b>(N</b>	/LRA 147,	148)	Coast Prairie Redox (A16)
Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Very Shallow Dark Surface (TF1)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       ✓ Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetatio         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Stripped Matrix (S6)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Type:        Depth (inches):       Yes       ✓         Depth (inches):        No       Yes       ✓	Black Hi	istic (A3)		Thin Dark Su	Irface (S9	) (MLRA 1	, 147, 148)	,	(MLRA 147, 148)
Stratified Layers (A5)       ✓       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Very Shallow Dark Surface (TF1)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       ✓       Iron-Manganese Masses (F12) (LRR N,         MLRA 147, 148)       MLRA 136)       Other (Explain in Remarks)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetatio         Stripped Matrix (S6)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be prese         Type:	Hvdroae	en Sulfide (A4)		Loamy Gleve	ed Matrix (	(F2)	, -,		Piedmont Floodplain Soils (F19)
2 cm Muck (A10) (LRR N)	Stratified	d Lavers (A5)		✓ Depleted Ma	trix (F3)	/			(MLRA 136, 147)
	2 cm Mi	uck (A10) <b>(I RR N)</b>		Redox Dark	Surface (F	-6)			Red Parent Material (TF2)
	2 on me	d Below Dark Surface	(A11)	Depleted Da	rk Surface	e (F7)			Very Shallow Dark Surface (TE12)
	Dopietot	ark Surface (A12)	, (, , , , , , , , , , , , , , , , , ,	Redox Depre	essions (F	8)			Other (Explain in Remarks)
MLRA 147, 148)       MLRA 136)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)         Stripped Matrix (S6)       wetland hydrology must be preserved):         Type:          Depth (inches):	Sandy N	Aucky Mineral (S1) (I		✓ Iron-Mangan		o, es (F12) <b>(</b>			
		117 118)	i (i ( i ( i ( i ( i ( i ( i ( i ( i (	MI PA 13	6)	(112)			
	Sandy (	$\frac{147, 140}{200}$			<b>0)</b> (E13) (	(MI PA 13	6 122)	3	<sup>3</sup> Indicators of hydrophytic vegetation and
	Sandy C	Podox (S5)		Dinblic Suite			/MIDA 1/	0)	wotland bydrology must be present
	Sanuy R	Motrix (S6)			Joupiairi S	0115 (119)		0)	upless disturbed or problematic
Type:	Suipped							1	unless disturbed of problematic.
Type: Depth (inches): No		Layer (IT Observed):							
Depth (inches): No	Туре:								
	Depth (in	ches):						Hydric S	Soil Present? Yes _ ✔ _ No
Remarks:	Remarks:							1	



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 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. Rabit E. Sfr

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 statelisted 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 <u>Ed.Harsson@tn.gov</u>.

# The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

Sincerely,

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 <mark>calcaricus</mark>	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)