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

MEMORANDUM

To: Steve Sellers, Deputy Director
State Innovative Delivery

From: Rita Thompson
Tech Studies Office, Ecology Section *Rita M. Thompson*

Date: 3/21/2023

Subject: Updated Environmental Boundaries Study:
SR-222, From near Stanton Somerville Road to near Camp Ground Road,
Haywood County, Tennessee;
PIN #: 132709.00

An updated ecological evaluation of the subject project has been conducted based on the ETSA revision dated February 16, 2023 with the following results:

STREAMS: Seven (7) perennial/intermittent streams and eight (8) ephemeral streams were identified within proposed project limits.

- WWC/EPH-9 is included in this EBR, but due to the revised ETSA, it is no longer within the project limits.

- WWC/EPH-12 and WWC/EPH-13 have been added due to the revised ETSA.

WETLANDS: Two (2) wetlands were identified within proposed project limits.

OTHER FEATURES: Nine (9) Wet Weather Conveyance/Upland Drainage Features were identified within the project limits.

SPECIES:

- USFWS: Coordination was completed and is included in this EBR. The USFWS has no concerns for protected species.

- TWRA: Coordination was completed and is included in this EBR. TWRA has no concerns for protected species.

- TDEC DNA: Coordination was completed and is included in this EBR. TDEC-DNA has no concerns for protected species.

COMMITMENTS:

This project does not require any project commitments.

Your assistance is appreciated. If you have any questions or comments, please contact me at 615-253-2459 or at rita.m.thompson@tn.gov.

xc: *TDOT.Env.Ecology@tn.gov*
TDOT.Env.Permits@tn.gov
TDOT.Env.Mitigation@tn.gov
TDOT.Env.NEPA@tn.gov

Project Name: SR-222; Hebron Road to Near Keeling Road **PIN:** 132709.00

Water Resource Table

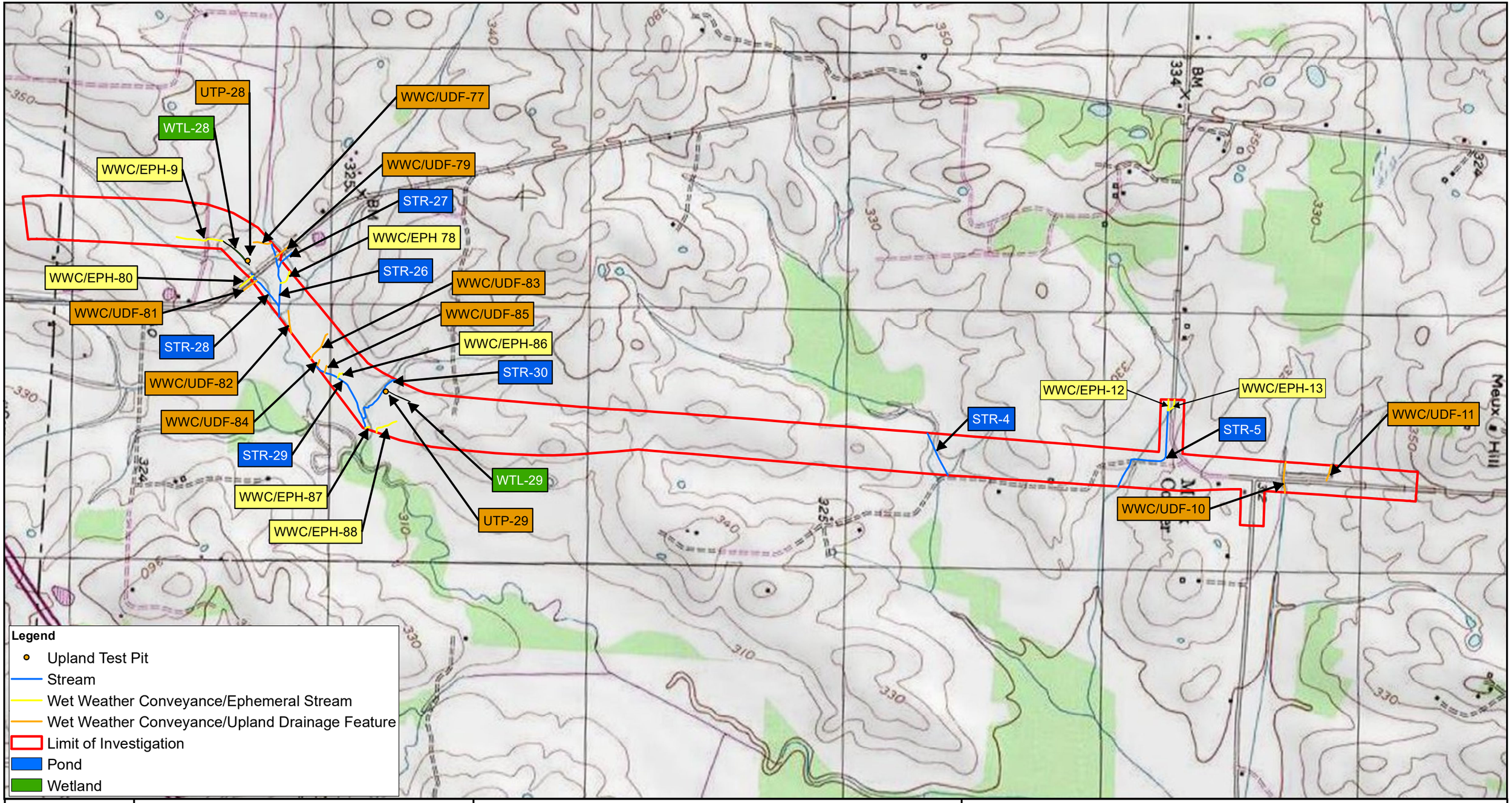
Based on: ETSA

Date: 2/16/2023

Water Resources (Non-Wetland)					
Label	**Type**	**Latitude**	**Longitude**	**Receiving Waters**	**Quality**
STR-4	Intermittent Stream	35.43147	-89.40643	UNT to Big Muddy Creek	Not Supporting
STR-5	Intermittent Stream	35.438539	-89.40637	UNT to Big Muddy Creek	Not Supporting
STR-26	Perennial Stream	35.40836	-89.41278	UNT to Big Muddy Creek	Not Supporting
STR-27	Intermittent Stream	35.40842	-89.41358	UNT to Big Muddy Creek	Unassessed
STR-28	Intermittent Stream	35.40815	-89.41191	UNT to Big Muddy Creek	Not Supporting
STR-29	Intermittent Stream	35.40982	-89.40904	UNT to Big Muddy Creek	Unassessed
STR-30	Intermittent Stream	35.41148	-89.40744	UNT to Big Muddy Creek	Unassessed
WWC-/EPH-9	Wet Weather Conveyance/Ephemeral	35.35096	-89.4803	UNT to Big Muddy Creek	Not Applicable
WWC/EPH-12	Wet Weather Conveyance/Ephemeral	35.439545	-89.408746	UNT to Big Muddy Creek	Not Applicable
WWC/EPH-13	Wet Weather Conveyance/Ephemeral	35.43974	-89.408698	UNT to Big Muddy Creek	Not Applicable
WWC-/EPH-78	Wet Weather Conveyance/Ephemeral	35.40867	-89.41314	UNT to Big Muddy Creek	Not Applicable
WWC-/EPH-80	Wet Weather Conveyance/Ephemeral	35.40711	-89.41257	UNT to Big Muddy Creek	Not Applicable
WWC-/EPH-86	Wet Weather Conveyance/Ephemeral	35.41051	-89.40879	UNT to Big Muddy Creek	Not Applicable
WWC-/EPH-87	Wet Weather Conveyance/Ephemeral	35.41162	-89.40662	UNT to Big Muddy Creek	Not Applicable
WWC-/EPH-88	Wet Weather Conveyance/Ephemeral	35.41229	-89.40671	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-10	Wet Weather Conveyance	35.44366	-89.40582	UNT to Big Muddy Creek	Not Supporting
WWC/UDF-11	Wet Weather Conveyance	35.44525	-89.40607	N/A (Isolated)	Not Applicable
WWC/UDF-77	Wet Weather Conveyance	35.40769	-89.414432	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-79	Wet Weather Conveyance	35.408412	-89.41399	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-81	Wet Weather Conveyance	35.407309	-89.412482	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-82	Wet Weather Conveyance	35.40873	-89.41098	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-83	Wet Weather Conveyance	35.40985	-89.409952	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-84	Wet Weather Conveyance	35.40979	-89.40926	UNT to Big Muddy Creek	Not Applicable
WWC/UDF-85	Wet Weather Conveyance	35.41005	-89.409031	UNT to Big Muddy Creek	Not Applicable

Water Resources (Wetland)*

Label	Type	Latitude	Longitude	Receiving Waters	Quality
WTL-28	Emergent	35.407213	-89.413524	UNT to Big Muddy Creek	Low Resource Value
WTL-29	Emergent	35.41265	-89.408	UNT to Big Muddy Creek	Low Resource Value



N

0 0.25 0.5
Miles

DRAWN BY: JFS | CHECKED BY: MJS

APPROVED BY: TJN *Hand signature on file

DATE: 12/14/2022

TN TDOT Department of Transportation

ISSUED FOR:
TDOT ENVIRONMENTAL DIVISION, NATURAL RESOURCES OFFICE

REFERENCE USGS TOPOGRAPHIC MAP/ ARCGIS MAP SERVICE: HTTP://GOTO.ARCGISONLINE.COM/MAPS/USA_TOPO_MAPS, ACCESSED 12/14/2022

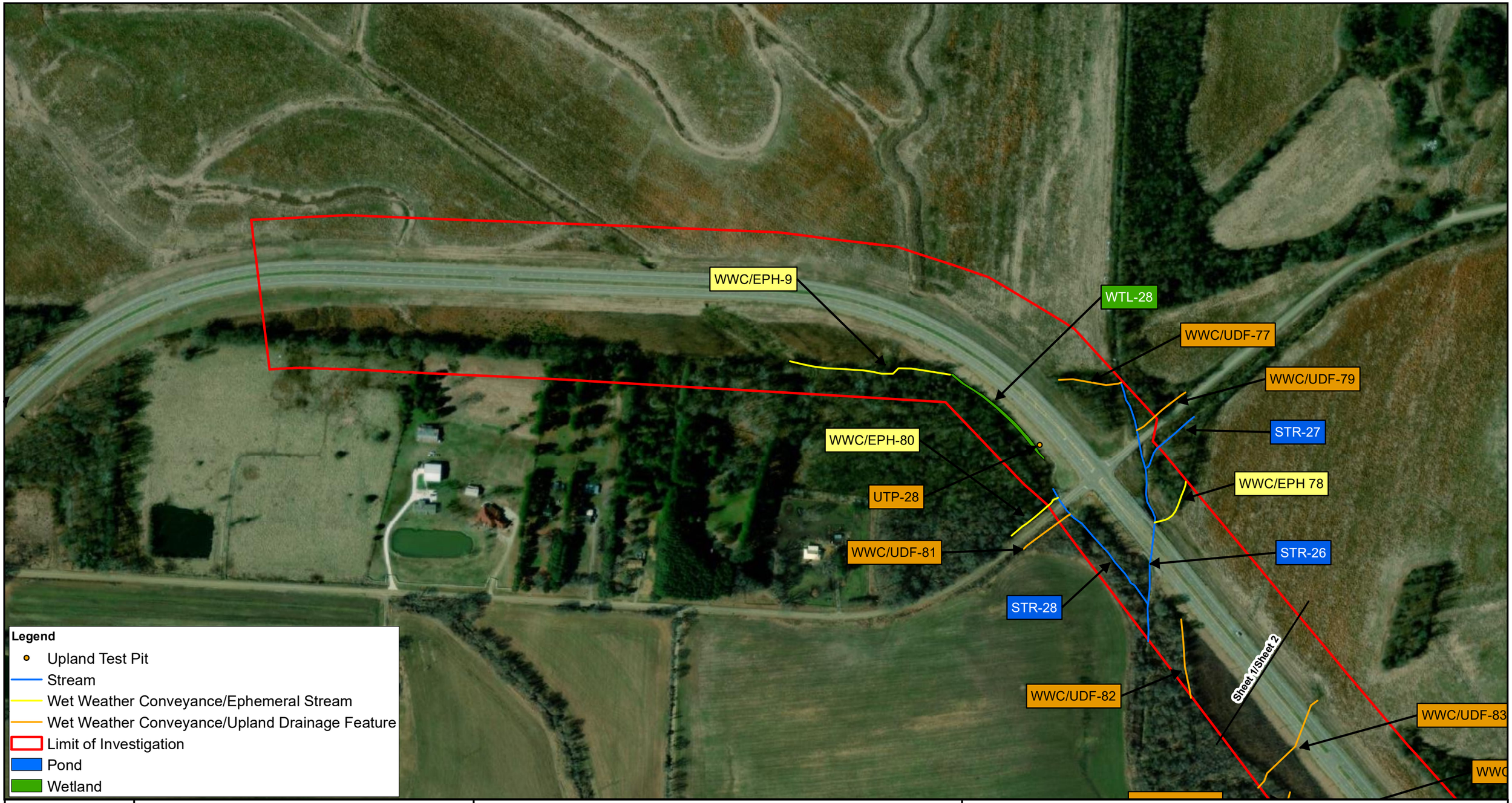
ISSUED BY:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
325 Seaboard Lane, Suite 170
Franklin, TN 37067
615-333-7797

ENVIRONMENTAL BOUNDARIES
SR-222 HEBRON ROAD TO NEAR KNEELING ROAD (INCLUDING THE I-40 INTERCHANGE, EXIT 42)
FAYETTE, HAYWOOD COUNTY, TENNESSEE
PIN 132709.00; PROJECT NO. R4S222-S1-002

PROJECT NO.: 324-640

FIGURE: 1 SHEET: 1



N

0 375 750
Feet

DRAWN BY: JFS | CHECKED BY: MJS

APPROVED BY: TJN *Hand signature on file

DATE: 12/15/2022

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ISSUED FOR:
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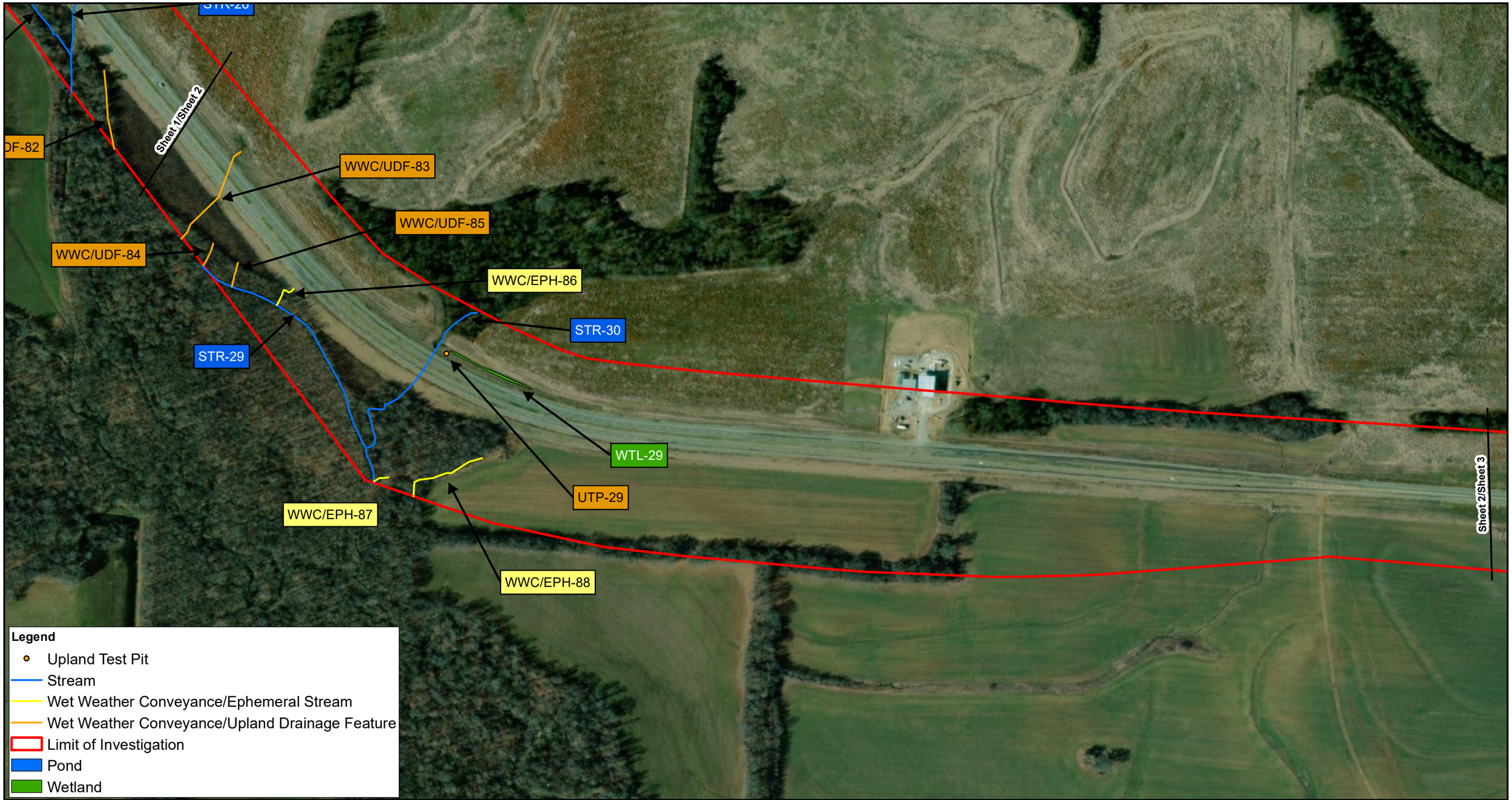
FIGURE: 1 SHEET: 1



N

0 375 750
Feet

DRAWN BY: JFS | CHECKED BY: MJS

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PROJECT NO.: 324-640

FIGURE: 1 SHEET: 2

N

0 375 750
Feet

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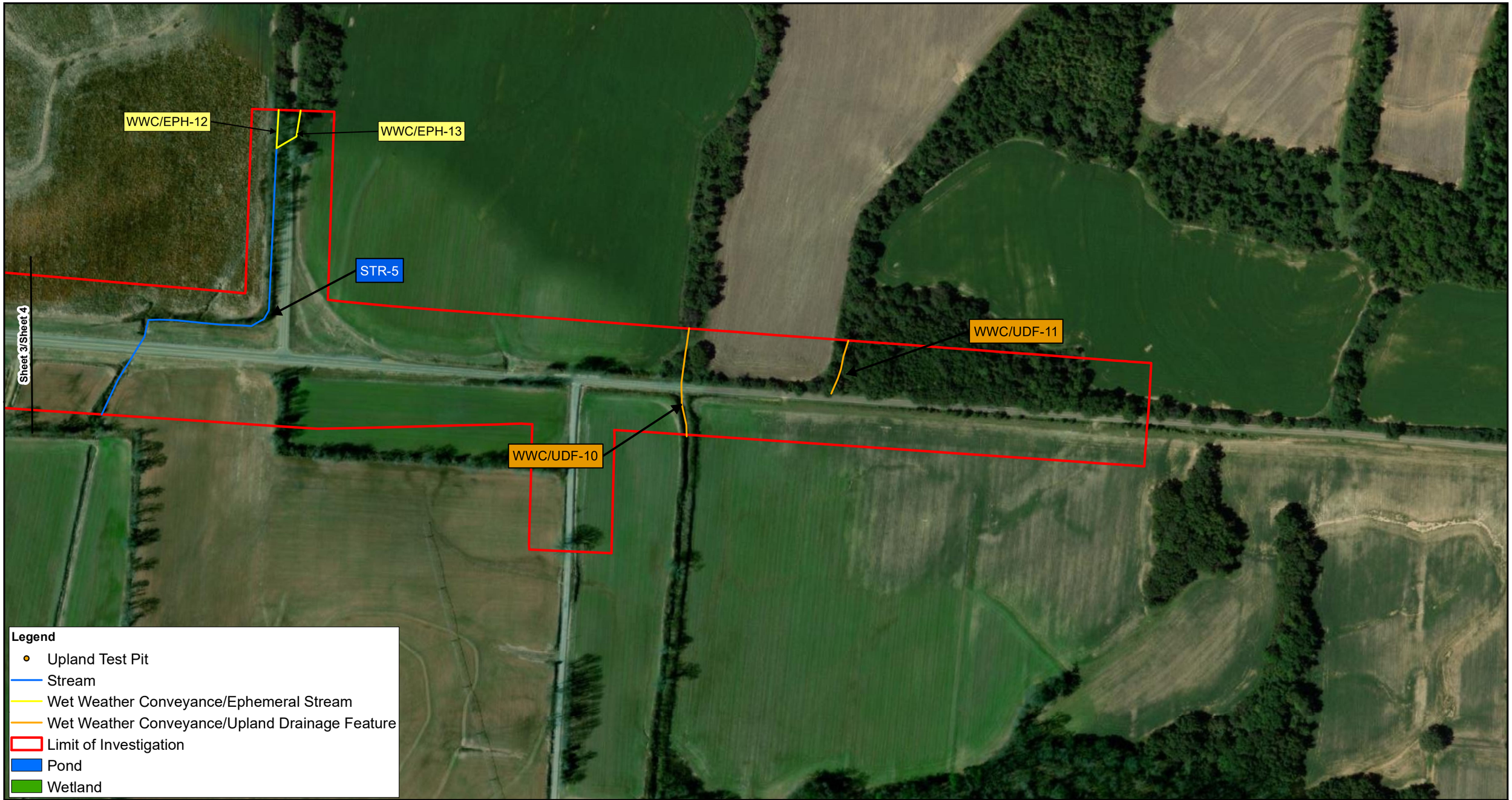
PIN 132709.00; PROJECT NO. R4S222-S1-002

PROJECT NO.: 324-640

FIGURE: 1 SHEET: 3



Legend

- Upland Test Pit
- Stream
- Wet Weather Conveyance/Ephemeral Stream
- Wet Weather Conveyance/Upland Drainage Feature
- Limit of Investigation
- Pond
- Wetland

N

0 375 750
Feet

DRAWN BY: JFS | CHECKED BY: MJS

APPROVED BY: TJN *Hand signature on file

DATE: 12/15/2022

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PIN 132709.00; PROJECT NO. R4S222-S1-002

PROJECT NO.: 324-640

FIGURE: 1 SHEET: 4

Feature ID	LAT	LONG	Bankfull Width (ft.)	Max Depth @ OHWM (ft.)
WWC/EPH-9	35.35096	-89.4803	5.7	0.68
STR-26	35.40836	-89.41278	10.7	1.83
STR-27	35.40842	-89.41358	5.8	0.5
WWC/EPH-80	35.40711	-89.41257	5.7	0.66
STR-28	35.40815	-89.41191	4.1	0.66
WWC/EPH-78	35.40867	-89.41314	5.4	0.5
WWC/EPH-86	35.41051	-89.40879	1.8	0.25
STR-29	35.40982	-89.40904	3.6	0.17
STR-30	35.41148	-89.40744	12.1	0.25
WWC/EPH-87	35.41162	-89.40662	1	0.1
WWC/EPH-88	35.41229	-89.40671	1.7	0.13
STR-4	35.43147	-89.40643	7.77	1.7
STR-5	35.438539	-89.40637	6.3	1.42
WWC/EPH-12	35.439545	-89.408746	5.9	1.35
WWC/EPH-13	35.43974	-89.408698	3.7	1.28

Note: The data presented above is from a single point and is not survey grade. Stream dimensions vary within the ETSA and may also vary within the margin of error of the sub-meter GPS used.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, M. Skelton	**Affiliation:**	CEC, Inc.	**Date:**	August 11, 2022

1-Station: from plans	N/A				
2-Map label and name	WWC/EPH-9				
3-Latitude/Longitude	35.405503; -89.414351				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☐	ephemeral stream ☑	wwc ☐	
-HD score (if applicable)	17.5				
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☐	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☑
	change in soil character ☐	leaf litter disturbed or absent ☐	natural line impressed on bank ☑	shelving ☐	wracking ☑
-channel bottom width	6’	-top of bank width	15’		
-width at ordinary high water mark	8’				
-bank height	LDB - 3’	RDB - 3’			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Chinese privet, honeysuckle, American elm				
	RDB: Chinese privet, American elm				
-date of PJD request					
5-photo numbers	1, 2				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Ponded water with no flow observed in channel. No benthics observed in channel.				
Substrate	Silt				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Haywood	Named Waterbody: N/A	Date/Time: August 11, 2022 4:24 PM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Matthew Skelton, CEC Inc.		Project ID: WWC/EPH-9
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad: Stanton	HUC (12 digit): 080102080402	35.405503, -89.414351
Previous Rainfall (7-days) : 1.36" with 0.33" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.32 Square Miles	Photos: Y or N (circle) Number : 1,2	
Soil Type(s) / Geology : Convent Silt Loam, Collins Silt Loam		
Surrounding Land Use : Forested		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 17.5

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: WWC/EPH-9

A. Geomorphology (Subtotal = 9)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**2.5**	0	1	2	3
2. Sinuous channel	**1**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1**	0	1	2	3
4. Sorting of soil textures or other substrate	**1**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**1**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0.5**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1**	0	1	2	3
11. Grade controls	**0.5**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
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**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**0**	0	1	2	3
16. Leaf litter in channel (January – September)	**1**	1.5	1	0.5	0
17. Sediment on plants or on debris	**1**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.5**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**Yes = 1.5**			

C. Biology (Subtotal = 4.5)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	**2.5**	3	2	1	0
21. Rooted plants in the thalweg [1]	**2**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 17.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

No defined channel above here. Grass swale. Begins at headcut. WWC-77 on old alignment.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR-222 PIN: 132709.00 Project: 4S222-S1-002 City/County: Fayette,Haywood Counties Sampling Date: 4.20.2022

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-28

Investigator(s): J. Wilhide, R. Kelso Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Road side Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR-P Lat: 35.40708 Long: -89.4136 Datum: NAD83

Soil Map Unit Name: Convent Silt Loam 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:

Along Hwy 222

Photos:3,4

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)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along 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)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ☑	No ☐	Depth (inches): 1-2
Water Table Present?	Yes ☑	No ☐	Depth (inches): 2-3
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:

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

Sampling Point: WTL-28

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: 20% of total cover:

Sapling/Shrub Stratum (Plot size:)			
1. Salix nigra	20	YES	OBL
2. Ulmus americana	10	YES	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		

50% of total cover: 15 20% of total cover: 6

Herb Stratum (Plot size:)			
1. Typha latifolia	25	YES	OBL
2. Carex scoparia	10	NO	FACW
3. Eleocharis sp.	10	NO	OBL
4. Ranunculus sardoas	15	YES	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 = Total Cover		

50% of total cover: 30 20% of total cover: 12

Woody Vine Stratum (Plot size:)			
1.			
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: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	20	x 2 =	40
FAC species	15	x 3 =	45
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	90 (A)		140 (B)

Prevalence Index = B/A = 1.55

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 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 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: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WTL-28

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
0-12	10YR-4/2	80	10YR 5/1	10	C	M		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☑ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[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:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR-222 PIN: 132709.00 Project: 4S222-S1-002 City/County: Fayette,Haywood, Counties Sampling Date: 4.20.2022

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: UTP-28

Investigator(s): J. Wilhide, R. Kelso Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Road side Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR-P Lat: 35.407213 Long: -89.413524 Datum: NAD83

Soil Map Unit Name: Convent Silt Loam 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:

Along Hwy 222

Photo: 5

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)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along 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)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

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:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UTP-28

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1. Cynodon dactylon	60	Yes	FACU
2. Trifolium pratense	35		FACU
3. Vicia sativa.	5		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
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: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 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:

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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.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: UTP-28

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
0-12	10YR-5/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[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:

TRAM Summary Worksheet

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	0
	2. **ETW**	0
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	0
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.439
	Function: Biogeochemical Processes	0.344
	Function: Retain Particulates	0
	Function: Plant Community	0.222
	Function: Wildlife Community	0.223
	Quantitative Score (Average of FCIs x 100)	30.72
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	30.72

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an **Outstanding Natural Resource Water (ONRW)** by the Department under 0400-40-03-.06(5)(a)**.**	No	**ORNW**
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	**ETW**
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	**ETW**
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	**ETW**
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as "**Critical Habitat**" for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	**ETW**
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	**ETW**
7	**The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12**	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee **ranked G2, G1, or more imperiled** at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is **an uncommon resource** (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an **older aged forested wetland** comprised of overstory trees with an average diameter at breast height (dbh) being **greater than or equal to 30 in** within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a **significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area**. These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is **hydrologically connected** to and/or has significant ecological contribution to an **ETW**	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a **score of 75 and above** using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

HGM FUNCTIONAL ASSESSMENT
SLOPE WETLANDS

Date: 4/20/2022 Project Name: SR-222 PIN: 132709.00 Project: 4S222-S1-002

Field Personnel J. Wilhide, R. Kelso Wetland Name/Location WTL-28

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)
   - no fill material or excessive sediment
   - no ditches/drainage tiles
   - no roads or other impediments to surface ground water
   - no excavation
   - no alteration to overland runoff, groundwater discharge/recharge
2. Hydrology slightly altered (SI = 0.75)
   - portion of site with minimal fill or sediment
   - portion of site with drainage ditches/tiles
   - roads or other impediments, water flow slightly altered
   - minor portion of site excavated
   - some alteration to overland runoff, groundwater discharge/recharge
3. Hydrology moderately altered (SI = 0.5)
   - portion of site with moderate fill or sediment
   - portion of site with drainage ditches/tiles
   - some alteration to overland runoff, groundwater discharge/recharge
   - roads or other impediments, water flow moderately altered
   - moderate portion of site excavated
4. Hydrology significantly altered (SI = 0.25)
   - portion of site with significant fill or sediment
   - portion of site with drainage ditches/tiles
   - significant alteration to overland runoff, groundwater discharge/recharge
   - roads or other impediments, water flow significantly altered
   - significant portion of site excavated
5. Hydrology severely altered (SI = 0.1)
   - entire site impacted by fill or excessive sediment
   - entire site with numerous drainage ditches/tiles
   - no contributions to or from overland runoff, groundwater discharge/recharge
   - roads or other impediments, water flow completely blocked
   - entire wetland affected

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 20
B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 70
C = Percentage low density residential, construction, or similar 10
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) = 0.77

V3: Canopy Tree Size Class (TSIZE)

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

__ ≥ 15 in. (SI = 1.0) __ 10 – 14 in. (SI = 0.75) __ 6 – 9 in. (SI = 0.5) __ 4 – 5 in. (SI = 0.25)
__ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot

__ 5 – 10 (SI = 1.0) __ 11 – 15 (SI = 0.75) __ > 15 (SI = 0.5) __ 1 – 4 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

__ > 20 (SI = 1.0) __ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

__ ≥ 70 (SI = 1.0) __ 55 – 69 (SI = 0.75) __ 45 – 54 (SI = 0.5) __ 30 – 44 (SI = 0.25) __ 20 – 29 (SI = 0.1)
__ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
__ 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 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 = 1.32

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 0.66
d) if 1 species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.25 _____
e) if no species from Groups 1 and/or 2 occurs as dominant, multiply Q by 0.0 _____

4. Calculate the square root of the value from Step 3 above. This is the SI for **V7**= 0.812

*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) SI=0.60

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present.

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

__ 90% – 100% (CI = 1.0) __ 75% – 89% (CI = 0.75) __ 40% – 74% (CI = 0.5) __ 10% – 39% (CI = 0.25)
__ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

a) if average buffer width is ≥ 492 ft., multiply by 1.0
b) if average buffer is 98 ft to 491 ft., multiply by 0.66
c) if average buffer width is 33 ft to 97 ft., multiply by 0.33
d) if average buffer width is < 33 ft., multiply by 0.1

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

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.25 (HYDRO) V3 -- (TSIZE) V5 1.0 (SCOV) V7 0.812 (COMP) V9 0.01 (BUFFER)

V2 0.77 (WSHEDINT) V4 -- (TDEN) V6 0.75 (GVC) V8 0.60 (ORGANIC)

Civil & Environmental Consultants, Inc.

HGM Functional Assessment Slope Wetlands

V1 HYDRO =	0.25
V2 WSHEDINT =	0.77
V3 TSIZE =	
V4 TDEN =	
V5 SCOV =	1
V6 GVC =	0.75
V7 COMP =	0.812
V8 ORGANIC =	0.6
V9 BUFFER =	0.01

Function 1: Maintain Hydrologic Regime

FCI: $(V1 * V2)^{1/2}$ = (0.25 * 0.77)$^{1/2}$ = 0.439

Function 2: Maintain Biogeochemical Processes

FCI (trees present): $[(V1 * V2)^{1/2} * 1/2 * ([V3 + V4] * 1/2 + V8)]^{1/2}$

[(0.25 * 0.77)$^{1/2}$ * 1/2 * ([0 + 0] * 1/2 + 0.6)]$^{1/2}$ = 0.363

FCI (shrubs present): $[(V1 * V2)^{1/2} * 1/3 * (V5 + V8)]^{1/2}$

[(0.25 * 0.77)$^{1/2}$ * 1/3 * (1 + 0.6)]$^{1/2}$ = 0.484

FCI (ground cover): $[(V1 * V2)^{1/2} * 1/5 * (V6 + V8)]^{1/2}$

[(0.25 * 0.77)$^{1/2}$ * 1/5 * (0.75 + 0.6)]$^{1/2}$ = 0.344

Function 3: Maintain Characteristic Plant Community

FCI (trees present): $[(V1 * V2)^{1/2} + 2/3 * (V3 + V4 + V7)] * 1/3$

[(0.25 * 0.77)$^{1/2}$ + 2/3 * (0 + 0 + 0.812)] * 1/3 = 0.327

FCI (shrubs present): $[(V1 * V2)^{1/2} + V5 + V7] * 1/6$

[(0.25 * 0.77)$^{1/2}$ + 1 + 0.812] * 1/6 = 0.375

FCI (ground cover): $[(V1 * V2)^{1/2} + V6 + V7] * 1/9$

[(0.25 * 0.77)$^{1/2}$ + 0.75 + 0.812] * 1/9 = 0.222

Function 4: Maintain Characteristic Wildlife Community

FCI (trees present): $[(V1 * V2)^{1/2} + 2/3 * (V3 + V4 + V7) + V9] * 1/4$

[(0.25 * 0.77)$^{1/2}$ + 2/3 * (0 + 0 + 0.812) + 0.01] * 1/4 = 0.248

FCI (shrubs present): $[(V1 * V2)^{1/2} + V5 + V7 + V9] * 1/6$

[(0.25 * 0.77)$^{1/2}$ + 1 + 0.812 + 0.01] * 1/6 = 0.377

FCI (ground cover): $[(V1 * V2)^{1/2} + V6 + V7 + V9] * 1/9$

[(0.25 * 0.77)$^{1/2}$ + 0.75 + 0.812 + 0.01] * 1/9 = 0.223

30.72

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-77								
3-Latitude/Longitude	35.407696, -89.414432								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	9								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☑		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☑
-channel bottom width	2'		-top of bank width		3-4'				
-width at ordinary high water mark	2.5'								
-bank height	LDB - 3'		RDB - 2'						
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Multi-flora rose, black willow								
	RDB: Multi-flora rose, black willow, red elderberry								
-date of PJD request									
5-photo numbers	6, 7								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate									

Revised June 2019

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-77
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.407696
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.414432
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 9.00

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.00)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1
2. Sinuous channel	0	1	2	3	1
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. 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
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	0.5
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 3.50)	**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
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	1
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 1.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	0.5
21. Rooted plants in the thalweg [1]	3	2	1	0	1
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 = 9.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	STR-26								
3-Latitude/Longitude	35.40836, -89.41278								
4-Feature description:									
-channel identification	perennial stream	✓	intermittent stream		ephemeral stream		wwc		
-HD score (if applicable)	21								
-OHWM indicators	bed & banks	✓	deposition		presence of litter / debris		scour	✓	veg absent, bent, matted ✓
	change in plant community		destruction of terrestrial veg		multiple observed flow events		sediment sorting		water staining
	change in soil character		leaf litter disturbed or absent		natural line impressed on bank		shelving	✓	wracking
-channel bottom width	2'		-top of bank width		10-12'				
-width at ordinary high water mark	6'								
-bank height	LDB - 6'		RDB - 7'						
-riffle/pool complex or other specialized habitat present?	No; pools w/minot riffle								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Chinese privet, multi-flora rose, black willow, Bermuda grass								
	RDB: American elm, black willow, Bermuda grass, honeysuckle								
-date of PJD request									
5-photo numbers	8, 9								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes		no	✓					
8-ETW	yes		no	✓					
9-303 (d) List	yes		siltation		habitat:		other:		
	no	✓							
10-Notes									
Substrate	Silt/sand								

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A		Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.		Project ID : STR-26
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.40836	
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.41278	
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground		
Watershed Size : 1.35 sq. mi.	County: Haywood	
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS	
Surrounding Land Use : Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate		

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = STREAM

Secondary Indicator Score (if applicable) = 21.00

Justification / Notes :

Sandy/silt substrate

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2.5
2. Sinuous channel	0	1	2	3	1
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. 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	0
9. Natural levees	0	1	2	3	1
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	0.5
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 7.00)	**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	3
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	0.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		1.5

C. Biology (Subtotal = 5.50)	**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	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	0

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 21.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-79								
3-Latitude/Longitude	35.408412, -89.413999								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	13.5								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☐
	change in plant community ☑		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☑		natural line impressed on bank ☐		shelving ☐		wracking ☑
-channel bottom width	2'		-top of bank width		12-15 inches				
-width at ordinary high water mark	2'								
-bank height	LDB - 10-12 inches				RDB - 10-12 inches				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:Sycamore, sweetgum, privet, multi-flora rose								
	RDB:Sycamore, sweetgum, privet, multi-flora rose								
-date of PJD request									
5-photo numbers	10, 11								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate	Silt/mud								

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-79
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.408412
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.413999
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 13.50

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.50)	**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. 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	1
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 5.50)	**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	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	1
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		1.5

C. Biology (Subtotal = 3.50)	**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	1
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	1.5
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 = 13.50

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	STR-27								
3-Latitude/Longitude	35.40842, -89.41358								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☑		wwc ☐		
-HD score (if applicable)	21.25								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☑		veg absent, bent, matted ☐
	change in plant community ☑		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☑		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☑		shelving ☑		wracking ☐
-channel bottom width	3-4'			-top of bank width		12-15'			
-width at ordinary high water mark	5-6'								
-bank height	LDB - 10-12'				RDB - 8-10'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:Sycamore, American elm, multi-flora rose, Bermuda grass								
	RDB:Sycamore, American elm, multi-flora rose, Bermuda grass								
-date of PJD request									
5-photo numbers	12, 13								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate	hard clay bottom								

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : STR-27
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.40842
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.41358
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.48 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = STREAM

Secondary Indicator Score (if applicable) = 21.25

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 10.25)	**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	1.5
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	1.5
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0.75
9. Natural levees	0	1	2	3	1
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 5.00)	**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	2.5
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	0.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 6.00)	**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
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 = 21.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/EPH-80								
3-Latitude/Longitude	35.40711, -89.41257								
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 observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☑
-channel bottom width	12-15 inches		-top of bank width		6'				
-width at ordinary high water mark	3'								
-bank height	LDB - 18 inches				RDB - 3.5'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Black willow, privet, multi-flora rose								
	RDB: Black willow, privet, multi-flora rose								
-date of PJD request									
5-photo numbers	14, 15								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes	Water backed up in channel due to rip-rap at connection with STR-3								
Substrate									

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/EPH-80
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.40711
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.41257
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 15.50

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.00)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2
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	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	1.5
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.50)	**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	1.5
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	1
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 5.00)	**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	0

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 15.50

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-81								
3-Latitude/Longitude	35.407309, -89.412482								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	12								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☑		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	18 inches			-top of bank width		2-3'			
-width at ordinary high water mark	18-21 inches								
-bank height	LDB - 4-5'				RDB - 2-3'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: American elm, sycamore, multi-flora rose								
	RDB: None - removed for power line clearing								
-date of PJD request									
5-photo numbers	16, 17								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate									

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-81
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.407309
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.412482
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Severe	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 12.00

Justification / Notes :

Part of riparian area removed for power line clearing

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1.5
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	0
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	1
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 3.50)	**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	0.5
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	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 4.00)	**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	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 = 12.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	STR-28								
3-Latitude/Longitude	35.40815, -89.41191								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☑		ephemeral stream ☐		wwc ☐		
-HD score (if applicable)	27.5								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☑		veg absent, bent, matted ☑
	change in plant community ☑		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☑
-channel bottom width	2'			-top of bank width		6-8'			
-width at ordinary high water mark	5-6'								
-bank height	LDB - 7'				RDB - 10'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, black willow, hickory, privet								
	RDB:American elm, black willow, privet								
-date of PJD request									
5-photo numbers	18, 19								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate									

Revised June 2019

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : STR-28
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.40815
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.41191
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.38 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Severe	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = STREAM

Secondary Indicator Score (if applicable) = 27.50

Justification / Notes :

Portion of channel has rip-rap

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 10.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	2
3. In-channel structure: riffle-pool sequences	0	1	2	3	1.5
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	1
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	0.5
10. Headcuts	0	1	2	3	0.5
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0.5
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 9.00)	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	1.5
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	1.5
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	1
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		1.5

C. Biology (Subtotal = 8.00)	**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	0
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

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 27.50

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.20.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/EPH-78								
3-Latitude/Longitude	35.40867, -89.41314								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	10.0								
-OHWM indicators	bed & banks ☐		deposition ☐		presence of litter / debris ☑		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☑
-channel bottom width	2'		-top of bank width		4' - 6'				
-width at ordinary high water mark	4'								
-bank height	LDB - 1'				RDB - 1'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:Sycamore, sweetgum, cypress								
	RDB:Sycamore, sweetgum, cypress								
-date of PJD request									
5-photo numbers	20, 21								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate	Bottom of channel w/water & leaf mats								

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.20.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/EPH-78
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.40867
Previous Rainfall (7-days) : 3.05 inches	Longitude: -89.41314
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 10.00

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.00)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1
2. Sinuous channel	0	1	2	3	0.5
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. 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	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.00)	**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	0.5
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	1
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 4.00)	**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	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 = 10.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-82								
3-Latitude/Longitude	35.408732, -89.410987								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	11								
-OHWM indicators	bed & banks ☐		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	3-4'			-top of bank width		4-5'			
-width at ordinary high water mark	3-4'								
-bank height	LDB - 12-18 inches				RDB - 12-18 inches				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sycamore, red mulberry, Bermuda grass, privet								
	RDB:American elm, sycamore, red mulberry, Bermuda grass, privet								
-date of PJD request									
5-photo numbers	22, 23								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes	Large area of Sweetgum along road								
Substrate									

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-82
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.408732
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.410987
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Slight	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 11.00

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 3.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1
2. Sinuous channel	0	1	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	2	3	0.5
4. Sorting of soil textures or other substrate	0	1	2	3	0
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	1
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.50)	**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	2
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0.5
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	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 3.00)	**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
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 = 11.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-83								
3-Latitude/Longitude	35.409859, -89.409952								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	13								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☑
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☑		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	12 inches			-top of bank width		4'			
-width at ordinary high water mark	6-8 inches								
-bank height	LDB - 3'				RDB - 2.5'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sweetgum, Bermuda grass, hickory								
	RDB:American elm, sweetgum, Bbermuda grass, hickory								
-date of PJD request									
5-photo numbers	24, 25								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate									

Tennessee Department of Environment and Conservation - Division of Water Resources
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Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-83
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.409859
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.409952
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Slight	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 13.00

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.00	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1
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. 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	1.5
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.00	**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	1.5
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	0.5
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	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 5.00	**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	0

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 13.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-84								
3-Latitude/Longitude	35.409797, -89.40926								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	18								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☑		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	12-18 inches			-top of bank width		6-7'			
-width at ordinary high water mark	12-18 inches								
-bank height	LDB - 2.5'				RDB - 2.5'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sweetgum, Bermuda grass, hickory, sycamore								
	RDB:American elm, sweetgum, Bermuda grass, hickory, sycamore								
-date of PJD request									
5-photo numbers	26, 27								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate									

Revised June 2019

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-84
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.409797
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.40926
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 18.00

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.00	**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	0.5
4. Sorting of soil textures or other substrate	0	1	2	3	0
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	1
10. Headcuts	0	1	2	3	2
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.00	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	1.5
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	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	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 7.00	**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	2
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 = 18.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/UDF-85								
3-Latitude/Longitude	35.410059, -89.409031								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	11.5								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	2.5'		-top of bank width		6-7'				
-width at ordinary high water mark	2.5'								
-bank height	LDB - 2.1'				RDB - 1.75'				
-riffle/pool complex or other specialized habitat present?	Weak, mostly pools, 1-2 riffle areas								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sweetgum, Bermuda grass, sycamore								
	RDB:American elm, sweetgum, Bermuda grass, sycamore								
-date of PJD request									
5-photo numbers	28, 29								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes	Abundant leaf litter, twigs, & sticks in channel								
Substrate	Sand/silt, mud								

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312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/UDF-85
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.410059
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.409031
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 11.50

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.00	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1.5
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	0
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	1
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.00	**Absent**	**Weak**	**Moderate**	**Strong**	
14. Subsurface flow/discharge into channel	0	1	2	3	1.5
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	0.5
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	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 3.50	**Absent**	**Weak**	**Moderate**	**Strong**	
20. Fibrous roots in channel bed [1]	3	2	1	0	1.5
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	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 = 11.50

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/EPH-86								
3-Latitude/Longitude	35.41051, -89.40879								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	13.5								
-OHWM indicators	bed & banks ☑		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	12 inches		-top of bank width		6-7'				
-width at ordinary high water mark	12 inches								
-bank height	LDB - 2-3'				RDB - 2-3'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sweetgum, Bermuda grass, sycamore, black willow								
	RDB:American elm, sweetgum, Bermuda grass, sycamore, black willow								
-date of PJD request									
5-photo numbers	30, 31								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate	Sand/silt, mud								

Tennessee Department of Environment and Conservation - Division of Water Resources
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Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/EPH-86
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.41051
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.40879
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 13.50

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1
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
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	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.50)	**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	1.5
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	0
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 6.50)	**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	1.5
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	0

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 13.50

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

There were several tadpoles in multiple locations.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	STR-29								
3-Latitude/Longitude	35.40982, -89.40904								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☑		ephemeral stream ☐		wwc ☐		
-HD score (if applicable)	21								
-OHWM indicators	bed & banks ☑		deposition ☑		presence of litter / debris ☐		scour ☑		veg absent, bent, matted ☐
	change in plant community ☑		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☑		natural line impressed on bank ☑		shelving ☐		wracking ☐
-channel bottom width	4-5'			-top of bank width		8-10'			
-width at ordinary high water mark	4-5'								
-bank height	LDB - 2-2.5'				RDB - 2-2.5'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sweetgum, Bermuda grass, sycamore								
	RDB:American elm, sweetgum, Bermuda grass, sycamore								
-date of PJD request									
5-photo numbers	32, 33								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate	Sand/silt, mud								

Tennessee Department of Environment and Conservation - Division of Water Resources
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Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : STR-29
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.40982
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.40904
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size :	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = STREAM

Secondary Indicator Score (if applicable) = 21.00

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 5.00)	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	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
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	0
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. **Hydrology** (Subtotal = 8.00)	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
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	0.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		1.5

C. **Biology** (Subtotal = 8.00)	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
25. Macrobenthos (record type & abundance)	0	1	2	3	0
26. Filamentous algae; periphyton	0	1	2	3	2
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 = 21.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Stream substrate is a hard packed clay with very little available macrobenthos habitat.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	STR-30								
3-Latitude/Longitude	35.41148, -89.40744								
4-Feature description:									
-channel identification	perennial stream ☐	intermittent stream ☑	ephemeral stream ☐	wwc ☐					
-HD score (if applicable)	27								
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☑	scour ☑	veg absent, bent, matted ☐				
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☑	water staining ☐				
	change in soil character ☐	leaf litter disturbed or absent ☑	natural line impressed on bank ☐	shelving ☐	wracking ☑				
-channel bottom width	6-8'	-top of bank width	10-12'						
-width at ordinary high water mark	6-7'								
-bank height	LDB - 10'	RDB - 10'							
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB:American elm, sweetgum, multi-flora rose, purple dead-nettle, violet								
	RDB:American elm, sweetgum, multi-flora rose, purple dead-nettle, violet, hickory								
-date of PJD request									
5-photo numbers	34, 35								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes	Black Locust								
Substrate	Sand/silt, mud								

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Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A		Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.		Project ID : STR-30
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.41148	
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.40744	
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground		
Watershed Size : 0.16 sq. mi.	County: Haywood	
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS	
Surrounding Land Use : Highway/Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate		

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = STREAM

Secondary Indicator Score (if applicable) = 27.00

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 14.00	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	3
2. Sinuous channel	0	1	2	3	2
3. In-channel structure: riffle-pool sequences	0	1	2	3	1.5
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	2
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	1
10. Headcuts	0	1	2	3	1
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 6.00	**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	2
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	0.5
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	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 7.00	**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	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 = 27.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

There were several tadpoles in multiple locations.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/EPH-87								
3-Latitude/Longitude	35.41162, -89.40662								
4-Feature description:									
-channel identification	perennial stream ☐		intermittent stream ☐		ephemeral stream ☐		wwc ☑		
-HD score (if applicable)	6								
-OHWM indicators	bed & banks ☐		deposition ☐		presence of litter / debris ☐		scour ☐		veg absent, bent, matted ☐
	change in plant community ☐		destruction of terrestrial veg ☐		multiple observed flow events ☐		sediment sorting ☐		water staining ☐
	change in soil character ☐		leaf litter disturbed or absent ☐		natural line impressed on bank ☐		shelving ☐		wracking ☐
-channel bottom width	10 inches			-top of bank width		6'			
-width at ordinary high water mark	1-2'								
-bank height	LDB - 4'				RDB - 3'				
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Sycamore, American elm, Bermuda grass								
	RDB: Sycamore, American elm, Bermuda grass								
-date of PJD request									
5-photo numbers	36, 37								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes									
Substrate	Sand/silt, mud								

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A	Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.	Project ID : WWC/EPH-87
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002	
Site Location: Mason, TN	
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.41162
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.40662
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground	
Watershed Size : 0.01 sq. mi.	County: Haywood
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS
Surrounding Land Use : Highway/Agriculture	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate	

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 6.00

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1.50)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	1
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. 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	0.5
11. Grade controls	0	0.5	1	1.5	0
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 2.50)	**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	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	0.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 2.00)	**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	1
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 = 6.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J Wilhide, R Kelso	**Affiliation:**	CEC, Inc.	**Date:**	4.21.2022

1-Station: from plans	N/A								
2-Map label and name	WWC/EPH-88								
3-Latitude/Longitude	35.41229, -89.40671								
4-Feature description:									
-channel identification	perennial stream ☐	intermittent stream ☐	ephemeral stream ☐	wwc ☑					
-HD score (if applicable)	18								
-OHWM indicators	bed & banks ☐	deposition ☐	presence of litter / debris ☐	scour ☐	veg absent, bent, matted ☐				
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐				
	change in soil character ☐	leaf litter disturbed or absent ☐	natural line impressed on bank ☐	shelving ☐	wracking ☐				
-channel bottom width	12 inches	-top of bank width	4'						
-width at ordinary high water mark	10-12 inches								
-bank height	LDB - 2'	RDB - 2'							
-riffle/pool complex or other specialized habitat present?	No								
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Hickory, American elm, Bermuda grass								
	RDB: Sycamore, American elm, sweetgum								
-date of PJD request									
5-photo numbers	38, 39								
6-HUC -8 Code & Name	08010208	Lower Hatchie							
7-Assessed	yes	☐	no	☑					
8-ETW	yes	☐	no	☑					
9-303 (d) List	yes	☐	siltation	☐	habitat:	☐	other:	☐	
	no	☑							
10-Notes	LB - 6' riparian open field								
Substrate	Sand/silt, mud								

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Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: N/A		Date/Time: 4.21.2022
Assessors/Affiliation: J. Wilhide, CEC Inc., Ryan Kelso, CEC Inc.		Project ID : WWC/EPH-88
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
HUC (12 digit): 080102080402 Big Muddy Creek Lower	Latitude: 35.41229	
Previous Rainfall (7-days) : 2.29 inches	Longitude: -89.40671	
Precipitation this Season vs. Normal : elevated Source of recent & seasonal precip. data : Weather Underground		
Watershed Size : 0.01 sq. mi.	County: Haywood	
Soil Type(s) / Geology : Convent Silt Loam	Source: WSS	
Surrounding Land Use : Highway/Agriculture		
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Moderate		

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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 18.00

Justification / Notes :

< 0.5 inch Rain overnight.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 7.00)	**Absent**	**Weak**	**Moderate**	**Strong**	
1. Continuous bed and bank	0	1	2	3	2
2. Sinuous channel	0	1	2	3	1.5
3. In-channel structure: riffle-pool sequences	0	1	2	3	0.5
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	0.5
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	0.5
10. Headcuts	0	1	2	3	1
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 4.50)	**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	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	1
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 6.50)	**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	1
25. Macrobenthos (record type & abundance)	0	1	2	3	0.5
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

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 18.00

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR-222 PIN: 132709.00 Project: 4S222-S1-00 City/County: Fayette,Haywood, Counties Sampling Date: 4.20.2022

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-29

Investigator(s): J. Wilhide, R. Kelso Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Road side Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR-P Lat: 35.41265 Long: -89.408 Datum: NAD83

Soil Map Unit Name: Convent Silt Loam 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:

Along Hwy 222

Photos: 40,41

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)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along 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)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ☑	No ☐	Depth (inches): 2
Water Table Present?	Yes ☑	No ☐	Depth (inches): 1
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:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WTL-29

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1. Typha latifolia	40	Yes	OBL
2. Eleocharis acicularis	30	Yes	OBL
3. Ranunculus sardoas	10	NO	FAC
4. Trifolium pratense	15	NO	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Woody Vine Stratum (Plot size:)			
1.			
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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species		x 2 =	
FAC species	10	x 3 =	30
FACU species	15	x 4 =	60
UPL species		x 5 =	
Column Totals:	95 (A)		160 (B)

Prevalence Index = B/A = 1.68

Hydrophytic Vegetation Indicators:

- ☑ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 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 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: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WTL-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
0-12	10YR-5/1	80	7.5YR 4/6	20	C	M		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☑ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[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:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR-222 PIN: 132709.00 Project: 4S222-S1-002 City/County: Fayette,Haywood, Counties Sampling Date: 4.20.2022

Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: UTP-29

Investigator(s): J. Wilhide, R. Kelso Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Road side Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR-P Lat: 35.412191 Long: -89.408153 Datum: NAD83

Soil Map Unit Name: Convent SIlt Loam 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:

Along Hwy 222

Photo:42

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)
- ☐ Marl Deposits (B15) **(LRR U)**
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along 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)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) **(LRR T, U)**

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:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UTP-29

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size:)			
1. Cynodon dactylon	40	Yes	FACU
2. Taraxacum officinale	20	Yes	FACU
3. Vicia sativa	10	Yes	FACU
4. Trifolium pratense	30	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species 100	x 4 = 400
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 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 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: (If observed, list morphological adaptations below).

SOIL

Sampling Point: UTP-29

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
0-12	10YR-4/6	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**
- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[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:

TRAM Summary Worksheet

Exceptional Status Wetlands		**Check if applicable**
	1. **ONRW**	0
	2. **ETW**	0
	3. **Further Review Requested:** Attach Wetland Background and Exceptional Status Wetlands Worksheet	0
	COMMENTS/NOTES:	
Quantitative Rating scores	Function: Hydrologic Regime	0.439
	Function: Biogeochemical Processes	0.375
	Function: Retain Particulates	0
	Function: Plant Community	0.223
	Function: Wildlife Community	0.224
	Quantitative Score (Average of FCIs x 100)	31.52
	Value Added (Significant Size) Total	0
Total of Quantitative and Value Added Scores	**TOTAL SCORE**	31.52

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an **Outstanding Natural Resource Water (ONRW)** by the Department under 0400-40-03-.06(5)(a)**.**	No	**ORNW**
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	**ETW**
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	**ETW**
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	**ETW**
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as "**Critical Habitat**" for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	**ETW**
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	**ETW**
7	**The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12**	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee **ranked G2, G1, or more imperiled** at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is **an uncommon resource** (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an **older aged forested wetland** comprised of overstory trees with an average diameter at breast height (dbh) being **greater than or equal to 30 in** within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a **significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area**. These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is **hydrologically connected** to and/or has significant ecological contribution to an **ETW**	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a **score of 75 and above** using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

HGM FUNCTIONAL ASSESSMENT
SLOPE WETLANDS

Date: 4/21/2022 Project Name: SR-222 PIN: 132709.00 Project: 4S222-S1-002

Field Personnel J. Wilhide, R. Kelso Wetland Name/Location WTL-29

Read instructions prior to conducting assessments. If project area is large or highly heterogeneous requiring the designation of several WAAs, a separate assessment should be performed for each WAA. CHECK THE APPROPRIATE BLANK(S) BELOW.

V1: Hydroperiod (HYDRO)

1. Hydrology not altered (SI = 1.0)
   - no fill material or excessive sediment
   - no ditches/drainage tiles
   - no roads or other impediments to surface ground water
   - no excavation
   - no alteration to overland runoff, groundwater discharge/recharge
2. Hydrology slightly altered (SI = 0.75)
   - portion of site with minimal fill or sediment
   - portion of site with drainage ditches/tiles
   - roads or other impediments, water flow slightly altered
   - minor portion of site excavated
   - some alteration to overland runoff, groundwater discharge/recharge
3. Hydrology moderately altered (SI = 0.5)
   - portion of site with moderate fill or sediment
   - portion of site with drainage ditches/tiles
   - some alteration to overland runoff, groundwater discharge/recharge
   - roads or other impediments, water flow moderately altered
   - moderate portion of site excavated
4. Hydrology significantly altered (SI = 0.25)
   - portion of site with significant fill or sediment
   - portion of site with drainage ditches/tiles
   - significant alteration to overland runoff, groundwater discharge/recharge
   - roads or other impediments, water flow significantly altered
   - significant portion of site excavated
5. Hydrology severely altered (SI = 0.1)
   - entire site impacted by fill or excessive sediment
   - entire site with numerous drainage ditches/tiles
   - no contributions to or from overland runoff, groundwater discharge/recharge
   - roads or other impediments, water flow completely blocked
   - entire wetland affected

V2: Wetland Watershed Integrity (WSHEDINT)

Use weighted average as discussed on page 10. Examples of land uses and multipliers listed below

A = Percentage forested with no impervious surfaces 20
B = Percentage permeable land, e.g. park, golf course, pasture, hay, orchard, tree farm, or similar 70
C = Percentage low density residential, construction, or similar 10
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) = 0.77

V3: Canopy Tree Size Class (TSIZE)

1. Average size of canopy trees > 3 in. DBH
   __ ≥ 15 in. (SI = 1.0) __ 10 – 14 in. (SI = 0.75) __ 6 – 9 in. (SI = 0.5) __ 4 – 5 in. (SI = 0.25)
   __ < 4 in. or no trees present, go to V5

V4: Canopy Tree Density (TDEN)

1. Average number of canopy trees (> 3 in. DBH) per 30-ft. radius plot
   __ 5 – 10 (SI = 1.0) __ 11 – 15 (SI = 0.75) __ > 15 (SI = 0.5) __ 1 – 4 (SI = 0.5)

V5: Shrub Cover (SCOV)

1. Average percent cover of shrubs (woody stems < 3 in. DBH and taller than 3 ft.) per 30-ft. radius plot

__ > 20 (SI = 1.0) __ < 20, go to V6

V6: Ground Vegetation Cover (GVC)

1. Average percent cover of ground vegetation per 30-ft. radius plot

__ ≥ 70 (SI = 1.0) __ 55 – 69 (SI = 0.75) __ 45 – 54 (SI = 0.5) __ 30 – 44 (SI = 0.25) __ 20 – 29 (SI = 0.1)
__ < 20 (SI=0.0)

V7: Vegetation Composition and Diversity (COMP)

1. Check the dominant species from Groups 1, 2, and 3 below using the 50/20 rule. If tree cover is < 20%, check the dominants in the next tallest stratum. If a dominant does not appear in lists below, but is a native species, it can be added as a Group 2 species. Native shrub and herbaceous species are assigned to Group 2. When using shrub or herbaceous write in the number of dominant species. Dominant invasive species are checked regardless of stratum. *

GROUP 1 (Reference Standard)		GROUP 2 (Native Ubiquitous)		GROUP 3 (Invasive)
__ 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	__ _____	____ Number native shrub spp.		__ _____
__ _____	__ _____	____ 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

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 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)

SI=0.60

1. Surface horizons unaltered

__ 100 percent cover of O and/or A horizon present (SI = 1.0)

2. Surface horizons altered. Estimate the percent of the WAA in which neither an O or A horizon is present.

3. Subtract the sum of the values from Step 2 from 100. Convert this value to a decimal. This is the SI for V8 (e.g., if 75 % of the WAA does not have an O or A horizon due to a significant disturbance, it will have an SI of 0.25).

V9: Buffer (BUFFER)

1. Determine the Connection Index (CI) by estimating the percent of the wetland surrounded by suitable buffer habitat.

__ 90% – 100% (CI = 1.0) __ 75% – 89% (CI = 0.75) __ 40% – 74% (CI = 0.5) __ 10% – 39% (CI = 0.25)
__ < 10% (CI = 0.1)

2. Multiply the CI by one if the following values:

a) if average buffer width is ≥ 492 ft., multiply by 1.0
b) if average buffer is 98 ft to 491 ft., multiply by 0.66
c) if average buffer width is 33 ft to 97 ft., multiply by 0.33
d) if average buffer width is < 33 ft., multiply by 0.1

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

VALUES USED TO CALCULATE FUNCTIONAL CAPACITY INDICES (FCIs)

SUBINDEX VALUES:

V1 0.25 (HYDRO) V3 -- (TSIZE) V5 -- (SCOV) V7 0.57 (COMP) V9 0.01 (BUFFER)

V2 0.77 (WSHEDINT) V4 -- (TDEN) V6 1.0 (GVC) V8 0.60 (ORGANIC)

Civil & Environmental Consultants, Inc.

HGM Functional Assessment Slope Wetlands

V1 HYDRO =	0.25
V2 WSHEDINT =	0.77
V3 TSIZE =	
V4 TDEN =	
V5 SCOV =	
V6 GVC =	1
V7 COMP =	0.57
V8 ORGANIC =	0.6
V9 BUFFER =	0.01

Function 1: Maintain Hydrologic Regime

FCI: $(V1 * V2)^{1/2}$ = (0.25 * 0.77)$^{1/2}$ = 0.439

Function 2: Maintain Biogeochemical Processes

FCI (trees present): $[(V1 * V2)^{1/2} * 1/2 * ([V3 + V4] * 1/2 + V8)]^{1/2}$

[(0.25 * 0.77)$^{1/2}$ * 1/2 * ([0 + 0] * 1/2 + 0.6)]$^{1/2}$ = 0.363

FCI (shrubs present): $[(V1 * V2)^{1/2} * 1/3 * (V5 + V8)]^{1/2}$

[(0.25 * 0.77)$^{1/2}$ * 1/3 * (0 + 0.6)]$^{1/2}$ = 0.296

FCI (ground cover): $[(V1 * V2)^{1/2} * 1/5 * (V6 + V8)]^{1/2}$

[(0.25 * 0.77)$^{1/2}$ * 1/5 * (1 + 0.6)]$^{1/2}$ = 0.375

Function 3: Maintain Characteristic Plant Community

FCI (trees present): $[(V1 * V2)^{1/2} + 2/3 * (V3 + V4 + V7)] * 1/3$

[(0.25 * 0.77)$^{1/2}$ + 2/3 * (0 + 0 + 0.57)] * 1/3 = 0.273

FCI (shrubs present): $[(V1 * V2)^{1/2} + V5 + V7] * 1/6$

[(0.25 * 0.77)$^{1/2}$ + 0 + 0.57] * 1/6 = 0.168

FCI (ground cover): $[(V1 * V2)^{1/2} + V6 + V7] * 1/9$

[(0.25 * 0.77)$^{1/2}$ + 1 + 0.57] * 1/9 = 0.223

Function 4: Maintain Characteristic Wildlife Community

FCI (trees present): $[(V1 * V2)^{1/2} + 2/3 * (V3 + V4 + V7) + V9] * 1/4$

[(0.25 * 0.77)$^{1/2}$ + 2/3 * (0 + 0 + 0.57) + 0.01] * 1/4 = 0.207

FCI (shrubs present): $[(V1 * V2)^{1/2} + V5 + V7 + V9] * 1/6$

[(0.25 * 0.77)$^{1/2}$ + 0 + 0.57 + 0.01] * 1/6 = 0.170

FCI (ground cover): $[(V1 * V2)^{1/2} + V6 + V7 + V9] * 1/9$

[(0.25 * 0.77)$^{1/2}$ + 1 + 0.57 + 0.01] * 1/9 = 0.224

31.52

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, M. Skelton	**Affiliation:**	CEC, Inc.	**Date:**	August 11, 2022

1-Station: from plans	N/A				
2-Map label and name	STR-4				
3-Latitude/Longitude	35.431526; -89.406288				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☑	ephemeral stream ☐	wwc ☐	
-HD score (if applicable)	22				
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☑	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐
	change in soil character ☐	leaf litter disturbed or absent ☑	natural line impressed on bank ☑	shelving ☐	wracking ☐
-channel bottom width	10’	-top of bank width	20’		
-width at ordinary high water mark	15’				
-bank height	LDB - 6’	RDB - 6’			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Giant ragweed, sycamore				
	RDB: Giant ragweed				
-date of PJD request					
5-photo numbers	88,89				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Water flowing in channel. Lots of sediment in channel. No benthics observed in channel. Drains under SR-222.				
Substrate	Silt				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Fayette	Named Waterbody: N/A	Date/Time: August 11, 2022 5:17 PM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Matthew Skelton, CEC Inc.		Project ID: STR-4
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad:	HUC (12 digit): 080102080402	Begin: 35.43117, -89.40718 End: 35.431929, -89.405416
Previous Rainfall (7-days) : 1.36" with 0.33" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.99 Square Miles	Photos: Y or N (circle) Number : 88,89	
Soil Type(s) / Geology : Convent Silt Loam		
Surrounding Land Use : Industrial, Pasture, Roadside		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable 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 :

Secondary Field Indicator Evaluation

Project ID: STR-4

A. **Geomorphology** (Subtotal = 13)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	**2**	0	1	2	3
2. Sinuous channel	**1**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1.5**	0	1	2	3
4. Sorting of soil textures or other substrate	**1.5**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**1**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**1**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1**	0	1	2	3
11. Grade controls	**0.5**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**Yes = 3**			

B. **Hydrology** (Subtotal = 6)		Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	**1**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**0**	0	1	2	3
16. Leaf litter in channel (January – September)	**1.5**	1.5	1	0.5	0
17. Sediment on plants or on debris	**1.5**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.5**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**Yes = 1.5**			

C. **Biology** (Subtotal = 3)		Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed [1]	**1**	3	2	1	0
21. Rooted plants in the thalweg [1]	**2**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 22

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

2nd order stream on topo. Stream has a rock check dam across it at Blue oval city. Water is turbid. Sediment on plants scored higher than it normally would.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, M. Skelton	**Affiliation:**	CEC, Inc.	**Date:**	August 12, 2022

1-Station: from plans	N/A				
2-Map label and name	STR-5				
3-Latitude/Longitude	35.439334; -89.406332				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☑	ephemeral stream ☐	wwc ☐	
-HD score (if applicable)					
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☑	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐
	change in soil character ☐	leaf litter disturbed or absent ☑	natural line impressed on bank ☐	shelving ☐	wracking ☑
-channel bottom width	3’	-top of bank width	12’		
-width at ordinary high water mark	5’				
-bank height	LDB - 5’	RDB - 5’			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Cotton wood, sweet gum, black willow				
	RDB: Black willow, sweet gum				
-date of PJD request					
5-photo numbers	90,91				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Lots of silt observed in channel. Ponded water and no benthics observed in channel.				
Substrate	Silt				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Fayette	Named Waterbody: N/A	Date/Time: August 12, 2022 7:59 AM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Matthew Skelton, CEC Inc.		Project ID: STR-5
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad:	HUC (12 digit): 080102080402	Begin: 35.439542, -89.408512 End: 35.437889, -89.405189
Previous Rainfall (7-days) : 1.36" with 0.33" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.27 square Miles	Photos: Y or N (circle) Number : 90,91	
Soil Type(s) / Geology : Loring Silt Loam, Adler Silt Loam		
Surrounding Land Use : Industrial, Pasture, Roadside		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable 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) = 21.5

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: STR-5

A. **Geomorphology** (Subtotal = 9)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	**2**	0	1	2	3
2. Sinuous channel	**1**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1**	0	1	2	3
4. Sorting of soil textures or other substrate	**0**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**1.5**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**1.5**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1**	0	1	2	3
11. Grade controls	**0.5**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. **Hydrology** (Subtotal = 8)		Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	**1**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**2**	0	1	2	3
16. Leaf litter in channel (January – September)	**1.5**	1.5	1	0.5	0
17. Sediment on plants or on debris	**1**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**1**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**Yes = 1.5**			

C. **Biology** (Subtotal = 4.5)		Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed [1]	**2**	3	2	1	0
21. Rooted plants in the thalweg [1]	**2**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0.5**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 21.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Outfall #2 for blue oval site. Lots of sediment in channel. Water is turbid. No benthics observed. Incised channel standing water throughout.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, R. Kelso	**Affiliation:**	CEC, Inc.	**Date:**	December 7, 2022

1-Station: from plans	N/A				
2-Map label and name	WWC/EPH-12				
3-Latitude/Longitude	35.439545; -89.408746				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☐	ephemeral stream ☑	wwc ☐	
-HD score (if applicable)	13.75				
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☑	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐
	change in soil character ☐	leaf litter disturbed or absent ☑	natural line impressed on bank ☑	shelving ☐	wracking ☑
-channel bottom width	3’	-top of bank width	8’		
-width at ordinary high water mark	4.5’				
-bank height	LDB - 2’	RDB - 3’			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Sweet gum, privet, sycamore, American elm				
	RDB: Privet, American elm				
-date of PJD request					
5-photo numbers	47,48				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Rooted saplings observed in channel. Deeply incised channel. Turbid water flowing in channel due to large rain event.				
Substrate	Silt, gravel.				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Fayette	Named Waterbody: N/A	Date/Time: December 7, 2022 1:43 PM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Ryan Kelso, CEC Inc.		Project ID: WWC/EPH-12
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad:	HUC (12 digit): 080102080402	Begin: 35.439548, -89.40898 End: 35.43542, -89.408512
Previous Rainfall (7-days) : 2.27" with 0.96" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☑ wet ☐ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.22 Square Miles	Photos: Y or N (circle) Number : 47,48	
Soil Type(s) / Geology : Adler Silt Loam		
Surrounding Land Use : Pasture		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 13.75

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: WWC/EPH-12

A. Geomorphology (Subtotal = 9.75)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**3**	0	1	2	3
2. Sinuous channel	**0**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1**	0	1	2	3
4. Sorting of soil textures or other substrate	**1**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**1.5**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0.75**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1.5**	0	1	2	3
11. Grade controls	**0**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. Hydrology (Subtotal = 2.75)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	**0**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**N/A**	0	1	2	3
16. Leaf litter in channel (January – September)	**N/A**	1.5	1	0.5	0
17. Sediment on plants or on debris	**0.75**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.75**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**No = 0**			

C. Biology (Subtotal = 2.5)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	**1.5**	3	2	1	0
21. Rooted plants in the thalweg [1]	**1.5**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 13.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Rooted trees observed in channel. Incised channel with 2" plus of leaf litter observed in thalweg even after large rain event. No hydric soils observed. Very turbid water flowing in channel. Confluence with STR-5 at culvert outlet. Actively raining and flooding during field visit.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, R. Kelso	**Affiliation:**	CEC, Inc.	**Date:**	December 7, 2022

1-Station: from plans	N/A				
2-Map label and name	WWC/EPH-13				
3-Latitude/Longitude	35.43974; -89.408698				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☐	ephemeral stream ☑	wwc ☐	
-HD score (if applicable)	11				
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☑	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐
	change in soil character ☐	leaf litter disturbed or absent ☑	natural line impressed on bank ☑	shelving ☐	wracking ☑
-channel bottom width	2’	-top of bank width	5.5’		
-width at ordinary high water mark	3.5’				
-bank height	LDB - 1.5’	RDB - 1.5’			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Sweet gum, privet, ironwood, American elm				
	RDB: Privet, hackberry				
-date of PJD request					
5-photo numbers	49,50				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Drains along roadway ditch into area of interest. Turbid flowing water in channel due to large rain event. Drains into culvert crossing into its confluence with STR-5.				
Substrate	Silt, gravel.				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Fayette	Named Waterbody: N/A	Date/Time: December 7, 2022 12:50 PM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Ryan Kelso, CEC Inc.		Project ID: WWC/EPH-13
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad:	HUC (12 digit): 080102080402	Begin: 35.439768, -89.40898 End: 35.439542, -89.408512
Previous Rainfall (7-days) : 2.27" with 0.96" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☑ wet ☐ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.01 Square Miles	Photos: Y or N (circle) Number : 49,50	
Soil Type(s) / Geology : Adler silt loam		
Surrounding Land Use : Pasture		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 11

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: WWC/EPH-13

A. Geomorphology (Subtotal = 9.75)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**3**	0	1	2	3
2. Sinuous channel	**0**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**0.5**	0	1	2	3
4. Sorting of soil textures or other substrate	**1**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**1**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0.5**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1**	0	1	2	3
11. Grade controls	**0**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. Hydrology (Subtotal = 2.75)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	**0**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**N/A**	0	1	2	3
16. Leaf litter in channel (January – September)	**N/A**	1.5	1	0.5	0
17. Sediment on plants or on debris	**0.25**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.75**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**No = 0**			

C. Biology (Subtotal = 2.5)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	**1**	3	2	1	0
21. Rooted plants in the thalweg [1]	**1**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 11

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Feature drains parallel to WWC/EPH-12. No hydric soils. Feature drains into a 24" concrete culvert inlet, crosses the road, and then drains out into its confluence with STR-5. Very turbid water flowing in channel. Actively raining and flooding during field visit.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, M. Skelton	**Affiliation:**	CEC, Inc.	**Date:**	August 12, 2022

1-Station: from plans	N/A				
2-Map label and name	WWC/UDF-10				
3-Latitude/Longitude	35.443665; -89.405828				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☐	ephemeral stream ☐	wwc ☑	
-HD score (if applicable)	11.25				
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☐	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐
	change in soil character ☐	leaf litter disturbed or absent ☐	natural line impressed on bank ☑	shelving ☐	wracking ☑
-channel bottom width	3’	-top of bank width	7’		
-width at ordinary high water mark	4’				
-bank height	LDB - 2.5’	RDB - 3.5			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Sycamore, eastern red cedar				
	RDB: Sycamore, black oak, pin oak				
-date of PJD request					
5-photo numbers	51,52				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Leaf litter and organic material observed in channel. No benthics observed in channel. Ponded water below downstream culvert. Rip rap barrier in channel.				
Substrate	Silt				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Haywood	Named Waterbody: N/A	Date/Time: August 12, 2022 8:48 AM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Matthew Skelton, CEC Inc.		Project ID: WWC/UDF-10
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad:	HUC (12 digit): 080102080402	Begin: 35.443722, -89.406489 End: 35.443435, -89.40517
Previous Rainfall (7-days) : 1.36" with 0.33" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.26 Square Miles	Photos: Y or N (circle) Number : 51,52	
Soil Type(s) / Geology : Adler silt loam		
Surrounding Land Use : Agricultural, Forested, Roadside		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 11.25

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: WWC/UDF-10

A. Geomorphology (Subtotal = 7.25)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**2.5**	0	1	2	3
2. Sinuous channel	**1**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1**	0	1	2	3
4. Sorting of soil textures or other substrate	**0.5**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**0**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0.25**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1**	0	1	2	3
11. Grade controls	**0.5**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. Hydrology (Subtotal = 1.5)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	**0**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**0**	0	1	2	3
16. Leaf litter in channel (January – September)	**0.5**	1.5	1	0.5	0
17. Sediment on plants or on debris	**0.5**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.5**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**No = 0**			

C. Biology (Subtotal = 2.5)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	**1**	3	2	1	0
21. Rooted plants in the thalweg [1]	**1.5**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 11.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

Dry channel. Lots of leaf litter. Water present in pool downstream of culvert. No flow.

Ecology Field Data Sheet: **Water Resources**

Project: SR-222 PIN: 132709.00 Project: 4S222-S1-002					
Biologist:	J. Scott, M. Skelton	**Affiliation:**	CEC, Inc.	**Date:**	August 12, 2022

1-Station: from plans	N/A				
2-Map label and name	WWC/UDF-11				
3-Latitude/Longitude	35.445254; -89.406077				
4-Feature description:					
-channel identification	perennial stream ☐	intermittent stream ☐	ephemeral stream ☐	wwc ☑	
-HD score (if applicable)	10.5				
-OHWM indicators	bed & banks ☑	deposition ☑	presence of litter / debris ☐	scour ☑	veg absent, bent, matted ☑
	change in plant community ☐	destruction of terrestrial veg ☐	multiple observed flow events ☐	sediment sorting ☐	water staining ☐
	change in soil character ☐	leaf litter disturbed or absent ☐	natural line impressed on bank ☑	shelving ☐	wracking ☐
-channel bottom width	3’	-top of bank width	7’		
-width at ordinary high water mark	5’				
-bank height	LDB - 3’	RDB - 3’			
-riffle/pool complex or other specialized habitat present?	No				
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Sassafras, eastern red cedar				
	RDB: Chinkapin oak, black cherry, black gum				
-date of PJD request					
5-photo numbers	53,54				
6-HUC -8 Code & Name	Lower Hatchie River-08010208				
7-Assessed	yes ☐	no ☑			
8-ETW	yes ☐	no ☑			
9-303 (d) List	yes ☐	siltation ☐	habitat: ☐	other: ☐	
	no ☑				
10-Notes	Leaf litter and organic material observed throughout feature. Drains to road and ends. No water or benthics observed in channel.				
Substrate	Silt				

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

County: Haywood	Named Waterbody: N/A	Date/Time: August 12, 2022 9:13 AM
Assessors/Affiliation: Jedidiah Scott, CEC Inc., Matthew Skelton, CEC Inc.		Project ID: WWC/UDF-11
Site Name/Description: SR-222 PIN: 132709.00 Project: 4S222-S1-002		
Site Location: Mason, TN		
USGS quad:	HUC (12 digit): 080102080402	Begin: 35445318., -89.406406 End: 35.445165, -89.405753
Previous Rainfall (7-days) : 1.36" with 0.33" in the previous 48 hours		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry drought unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/web/precip.htm		
Watershed Size : 0.26 Square Miles	Photos: Y or N (circle) Number : 53,54	
Soil Type(s) / Geology : Calloway Silt Loam. Adler Silt Loam		
Surrounding Land Use : Forested, Roadside		
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, dominated by upland vegetation / grass	☑	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 STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicatortable on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 10.5

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: WWC/UDF-11

A. Geomorphology (Subtotal = 6)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**2**	0	1	2	3
2. Sinuous channel	**1**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1**	0	1	2	3
4. Sorting of soil textures or other substrate	**0.5**	0	1	2	3
5. Active/relic floodplain	**0**	0	0.5	1	1.5
6. Depositional bars or benches	**0**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0.5**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**0**	0	1	2	3
11. Grade controls	**0.5**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. Hydrology (Subtotal = 1.5)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	**0**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**0**	0	1	2	3
16. Leaf litter in channel (January – September)	**0.5**	1.5	1	0.5	0
17. Sediment on plants or on debris	**0.25**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.75**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**No = 0**			

C. Biology (Subtotal = 3)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	**1**	3	2	1	0
21. Rooted plants in the thalweg [1]	**2**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	1	2	3
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	**0**	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 10.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

No sign of recent flow. Dry channel. Flows to road side ditch.

Photo 1: View of WWC/EPH-9 looking up-gradient.

Photo 2: View of WWC/EPH-9 looking down gradient.

Photo 3: Overview of WTL-28.

Photo 4: View of WTP-28. Soil matrix 10YR 4/2 with 10YR 5/1 redox concentrations.

Photo 5: View of UTP-28. Soil matrix 10YR 5/4 with no redox concentrations.

Photo 6: View of WWC/UDF-77 looking up-gradient.

Photo 7: View of WWC/UDF-77 looking down gradient.

Photo 8: View of STR-26 looking upstream.

Photo 9: View of STR-26 looking downstream.

Photo 10: View of WWC/UDF-79 looking up-gradient.

Photo 11: View of WWC/UDF-79 looking down gradient.

Photo 12: View of STR-27 looking upstream.

Photo 13: View of STR-27 looking downstream.

Photo 14: View of WWC/EPH-80 looking up-gradient.

Photo 15: View of WWC/EPH-80 looking down gradient.

Photo 16: View of WWC/UDF-81 Looking up-gradient.

Photo 17: View of WWC/UDF-81 looking down gradient.

Photo 18: View of STR-28 looking upstream.

Photo 19: View of STR-28 looking downstream.

Photo 20: View of WWC/EPH-78 looking up-gradient.

Photo 21: View of WWC/EPH-78 looking down gradient.

Photo 22: View of WWC/UDF-82 looking up-gradient.

Photo 23: View of WWC/UDF-82 looking down gradient.

Photo 24: View of WWC/UDF-83 looking up-gradient.

Photo 25: View of WWC/UDF-83 looking down gradient.

Photo 26: View of WWC/UDF-84 looking up-gradient.

Photo 27: View of WWC/UDF-84 looking down gradient.

Photo 28: View of WWC/UDF-85 looking up-gradient.

Photo 29: View of WWC/UDF-85 looking down gradient.

Photo 30: View of WWC/EPH-86 looking up-gradient.

Photo 31: View of WWC/EPH-86 looking down gradient.

Photo 32: View of STR-29 looking upstream.

Photo 33: View of STR-29 looking downstream.

Photo 34: View of STR-30 looking upstream.

Photo 35: View of STR-30 looking downstream.

Photo 36: View WWC/EPH-87 looking up-gradient.

Photo 37: View of WWC/EPH-87 looking down gradient.

Photo 38: View WWC/EPH-88 looking up-gradient.

Photo 39: View of WWC/EPH-88 looking down gradient.

Photo 40: Overview of WTL-29.

Photo 41: View of WTP-29. Soil matrix 10YR 5/1 with 7.5YR 5/6 redox concentrations.

Photo 42: View of UTP-29. Soil matrix 10YR 4/6 with no redox concentrations.

Photo 43: View of STR-4 looking upstream.

Photo 44: View of STR-4 looking downstream.

Photo 45: View of STR-5 looking upstream.

Photo 46: View of STR-5 looking downstream.

Photo 47: View of WWC/EPH-12 looking up-gradient.

Photo 48: View of WWC/EPH-12 looking down gradient.

Photo 49: View of WWC/EPH-13 looking up-gradient.

Photo 50: View of WWC/EPH-13 looking down gradient.

Photo 51: View of WWC/UDF-10 looking up-gradient.

Photo 52: View of WWC/UDF-10 looking down gradient.

Photo 53: View of WWC/UDF-11 looking up-gradient.

Photo 54: View of WWC/UDF-11 looking down gradient.

From: Griffith, John <john_griffith@fws.gov>
Sent: Monday, August 1, 2022 2:41 PM
To: Rita M. Thompson
Cc: Sikula, Nicole R
Subject: [EXTERNAL] Re: IPaC delivered Official Species List for project: TDOT-PIN 132709.00; SR-222 From near Hebron Road to near Keeling Road (including the I-40 interchang

Rita,

Thank you for your correspondence regarding the proposed State Route 222 reconstruction and widening from near Hebron Road to near Keeling Road in Fayette and Haywood counties, Tennessee. The project would also include construction at the Interstate 40 Interchange. You are requesting a list of federally threatened or endangered species that may be present in the project area.

Our database does not indicate the presence of any federally listed or proposed species or designated critical habitat within your project area. Therefore, we do not anticipate take of any federally listed species resulting from the project. Based on the best information available at this time, we believe that the requirements of the Endangered Species Act (ESA) are fulfilled for all species that currently receive protection under the ESA. Obligations under section 7 of the ESA should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

TDOT would implement standard construction BMPs to ensure work is separated from flowing waters and that project-related contaminants are kept out of area streams. Equipment staging and maintenance areas should be developed an adequate distance away to avoid entry of petroleum-based pollutants into the water.

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
931-525-4995 (office)
931-528-7075 (fax)

From: Administrator Email <ecosphere_support@ecosphere.fws.gov>
Sent: Monday, July 11, 2022 8:58 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 132709.00; SR-222 From near Hebron Road to near Keeling Road (including the I-40 interchang

To: IPaC point(s) of contact for Tennessee Ecological Services Field Office
Project Location: Fayette and Haywood counties, Tennessee

IPaC has delivered an official Section 7 species list on behalf of your office. For your convenience, IPaC has created an ETK project (2022-0062097) 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).

From: Casey Parker
Sent: Thursday, August 4, 2022 11:49 AM
To: Rita M. Thompson; TDOT.Env Ecology
Cc: Vincent Pontello
Subject: RE: TDOT- PIN 132709.00; SR-222 From near Hebron Road to near Keeling Road (including the I-40 interchange, Exit 42) (Project Blue Oval); Fayette, Haywood

Subject: TDOT- PIN 132709.00; SR-222 From near Hebron Road to near Keeling Road (including the I-40 interchange, Exit 42) (Project Blue Oval); Fayette, Haywood

Ms. Rita Thompson,

The Tennessee Wildlife Resources Agency has reviewed the information that you provided regarding the proposed widening of SR-222 in Fayette and Haywood County, Tennessee and we have no concerns regarding the project and do not anticipate adverse impacts to state listed species under our authority due to the project. Thank you for the opportunity to review and comment, please contact me if you need further assistance.

Casey Parker - Wildlife Biologist
Liaison to TDOT & Federal Highway Administration
Tennessee Wildlife Resources Agency
Environmental Services Division
Email: casey.parker@tn.gov

From: Rita M. Thompson <Rita.M.Thompson@tn.gov>
Sent: Monday, July 11, 2022 8:50 AM
To: Casey Parker <Casey.Parker@tn.gov>
Cc: Vincent Pontello <Vincent.Pontello@tn.gov>
Subject: TDOT- PIN 132709.00; SR-222 From near Hebron Road to near Keeling Road (including the I-40 interchange, Exit 42) (Project Blue Oval); Fayette, Haywood

Casey,

TDOT requests TWRA comment on the above referenced project. This project will consist of reconstruction and widening of SR-222 to accommodate Project Blue Oval in Fayette and Haywood counties. Attached is a .kml of the study area and a 4 mile list from the Natural Heritage database. There were no species records within the 1 mile radius of the project, so I did not include a 1 mile list.

Please let me know if you have questions or need additional information for your comment.

Thanks,

Rita M. Thompson | TDOT Environmental Supervisor
Environmental Division
James K. Polk, 9th Floor
505 Deaderick Street
Nashville, TN 37243
p. 615-253-2459

rita.m.thompson@tn.gov

STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas
Natural Heritage Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, Tennessee 37243
Phone 615/532-0431 Fax 615/532-0046

August 19, 2022

Rita Thompson
TDOT
505 Deaderick Street
Nashville, TN 37243

Subject: SR-222 from near Hebron Road to near Keeling Road (including I-40 interchange, Exit, 42)
TDOT PIN 132709.00
Northern Extent (Haywood Co.): (35.44814°, -89.40559°)
Southern Extent (Fayette Co.): (35.38859°, -89.41216°)
Fayette Co. and Haywood Co., TN
Rare Species Database Review

Dear Ms. Thompson:

Thank you for your correspondence of 11 July 2022 requesting a rare species database review for the proposed expansion of SR-222 in Fayette and Haywood Counties, Tennessee.

Per your submittal:

TDOT plans to reconstruct and widen SR-222 in Haywood and Fayette counties.

We have reviewed the state's natural heritage database with regard to the project boundaries, and we find that no rare species have been observed previously within one mile of the project area.

Within four miles of the project area the following rare species have been reported:

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	*Agalinis heterophylla*	Prairie False-foxglove	G4G5	S1	--	E	Barrens
Vascular Plant	*Carex reniformis*	Reniform Sedge	G4?	S1	--	S	Rich Bottomland Woods

The Division of Natural Areas - Natural Heritage Program has reviewed the location of the proposed project workspace with respect to rare plant species. Based on the habitat within the project area, we do not anticipate any impacts to occurrences of rare, threatened, or endangered plant species from this project.

We ask that you coordinate this project with the Tennessee Wildlife Resources Agency contact assigned to your agency to ensure that legal requirements for protection of state listed rare animals are addressed. Additionally, we ask that you contact the U.S. Fish and Wildlife Service Field Office, Cookeville, Tennessee (931-525-4970) for comments regarding federally listed species. Please ensure that best management practices to address erosion and sediment are implemented and maintained during construction activities. Note that the General Aquatic Resource Alteration Permit states that "use of monofilament-type erosion control netting or blanket is prohibited in the stream channel, stream banks, or any disturbed riparian areas within 30 feet of top of bank." Where necessary and feasible, we encourage use of biodegradable netting under the CGP (Construction General Stormwater Permit) as well.

Thank you for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact me at 615-532-4799 or dillon.blankenship@tn.gov.

Sincerely,

Dillon

Dillon Blankenship | Environmental Review Coordinator
Tennessee Natural Heritage Program