



June 22, 2022

McMinn County Government
6 East Madison Avenue
Athens, Tennessee 37303

Attention: Mr. Mayor John Gentry
jgentry@mcminncountyttn.gov

Subject: **Revised Water Resource Inventory**
North Etowah Industrial Park
Etowah, Tennessee
GEOServices Project No. 24-22451

Dear Mayor Gentry:

GEOServices, LLC has completed a Water Resource Inventory to assess the jurisdictional status of hydrologic features at the referenced project, located on at Jack King Drive and North Industrial Drive in Etowah, Tennessee. Please see our findings in the attached report.

GEOServices appreciates the opportunity to continue providing services to you and looks forward to working with you in the future. If you have any questions, please do not hesitate to contact us at your convenience.

Sincerely,
GEOServices, LLC

Cierra Homic
Environmental Scientist

Jason Mann, PE, TN-QHP # 1042-TN10
Senior Project Manager

**REVISED WATER RESOURCES INVENTORY
FOR
NORTH ETOWAH INDUSTRIAL PARK
ETOWAH, TENNESSEE**

Prepared For:
Mr. Mayor John Gentry
McMinn County Government
6 East Madison Avenue
Athens, TN 37303

Prepared by:



June 22, 2022

GEOServices Project # 24-22451

1.0 INTRODUCTION

GEOServices, LLC (GEOServices) performed a Water Resource Inventory on multiple hydrologic features located in the Chestuee Creek Lower Watershed, located on multiple parcels west of North Industrial Drive in Etowah, Tennessee. The site investigation and hydrologic assessment was conducted on June 01, 2022, and June 9, 2022, by staff of GEOServices.

2.0 SITE DESCRIPTION

The subject project location is described as Map 097, Parcel 018.00 and Map 087, Parcel 206.00 according to the Knox County property assessor website. The approximate coordinates for the area of concern are Latitude: North 35.3755°, Longitude West -84.5294°. The overall project footprint is approximately 280 acres in size; **Figure 1 in Appendix A** provides an overview of the subject location. The site is comprised of pasture areas and strands of forest. The site is surrounded by undeveloped, agricultural, and residential properties.

Figure 2 in Appendix A illustrates the location of the hydrologic resources evaluated on site. Seven channels were evaluated on the site. Channel 1 enters the property east of North Industrial Drive and flows southwest across the southeastern corner of the property. Channel 2 was observed within a hillside feature on the southern part of the property. The feature appeared to be formed due to the hillside releasing perched groundwater from recent rain events. At approximately lat/lon 35.3735°, -84.5285° Channel 2 formed a confluence with Channel 1. Channel 3 enters the property on the northwestern property boundary and flows southwest and exits the property via a culvert that runs under County Road 561. Channel 4 flows north parallel with County Road 561 contained a springhead with an obvious indication of groundwater contribution. Channel 5 runs south parallel to County Road 561 and did not have any flow. At approximately lat/lon 35.3772°, -84.5398° channel 4 and 5 formed a confluence with Channel 3. Channel 6 was observed within a hillslope feature along the northwest property boundary. At approximately lat/lon 35.3780°, -84.5385° Channel 6 formed a confluence with Channel 3. The channels have been evaluated using the Tennessee Department of Environment and

Conservation Hydrologic Determination Field Data form v1.5. Weather calculations, field data sheets, photos, and a copy of QHP Certification 1042-TN10 is provided in the attached appendices.

Based on the current Topographic Maps (**Figure 3 in Appendix A**), Channels 1 is the only channel designated as a “blue line” feature. Additionally, the topography of the property has an approximate elevation range between approximately 860 and 920 feet above mean sea level.

The soils map associated with this site are shown as **Figure 4 in Appendix A**. There are multiple soil types mapped on site. One of the soils mapped on site has a hydric rating component, however, hydric soils were found at multiple locations during the site investigation.

The entire project lies in the Chestuee Creek Lower Watershed (HUC 060200021003), which is nested within the Hiwassee River Watershed (HUC 06020002). The site drains to Blair Branch which is listed as impaired for habitat alteration in stream-side or littoral vegetative covers and *Escherichia coli* (*E. coli*).

3.0 RESOURCE DESCRIPTION

Figure 2 in Appendix A illustrates the location of the hydrologic resources evaluated on site. Seven channels were evaluated on the property. Wetland indicators such as hydric soils, wetland vegetation, and hydrologic features were observed upon site investigation. There was evidence of hydric soils, hydrophytic vegetation and hydrology on site in combination at six observed locations. The individual data points were reviewed using guidance from the 1987 Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1) and the applicable regional supplement. A delineation of those data points is included in **Figure 2**. Photographs taken during the site investigation are included in **Appendix B**. The data collected during the site investigation can be found in **Appendix C**.

In total one (1) pond feature were discovered in the central portion of the property. This hydrologic feature was observed to not have flowing water entering and/or leaving the pond.

4.0 SOIL SURVEY

As shown in **Figure 4**, the site's hydrologic features are predominantly underlain by soils listed in **Table I**. One of the soils mapped on site is listed as hydric by the USDA Web Soil Survey, Hydric Rating by Map Unit.

Table I: Potential Soils Located on the Subject Location

Symbol	Soil Name	Description	Hydric
Rk	Rockdell gravelly loam	0 to 3 percent slopes, gravelly alluvium derived from cherty limestone	No
Bm	Bloomington silty clay loam	0 to 2 percent slopes, occasional flooding, Gravelly alluvium derived from limestone and shale	Yes
TaC	Tasso loam	5 to 12 percent slopes, loamy colluvium and/or alluvium over residuum weathered from limestone	No
Ha	Hamblen silt loam	0 to 3 percent slopes, occasional flooding, loamy alluvium derived from limestone, sandstone, and shale	No
Eo	Etowah loam	0 to 3 percent slopes, occasionally flooded, over wash, loamy alluvium and colluvium derived from limestone, sandstone, and shale	Yes
CnC2	Coile silt loam	5 to 12 percent slopes, eroded, channery residuum weathered from acid shale	No
FgF2	Fullerton gravelly silt	25 to 60 percent slopes, eroded, loamy creep deposits derived from cherty limestone over clayey residuum weathered from cherty limestone	No

Source: USDA, Web Soil Survey, Hydric Rating by Map Unit

5.0 NATIONAL WETLANDS INVENTORY MAP

The National Wetlands Inventory (NWI) map was reviewed to identify any potential wetlands within the boundaries or adjacent to the site. The NWI map is included as **Figure 5** in **Appendix A** of this report. The NWI map has identified potential Freshwater and Forested wetland features along Channel 1.

6.0 METHODS

The Channels were evaluated using the most current Tennessee Department of Environment and Conservation Hydrologic Determination Field Data form. Weather calculations, field data sheets, photos, and a copy of QHP Certification 1042-TN10 is provided in the attached appendices. Potential wetland areas were analyzed following the routine three parameter approach to wetland delineations as published by the U.S. Army Corps of Engineers (USACE), 1987 edition (Technical Report Y-87-1), and the Regional Supplement for Eastern Mountains and Piedmont Region. Photographs taken during the investigation are included in **Appendix B**. Field data sheets were completed during the determination and are provided in **Appendix C**.

7.0 RESULTS

Channel 1, Unnamed Tributary to Blair Branch – Stream due to secondary stream indicators; a secondary indicator score of **22.5** was calculated using a rigorous and reasonable amount of effort. Channel 1 shows evidence of weak hydrology, biology, and geomorphology. There was some flowing water, some fibrous and rooted plants, and multiple culverts were found.

Channel 2, Unnamed Tributary to Blair Branch – Wet Weather Conveyance (WWC) due to secondary stream indicators; no amphibians were observed, and a secondary indicator score of **6.5** was calculated using a rigorous and reasonable amount of effort. Channel 2 ties into Channel 1 in the southeastern corner of the property.

Channel 3, Unnamed Tributary to Blair Branch – Stream due to secondary stream indicators; a secondary score of **26** was calculated using rigorous and reasonable amount of effort. Channel 3 shows weak geomorphology and biology characteristics but strong hydrology characteristics. A few amphibians, strong flow, hydric soil, and a moderate floodplain was observed.

Channel 4, Unnamed Tributary to Blair Branch – Stream due to primary and secondary stream indicators; a secondary score of **20.5** was calculated using rigorous and reasonable amount of effort. Channel 4 shows weak geomorphology and hydrology but moderate biology characteristics. A moderate amount of leaf litter and rooted plants were observed.

Channel 5, Unnamed Tributary to Blair Branch – Wet Weather Conveyance (WWC) due to secondary score of **12.5** was calculated using rigorous and reasonable amount of effort. Channel 5 shows weak geomorphology and hydrology characteristics but strong biology characteristics. Channel 5 had no flow, a lot of leaf litter and a weak floodplain.

Channel 6, Unnamed Tributary to Blair Branch – Stream due to primary and secondary stream indicators; a secondary score of **19** was calculated using rigorous and reasonable amount of effort. Channel 6 shows weak hydrology and biology characteristics but weak geomorphology characteristics. A spring head was clearly associated with this feature, a distinct continuous bed and bank, some flow, and wetland plants in the channel bed were observed.

Channel 7, Unnamed Tributary to Blair Branch – Stream due to secondary stream indicators; a secondary score of **26** was calculated using rigorous and reasonable amount of effort. Channel 7 shows moderate geomorphology and hydrology but weak biology characteristics. A defined bed and bank, moderate flow, and fibrous roots were observed.

Wetland A – An approximately 2.22-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 1) on site.

Wetland B – An approximately 0.10-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 1) on site.

Wetland C – An approximately 0.46-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 3) on site.

Wetland D – An approximately 0.52-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 6) on site.

Wetland E – An approximately 0.35-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 7) on site.

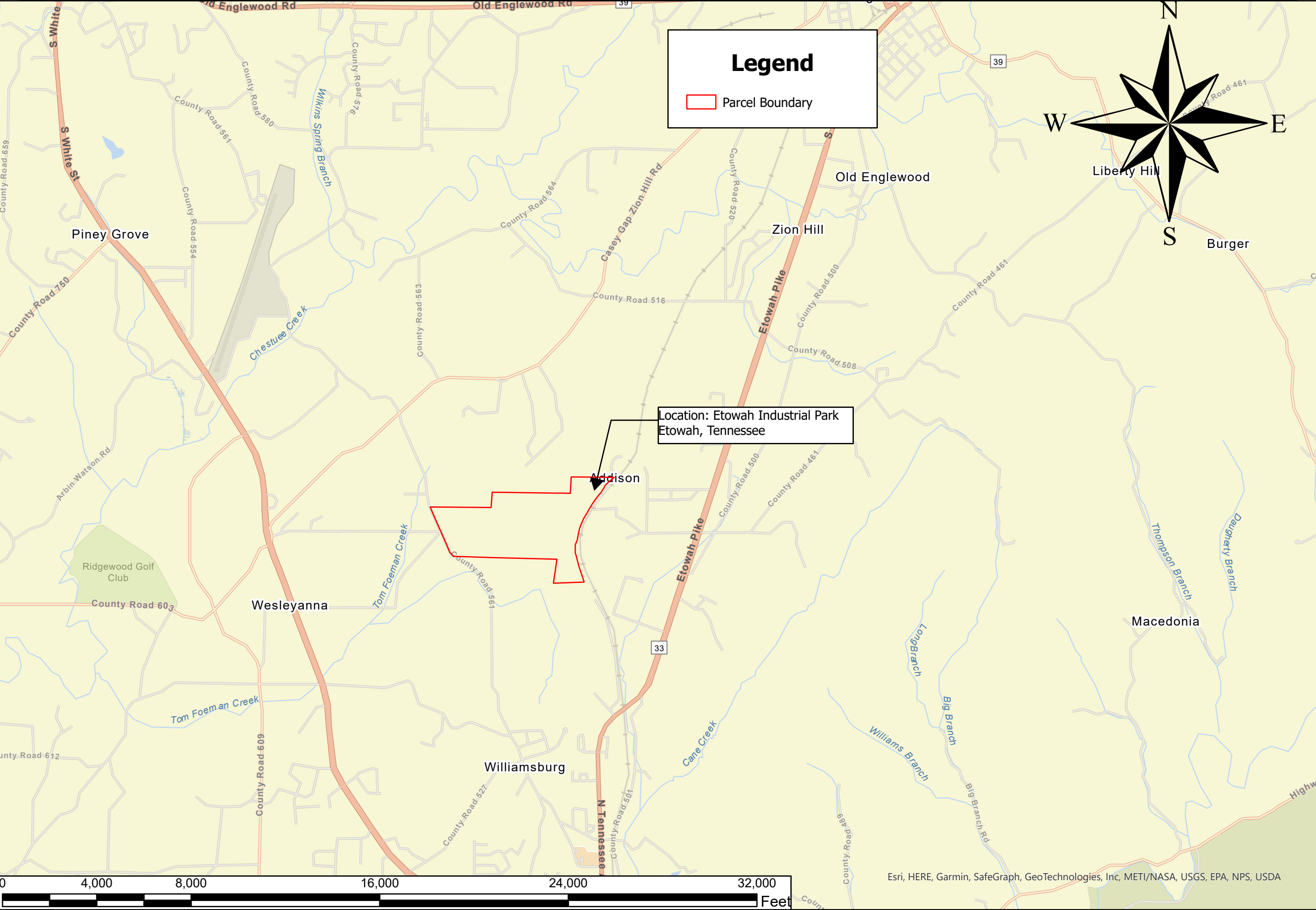
Wetland F – An approximately 1.43-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 7) on site.


Pond 1 –Jurisdictional Feature there is no evidence of flowing water leaving or entering the pond. However, it is unknown at this time if the pond has a direct tie to the groundwater.

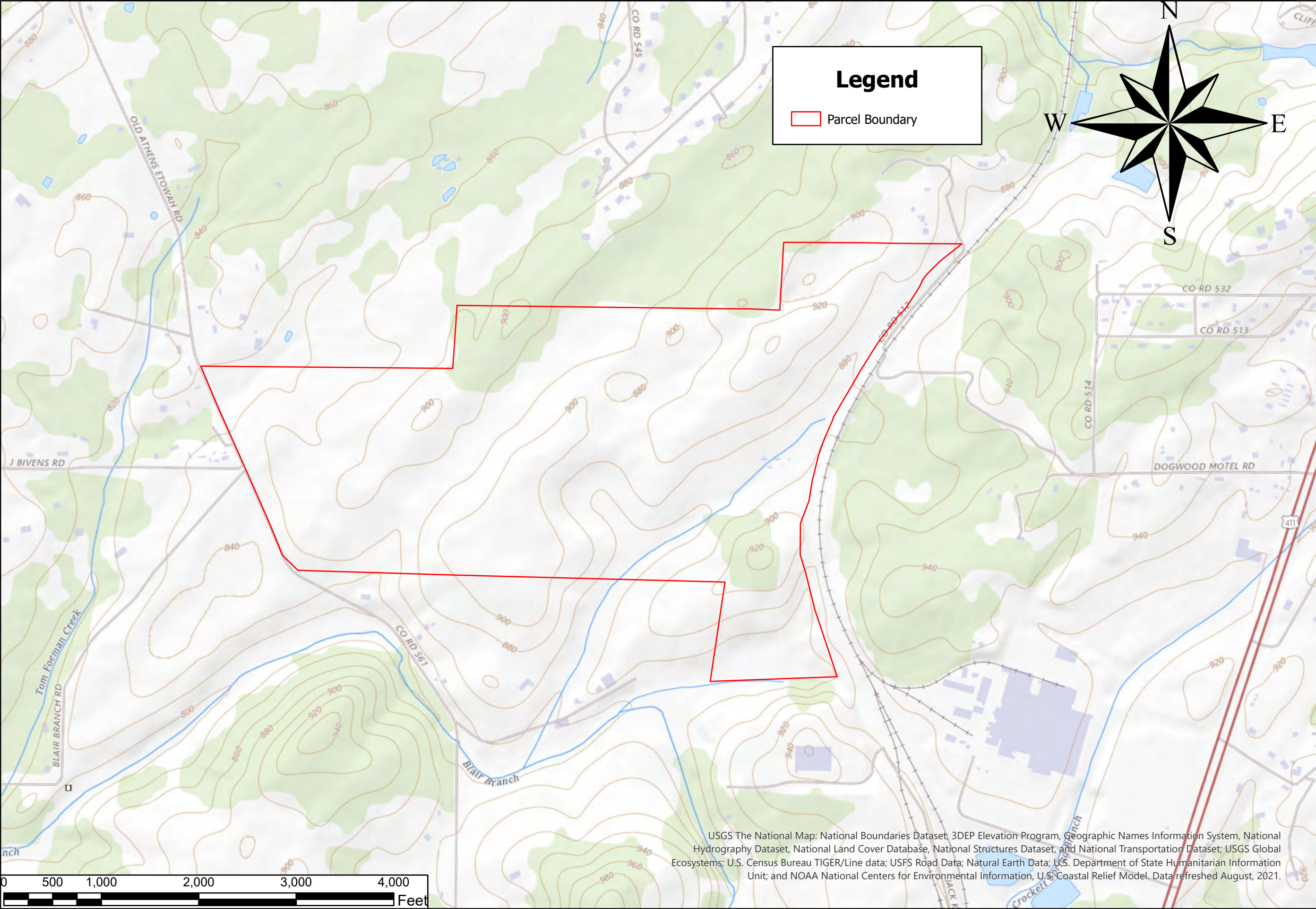
Figure 2 illustrates the georeferenced locations of the water resources in question, and is included in **Appendix A**.


Appendix A

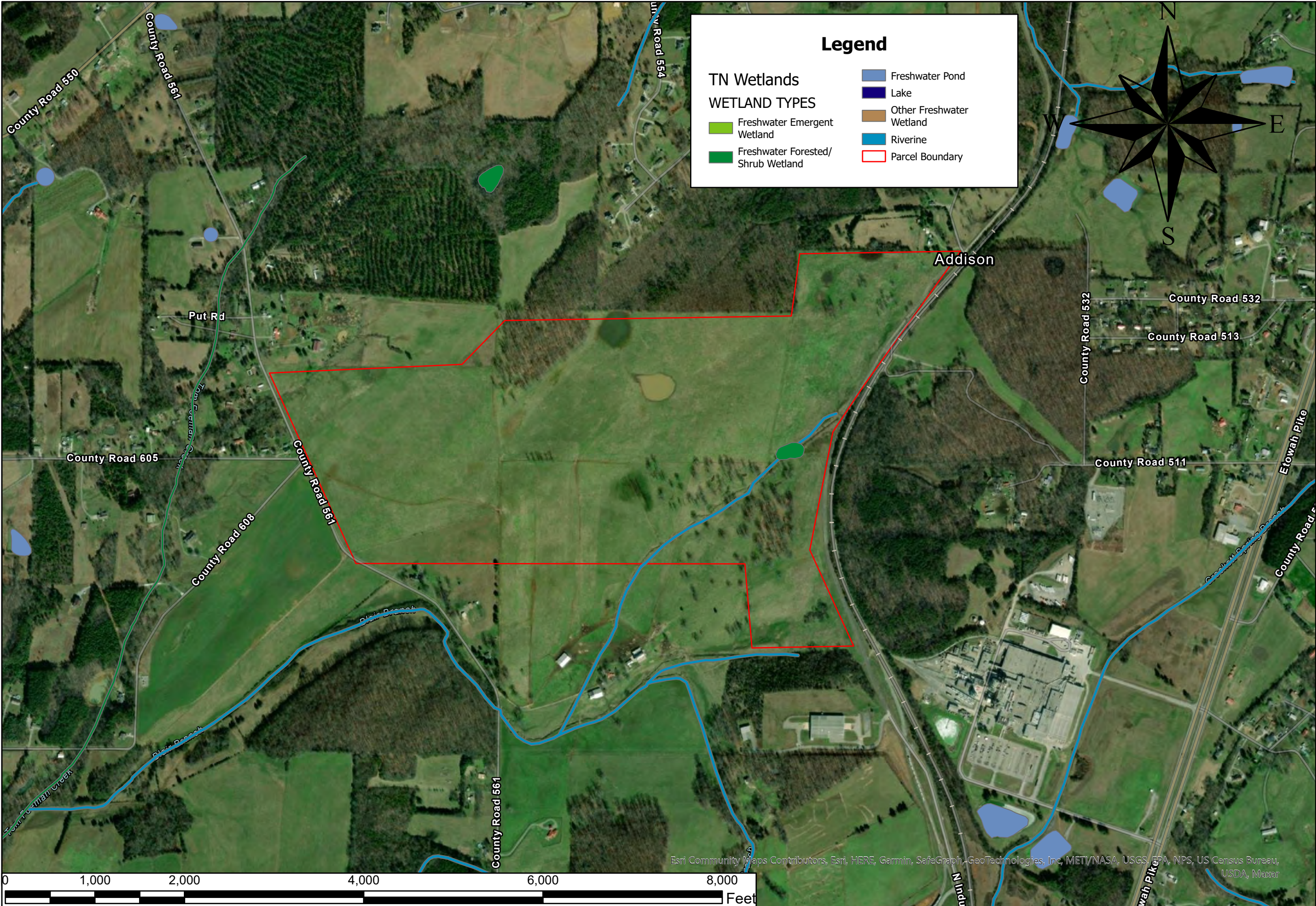
Figures



	DRAWN BY:	CB	REVISED LOCATION MAP	NOTES:
	REVIEWED BY:	JM		
	SCALE:	AS SHOWN		
	JOB NO.:	24-22451		
	DATE:	6/10/22		
FIGURE 1			WATER RESOURCE INVENTORY ETOWAH INDUSTRIAL PARK ETOWAH, TENNESSEE	



	DRAWN BY:	CB	REVISED TOPO MAP	NOTES:
	REVIEWED BY:	JM		
	SCALE:	AS SHOWN	WATER RESOURCE INVENTORY ETOWAH INDUSTRIAL PARK ETOWAH, TENNESSEE	
	JOB NO.:	24-22451		
	DATE:	6/10/22		
FIGURE 3				



TN Wetlands

WETLAND TYPES

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Other Freshwater Wetland

Riverine

Parcel Boundary

<div><div><div><div><div><div></div></div></div><div><div>GEOS</div><div>Geotechnical, Environmental and Materials Engineers</div></div></div><div><div>Universal Engineering Sciences</div></div></div></div>	DRAWN BY:	CB	NW MAP	NOTES:
	REVIEWED BY:	JM		
	SCALE:	AS SHOWN	WATER RESOURCE INVENTORY ETOWAH INDUSTRIAL PARK ETOWAH, TENNESSEE	
	JOB NO.:	24-22451		
	DATE:	6/2/22		
FIGURE 5				

Appendix B
Photographs



Photo 1: Wetland A



Photo 2: Wetland A vegetation (common rush and rice cutgrass)



Photo 3: Hydric soil sample from Wetland A



Photo 4: Upstream point of Channel 1 within Wetland A with culvert



Photo 5: Wetland A hydrology



Photo 6: Upper section of Channel 1 showing wetland plants in the channel bed



Photo 7: Typical representation of Channel 1



Photo 8: Lower section of Channel 1



Photo 9: Pool in Channel 1 where multiple species of tadpoles were discovered



Photo 10: Lower section of Channel 1 culvert



Photo 11: Confluence point of Channel 1 and 2



Photo 12: Lower section of Channel 2



Photo 13: Typical representation of Channel 2



Photo 14: Upper Section of Channel 2



Photo 15: Pond 1



Photo 16: Wetland B



Photo 17: Hydric soil from Wetland B



Photo 18: Wetland B vegetation (common rush and rice cutgrass)



Photo 19: Typical representation of Wetland C and Channel 3



Photo 20: Wetland C hydrology and vegetation (rice cutgrass)



Photo 21: Confluence point of Channels 3, 4, and 5



Photo 22: Crayfish found in Channel 4



Photo 23: Typical representation of Channel 4



Photo 24: Typical representation of Channel 5



Photo 25: Culvert within Wetland C and Channel 3



Photo 26: Confluence point of Channel 3 and 6



Photo 27: Typical representation of Channel 6



Photo 28: Upper section of Wetland D showing sedges and rice cutgrass



Photo 29: Hydric soil from Wetland C



Photo 30: View of Wetland E and F



Photo 31: Wetland F vegetation (common rush, sedges and rice cutgrass)



Photo 32: Wetland E vegetation (sedges and rice cutgrass)



Photo 33: Hydric soil from Wetland E



Photo 34: Upland soil



Photo 35: Upper section of Channel 7



Photo 36: Typical representation of Channel 7



Photo 37: Lower section of Channel 7



Photo 38: Point where Channel 7 leaves the property

Appendix C
Field Data Sheets

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R		OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)		
Project/Site: <u>North Etowah Industrial Park</u> City/County: <u>McMinn</u> Sampling Date: <u>6/1/22</u>				
Applicant/Owner: _____ State: <u>TN</u> Sampling Point: <u>DP 1</u>				
Investigator(s): <u>Jason Mann, Clayton Biden, Cierra Homic</u> Section, Township, Range: _____				
Landform (hillside, terrace, etc.): <u>hillside</u> Local relief (concave, convex, none): <u>none</u> Slope (%): _____				
Subregion (LRR or MLRA): <u>N 126</u> Lat: <u>35.3767 °</u> Long: <u>-84.5226 °</u> Datum: _____				
Soil Map Unit Name: <u>BM - Bloomingdale silty clay loam</u> NWI classification: <u>Freshwater Forested</u>				
Are climatic / hydrologic conditions on the site typical for this time of year? Yes <u>X</u> No _____ (If no, explain in Remarks.)				
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes <u>X</u> No _____				
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)				
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.				
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 40%; padding: 5px;"> Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____ </td> <td style="width: 60%; padding: 5px;"> Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ </td> </tr> </table>			Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
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Remarks:				
HYDROLOGY				
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13) </td> <td style="width: 40%; padding: 5px;"> <u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) _____ FAC-Neutral Test (D5) </td> </tr> </table>			Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

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

 Sampling Point: **DP1**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <i>Salix nigra</i>	5	Y	OBL	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)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
50% of total cover: _____		20% of total cover: _____		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>44</u></td> <td>x 1 = <u>44</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>189</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.89</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>44</u>	x 1 = <u>44</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species _____	x 3 = _____	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>100</u> (A)	<u>189</u> (B)	Prevalence Index = B/A = <u>1.89</u>	
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Column Totals: <u>100</u> (A)	<u>189</u> (B)																			
Prevalence Index = B/A = <u>1.89</u>																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
50% of total cover: _____		20% of total cover: _____																		
Herb Stratum (Plot size: _____)																				
1. <i>Juncus effusus</i>	30	Y	FACW	Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <i>Carex lurida</i>	10	N	OBL																	
3. <i>Solanum carolinense</i>	2	N	FACU																	
4. <i>Verbascum thapsus</i>	2	N	FACU																	
5. <i>Carduus nutans</i>	5	N	UPL																	
6. <i>Juniperus virginiana</i>	2	N	FACU																	
7. <i>Ligustrum sinense</i>	15	N	FACU																	
8. <i>Murdannia keisak</i>	25	N	OBL																	
9. <i>Alisma triviale</i>	4	N	OBL																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
50% of total cover: <u>X</u>		20% of total cover: _____																		
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: DP1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 6/1	100					Clay loam	

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

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)
☒ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☒ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 122, 136**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/1/22
 Applicant/Owner: _____ State: TN Sampling Point: DP2
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3763 ° Long: -84.5234 ° Datum: _____
 Soil Map Unit Name: Rk - Rockdell gravelly loam NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No x
 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 <u>x</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>x</u>
Hydric Soil Present? Yes _____ No <u>x</u>	
Wetland Hydrology Present? Yes _____ No <u>x</u>	
Remarks:	

HYDROLOGY

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

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

 Sampling Point: **DP2**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. <u>Festuca spp.</u>	100	Y	FAC	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>X</u> 20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

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 <u>100</u>	x 3 = <u>300</u>
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: <u>100</u> (A)	<u>300</u> (B)
Prevalence Index = B/A = <u>3.0</u>	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

B/A = 3.0

Hydrophytic Vegetation Present? Yes _____ No X

SOIL

Sampling Point: DP2[illegible]

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/1/22
 Applicant/Owner: _____ State: TN Sampling Point: DP3
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3740 ° Long: -84.5258 ° Datum: _____
 Soil Map Unit Name: TaC - Tasso Loam NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

 Sampling Point: **DP3**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	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)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>80</u></td> <td>x 1 = <u>80</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>120</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.20</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>80</u>	x 1 = <u>80</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>100</u> (A)	<u>120</u> (B)	Prevalence Index = B/A = <u>1.20</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>80</u>	x 1 = <u>80</u>																			
FACW species <u>20</u>	x 2 = <u>40</u>																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: <u>100</u> (A)	<u>120</u> (B)																			
Prevalence Index = B/A = <u>1.20</u>																				
50% of total cover: _____ 20% of total cover: _____																				
_____ = Total Cover																				
Sapling Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
<u>100</u> = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: _____)																				
1. <u>Juncus effusus</u>	<u>20</u>	<u>N</u>	<u>FACW</u>																	
2. <u>Carex lurida</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>																	
3. <u>Alisma triviale</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>																	
4. <u>Murdannia keisak</u>	<u>20</u>	<u>N</u>	<u>OBL</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>X</u> 20% of total cover: _____																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

B/A = 1.20

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: DP3

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- X** ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbritic Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ___ Red Parent Material (F21) (**MLRA 127, 147**)

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/1/22
Applicant/Owner: _____ State: TN Sampling Point: DP4
Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
Subregion (LRR or MLRA): N 126 Lat: 35.3740 ° Long: -84.5258 ° Datum: _____
Soil Map Unit Name: TaC - Tasso Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

HYDROLOGY

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

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

Sampling Point: DP4

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Sapling Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Shrub Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Herb Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Festuca spp.</u>	<u>100</u>	<u>Y</u>	<u>FAC</u>		
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
8.	_____	_____	_____	_____		
9.	_____	_____	_____	_____		
10.	_____	_____	_____	_____		
11.	_____	_____	_____	_____		
				<u>100</u> = Total Cover		
50% of total cover: <u>X</u> 20% of total cover: _____						
Woody Vine Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Remarks: (Include photo numbers here or on a separate sheet.)						

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 <u>100</u> x 3 = <u>300</u>	
FACU species _____ x 4 = _____	
UPL species _____ x 5 = _____	
Column Totals: _____ (A) _____ (B)	
Prevalence Index = B/A = <u>3.0</u>	
Hydrophytic Vegetation Indicators:	
___ 1 - Rapid Test for Hydrophytic Vegetation	
___ 2 - Dominance Test is >50%	
<u>X</u> 3 - Prevalence Index is ≤3.0 ¹	
___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
___ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Five Vegetation Strata:	
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
Woody vine – All woody vines, regardless of height.	
B/A = 3.0	
Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>

SOIL

Sampling Point: DP4

[illegible]

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP5
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3773° Long: -84.5391° Datum: _____
 Soil Map Unit Name: CnC2 - Coile silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> True Aquatic Plants (B14) <u>X</u> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

 Sampling Point: **DP5**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: _____)				
1. <u>Acer rubrum</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>5</u> = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. <u>Leersia oryzoides</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Solidago juncea</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
3. <u>Carduus nutans</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
4. <u>Carex lurida</u>	<u>10</u>	<u>N</u>	<u>OBL</u>	
5. <u>Juncus effusus</u>	<u>25</u>	<u>N</u>	<u>FACW</u>	
6. <u>Agrostis gigantea</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
7. <u>Rumex crispus</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>95</u> = Total Cover				
50% of total cover: <u>X</u> 20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

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 <u>40</u>	x 1 = <u>40</u>
FACW species <u>25</u>	x 2 = <u>50</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>20</u>	x 4 = <u>80</u>
UPL species <u>20</u>	x 5 = <u>100</u>
Column Totals: <u>100</u> (A)	<u>235</u> (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
 ___ 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

B/A = 2.35

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: DP5

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (**LRR N**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- X** ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbritic Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ___ Red Parent Material (F21) (**MLRA 127, 147**)

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP6
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3772° Long: -84.5392° Datum: _____
 Soil Map Unit Name: CnC2 - Colie silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

HYDROLOGY

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

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

Sampling Point: DP6

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Sapling Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Shrub Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Herb Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Festuca spp.</u>	<u>100</u>	<u>Y</u>	<u>FAC</u>		
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
7.	_____	_____	_____	_____	_____	_____
8.	_____	_____	_____	_____	_____	_____
9.	_____	_____	_____	_____	_____	_____
10.	_____	_____	_____	_____	_____	_____
11.	_____	_____	_____	_____	_____	_____
				<u>100</u> = Total Cover		
50% of total cover: <u>X</u> 20% of total cover: _____						
Woody Vine Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____ 20% of total cover: _____						
Remarks: (Include photo numbers here or on a separate sheet.)						

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 <u>100</u> x 3 = <u>300</u>	
FACU species _____ x 4 = _____	
UPL species _____ x 5 = _____	
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = <u>3.0</u>	
Hydrophytic Vegetation Indicators:	
___ 1 - Rapid Test for Hydrophytic Vegetation	
___ 2 - Dominance Test is >50%	
<u>X</u> 3 - Prevalence Index is ≤3.0 ¹	
___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
___ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Five Vegetation Strata:	
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
Woody vine – All woody vines, regardless of height.	
B/A = 3.0	
Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>

SOIL

Sampling Point: DP6

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (**LRR N**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbritic Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ___ Red Parent Material (F21) (**MLRA 127, 147**)

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP7
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3778° Long: -84.5383° Datum: _____
 Soil Map Unit Name: Eo - Etowah Loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> True Aquatic Plants (B14) <u>X</u> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

 Sampling Point: **DP7**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	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)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>70</u></td> <td>x 1 = <u>70</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>50</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>100</u></td> <td>(A) <u>165</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.65</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>70</u>	x 1 = <u>70</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>10</u>	x 4 = <u>50</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>100</u>	(A) <u>165</u> (B)	Prevalence Index = B/A = <u>1.65</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>70</u>	x 1 = <u>70</u>																			
FACW species <u>15</u>	x 2 = <u>30</u>																			
FAC species <u>5</u>	x 3 = <u>15</u>																			
FACU species <u>10</u>	x 4 = <u>50</u>																			
UPL species <u>10</u>	x 5 = <u>50</u>																			
Column Totals: <u>100</u>	(A) <u>165</u> (B)																			
Prevalence Index = B/A = <u>1.65</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: _____)																				
1. <u>Leersia oryzoides</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>																	
2. <u>Solidago juncea</u>	<u>10</u>	<u>N</u>	<u>UPL</u>																	
3. <u>Carex lurida</u>	<u>10</u>	<u>N</u>	<u>OBL</u>																	
4. <u>Juncus effusus</u>	<u>15</u>	<u>N</u>	<u>FACW</u>																	
5. <u>Rumex crispus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
<u>100</u> = Total Cover																				
50% of total cover: <u>X</u> 20% of total cover: _____																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

B/A = 1.65

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: DP7

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbritic Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ___ Red Parent Material (F21) (**MLRA 127, 147**)

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP8
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3776° Long: -84.5380° Datum: _____
 Soil Map Unit Name: WaC2—Waynesboro clay loam NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

HYDROLOGY

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

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

Sampling Point: DP8

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Sapling Stratum (Plot size: _____)						
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Shrub Stratum (Plot size: _____)						
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Herb Stratum (Plot size: _____)						
1.	<u>Festuca spp.</u>	<u>100</u>	<u>Y</u>	<u>FAC</u>		
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
7.	_____	_____	_____	_____	_____	_____
8.	_____	_____	_____	_____	_____	_____
9.	_____	_____	_____	_____	_____	_____
10.	_____	_____	_____	_____	_____	_____
11.	_____	_____	_____	_____	_____	_____
				<u>100</u> = Total Cover		
50% of total cover: <u>X</u>				20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)						
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Remarks: (Include photo numbers here or on a separate sheet.)						

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 <u>100</u>	x 3 = <u>300</u>
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B)
Prevalence Index = B/A = <u>3.0</u>	
Hydrophytic Vegetation Indicators:	
___ 1 - Rapid Test for Hydrophytic Vegetation	
___ 2 - Dominance Test is >50%	
<u>X</u> 3 - Prevalence Index is ≤3.0 ¹	
___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
___ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Five Vegetation Strata:	
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
Woody vine – All woody vines, regardless of height.	
B/A = 3.0	
Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>

SOIL

Sampling Point: DP8

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbritic Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP9
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3709° Long: -84.5236° Datum: _____
 Soil Map Unit Name: FgF2—Fullerton gravelly silt loam NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) <u>X</u> True Aquatic Plants (B14) <u>X</u> High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

 Sampling Point: **DP9**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: _____)																				
1. <u>Leersia oryzoides</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>																	
2. <u>Carex lurida</u>	<u>15</u>	<u>N</u>	<u>OBL</u>																	
3. <u>Juncus effusus</u>	<u>15</u>	<u>N</u>	<u>FACW</u>																	
4. <u>Rumex crispus</u>	<u>10</u>	<u>N</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
<u>100</u> = Total Cover																				
50% of total cover: <u>X</u> 20% of total cover: _____																				
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: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>75</u></td> <td>x 1 = <u>75</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>135</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.35</u></td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height. <div style="text-align: center; font-size: 1.2em; margin-top: 20px;">B/A = 1.35</div> Hydrophytic Vegetation Present? Yes <u>X</u> No _____					Total % Cover of:	Multiply by:	OBL species <u>75</u>	x 1 = <u>75</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>100</u> (A)	<u>135</u> (B)	Prevalence Index = B/A = <u>1.35</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>75</u>	x 1 = <u>75</u>																			
FACW species <u>15</u>	x 2 = <u>30</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: <u>100</u> (A)	<u>135</u> (B)																			
Prevalence Index = B/A = <u>1.35</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: DP9

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- X** ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbritic Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ___ Red Parent Material (F21) (**MLRA 127, 147**)

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP10
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3711° Long: -84.5235° Datum: _____
 Soil Map Unit Name: FgF2—Fullerton gravelly silt loam NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

HYDROLOGY

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

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

Sampling Point: DP10

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Sapling Stratum (Plot size: _____)						
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Shrub Stratum (Plot size: _____)						
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Herb Stratum (Plot size: _____)						
1.	<u>Festuca spp.</u>	<u>100</u>	<u>Y</u>	<u>FAC</u>		
2.	_____	_____	_____	_____		
3.	_____	_____	_____	_____		
4.	_____	_____	_____	_____		
5.	_____	_____	_____	_____		
6.	_____	_____	_____	_____		
7.	_____	_____	_____	_____		
8.	_____	_____	_____	_____		
9.	_____	_____	_____	_____		
10.	_____	_____	_____	_____		
11.	_____	_____	_____	_____		
				<u>100</u> = Total Cover		
50% of total cover: <u>X</u>				20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)						
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____	_____
				_____ = Total Cover		
50% of total cover: _____				20% of total cover: _____		
Remarks: (Include photo numbers here or on a separate sheet.)						

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 <u>100</u>	x 3 = <u>300</u>
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B)
Prevalence Index = B/A = <u>3.0</u>	
Hydrophytic Vegetation Indicators:	
___ 1 - Rapid Test for Hydrophytic Vegetation	
___ 2 - Dominance Test is >50%	
<u>X</u> 3 - Prevalence Index is ≤3.0 ¹	
___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
___ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Five Vegetation Strata:	
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).	
Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	
Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.	
Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.	
Woody vine – All woody vines, regardless of height.	
B/A = 3.0	
Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>

SOIL

Sampling Point: DP10

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbritic Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ___ Red Parent Material (F21) (**MLRA 127, 147**)

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP11
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3710° Long: -84.5259° Datum: _____
 Soil Map Unit Name: Eo—Etowah loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) <u>X</u> True Aquatic Plants (B14) <u>X</u> High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

 Sampling Point: **DP11**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. <u>Leersia oryzoides</u>	55	Y	OBL	
2. <u>Carex lurida</u>	15	N	OBL	
3. <u>Juncus effusus</u>	5	N	FACW	
4. <u>Rumex crispus</u>	10	N	FAC	
5. <u>Cyperus difformis</u>	15	N	OBL	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
100 = Total Cover				
50% of total cover: <u>X</u> 20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

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 <u>85</u>	x 1 = <u>85</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: <u>100</u> (A)	<u>125</u> (B)
Prevalence Index = B/A = <u>1.25</u>	

Hydrophytic Vegetation Indicators:
 _____ 1 - Rapid Test for Hydrophytic Vegetation
 _____ 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
 _____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

B/A = 1.25

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: DP11[illegible]

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/9/22
 Applicant/Owner: _____ State: TN Sampling Point: DP12
 Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): N 126 Lat: 35.3711° Long: -84.5257° Datum: _____
 Soil Map Unit Name: Eo—Etowah loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

HYDROLOGY

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

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

 Sampling Point: **DP12**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. <i>Festuca spp.</i>	100	Y		FAC
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: X 20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

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 100	x 3 = 300
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = 3.0	

Hydrophytic Vegetation Indicators:
 _____ 1 - Rapid Test for Hydrophytic Vegetation
 _____ 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
 _____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

B/A = 3.0

Hydrophytic Vegetation Present? Yes _____ No **X**

SOIL

Sampling Point: DP12

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

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

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (**LRR N**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbritic Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 1		Date/Time: 6/1/22 10:00
Assessors/Affiliation: Jason Mann, PE, TN-QHP # 1042-TN10, Cierra Homic, & Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003		Lat/Long: Lat: 35.3767° Long: -84.5226°
Previous Rainfall (7-days) : 1.24"		
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip data : NOAA		
Watershed Size : 179.2 acres	County: McMinn	
Soil Type(s) / Geology : Bm-Bloomingdale silty clay loam, TaC-Tasso loam, Ha-Hamblen silt loam		Source: WSS
Surrounding Land Use : Agricultural, Residential, and Commerical		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	Stream
7. Presence of naturally occurring ground water table connection	x	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 22.5

Justification / Notes :

Channel 1 Upstream Point - Lat: 35.3767°, Long: -84.5226°

Channel 1 Downstream Point - Lat: 35.3730°, Long: -84.5288°

Multiple culverts found in conjunction with the Channel

Secondary Field Indicator Evaluation

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

B. Hydrology (Subtotal = 5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ₁	3	2	1	0
21. Rooted plants in the thalweg ₁	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ₂	0	0.5	1	1.5

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 22.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 2		Date/Time: 6/1/22 10:30
Assessors/Affiliation: Jason Mann, PE, TN-QHP # 1042-TN10, Cierra Homic, & Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003		Lat/Long: Lat: 35.3730° Long: -84.5288°
Previous Rainfall (7-days) : 1.24"		
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : NOAA		
Watershed Size : 25.6 acres	County: McMinn	
Soil Type(s) / Geology : Bm-Bloomingdale silty clay loam, TaC-Tasso loam, Ha-Hamblen silt loam		Source: WSS
Surrounding Land Use : Agricultural, Residential, and Commerical		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	Stream
7. Presence of naturally occurring ground water table connection	x	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = WWC
Secondary Indicator Score (if applicable) = 6.5

Justification / Notes :

Channel 2 Upstream Point - Lat: 35.3730°, Long: -84.5288°
Channel 2 Downstream Point - Lat: 35.3735°, Long: -84.5282°

Secondary Field Indicator Evaluation

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

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

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

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 6.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 3		Date/Time: 6/9/22 14:00
Assessors/Affiliation: Jason Mann, Cierra Homic, and Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003		Lat/Long:
Previous Rainfall (7-days) : 1.18"		Lat: 35.3772° Long: -84.5398°
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : NOAA		
Watershed Size : 96 Acres	County: McMinn	
Soil Type(s) / Geology : CnC2—Coile silt loam, Eo—Etowah loam		Source: WWS
Surrounding Land Use : Agricultural & Residential		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	Stream
7. Presence of naturally occurring ground water table connection	x	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = Stream
Secondary Indicator Score (if applicable) = 26

Justification / Notes : Upstream Point - Lat: 35.3780°, Long: -84.5385°
 Downstream Point - Lat: 35.3709°, Long: -84.5229°

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 7.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = 7)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ₁	3	2	1	0
21. Rooted plants in the thalweg ₁	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ₂	0	0.5	1	1.5

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 26

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 4		Date/Time: 6/9/22 14:10
Assessors/Affiliation: Jason Mann, Cierra Homic, and Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003		Lat/Long:
Previous Rainfall (7-days) : 1.18"		Lat: 35.3772° Long: -84.5398°
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : NOAA		
Watershed Size : 96 Acres	County: McMinn	
Soil Type(s) / Geology : CnC2—Coile silt loam, Eo—Etowah loam		Source: WWS
Surrounding Land Use : Agricultural & Residential		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	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	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = Stream
Secondary Indicator Score (if applicable) = 20.5

Justification / Notes : Upstream Point - Lat: 35.3769°, Long: -84.5397°
Downstream Point - Lat: 35.3772°, Long: -84.5398°

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 6)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ₁	3	2	1	0
21. Rooted plants in the thalweg ₁	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ₂	0	0.5	1	1.5

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 20.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 5		Date/Time: 6/9/22 14:15
Assessors/Affiliation: Jason Mann, Cierra Homic, and Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003		Lat/Long:
Previous Rainfall (7-days) : 1.18"		Lat: 35.3772° Long: -84.5398°
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : NOAA		
Watershed Size : 96 Acres	County: McMinn	
Soil Type(s) / Geology : CnC2—Coile silt loam, Eo—Etowah loam		Source: WWS
Surrounding Land Use : Agricultural & Residential		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	Stream
7. Presence of naturally occurring ground water table connection	x	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = WWC
Secondary Indicator Score (if applicable) = 12.5

Justification / Notes : Upstream Point - Lat: 35.3774°, Long: -84.5400°
Downstream Point - Lat: 35.3772°, Long: -84.5398°

Secondary Field Indicator Evaluation

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

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

C. Biology (Subtotal = 3.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ₁	3	2	1	0
21. Rooted plants in the thalweg ₁	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ₂	0	0.5	1	1.5

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 12.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 6		Date/Time: 6/9/22 14:30
Assessors/Affiliation: Jason Mann, Cierra Homic, and Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003	Lat/Long:	
Previous Rainfall (7-days) : 1.18"	Lat: 35.3780° Long: -84.5385°	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : NOAA		
Watershed Size : 96 Acres	County: McMinn	
Soil Type(s) / Geology : CnC2—Coile silt loam, Eo—Etowah loam		Source: WWS
Surrounding Land Use : Agricultural & Residential		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	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	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = STREAM
Secondary Indicator Score (if applicable) = 19

Justification / Notes : Upstream Point - Lat: 35.3779°, Long: -84.5375°

Downstream Point - Lat: 35.3780°, Long: -84.5385°

Secondary Field Indicator Evaluation

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

B. Hydrology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ₁	3	2	1	0
21. Rooted plants in the thalweg ₁	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ₂	0	0.5	1	1.5

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 19

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: Channel 7		Date/Time: 6/9/22 16:00
Assessors/Affiliation: Jason Mann, Cierra Homic, and Clayton Biden		Project ID : 24-22451
Site Name/Description: Etowah Industrial Park		
Site Location: Map 097, Parcel 018.00 and Map 087, Parcel 206.00		
HUC (12 digit): 060200021003		Lat/Long:
Previous Rainfall (7-days) : 1.18"		Lat: 35.3709° Long: -84.5229°
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown Source of recent & seasonal precip data : NOAA		
Watershed Size : 96 Acres	County: McMinn	
Soil Type(s) / Geology : CnC2—Coile silt loam, Eo—Etowah loam		Source: WWS
Surrounding Land Use : Agricultural & Residential		
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	x	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	x	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	x	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	x	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	x	Stream
6. Presence of fish (except <i>Gambusia</i>)	x	Stream
7. Presence of naturally occurring ground water table connection	x	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	x	Stream
9. Evidence watercourse has been used as a supply of drinking water	x	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

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

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

Overall Hydrologic Determination = STREAM
Secondary Indicator Score (if applicable) = 25.5

Justification / Notes : Upstream Point - Lat: 35.3709°, Long: -84.5229°
Downstream Point - Lat: 35.3708°, Long: -84.5260°

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 9)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = 5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed ₁	3	2	1	0
21. Rooted plants in the thalweg ₁	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel bed ₂	0	0.5	1	1.5

1 Focus is on the presence of **terrestrial** plants.

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

Total Points = 25.5

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

Notes :

[illegible]

Appendix D
Weather Data

Normal Weather Conditions

Calculations Table

Knoxville –2022

Long-term rainfall records										
	Month	Standard Deviation	Minus One Std. Dev. (DRY)	Normal (Mean inches)	Plus One Std. Dev. (WET)	Actual Rainfall	Condition (elevated, low, average)	Condition value	Month weight value	Product of previous two columns
1 st prior month*	MAY	1.96	1.84	3.80	5.76	4.77	AVE	2	3	6
2 nd prior month*	APR	1.83	1.92	3.75	5.58	3.68	AVE	2	2	4
3 rd prior month*	MAR	2.18	2.61	4.79	6.97	3.69	AVE	2	1	2
									Sum =	12

Note:

If sum is:	13 - Average
6-9	then prior period has been abnormally dry
10-14	then prior period has been normal (average)
15-18	Then prior period has been abnormally wet

Condition value:	
Low =	1
Average =	2
Elevated =	3

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CXUS54 KMRX 021332
CLMTYS

CLIMATE REPORT
NATIONAL WEATHER SERVICE MORRISTOWN, TN
932 AM EDT THU JUN 02 2022

.....

...THE KNOXVILLE MCGHEE TYSON AIRPORT CLIMATE SUMMARY FOR THE MONTH OF MAY 2022...

CLIMATE NORMAL PERIOD: 1991 TO 2020

CLIMATE RECORD PERIOD: 1871 TO 2022

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL
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TEMPERATURE (F)

HIGHEST	90	05/20		
		05/21		
LOWEST	52	05/09		
AVG. MAXIMUM	81.2		78.9	2.3
AVG. MINIMUM	60.5		56.9	3.6
MEAN	70.9		67.9	3.0
DAYS MAX >= 90	2			
DAYS MAX <= 32	0			
DAYS MIN <= 32	0			
DAYS MIN <= 0	0			

PRECIPITATION (INCHES)

RECORD

MAXIMUM	10.98	1974		
MINIMUM	0.71	1941		
TOTALS	4.77		4.13	0.64
DAYS >= .01	10			
DAYS >= .10	7			
DAYS >= .50	4			
DAYS >= 1.00	2			
GREATEST				
24 HR. TOTAL	1.90	05/22 TO 05/23		

SNOWFALL (INCHES)

TOTALS	0.0		0.0	0.0
SINCE 7/1	10.7			
SNOWDEPTH AVG.	0			
DAYS >= TRACE	0			
GREATEST				
SNOW DEPTH	0			

DEGREE DAYS

HEATING TOTAL	9		53	-44
SINCE 7/1	3153		3525	-372
COOLING TOTAL	202		143	59
SINCE 1/1	241		184	57

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WEATHER CONDITIONS. NUMBER OF DAYS WITH

THUNDERSTORM	6	RAIN	7
SNOW	0	FOG	14

FOG W/VIS <= 1/4 MILE 1

- INDICATES NEGATIVE NUMBERS.
R INDICATES RECORD WAS SET OR TIED.
MM INDICATES DATA IS MISSING.
T INDICATES TRACE AMOUNT.

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CXUS54 KMRX 021904

CLMCHA

CLIMATE REPORT

NATIONAL WEATHER SERVICE MORRISTOWN, TN

304 PM EDT MON MAY 02 2022

.....

...THE CHATTANOOGA AIRPORT CLIMATE SUMMARY FOR THE MONTH OF **APRIL** 2022...

CLIMATE NORMAL PERIOD: 1991 TO 2020

CLIMATE RECORD PERIOD: 1879 TO 2022

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL
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TEMPERATURE (F)

HIGHEST	85	04/25		
LOWEST	33	04/10		
AVG. MAXIMUM	73.2		73.6	-0.4
AVG. MINIMUM	48.9		49.9	-1.0
MEAN	61.0		61.7	-0.7
DAYS MAX >= 90	0			
DAYS MAX <= 32	0			
DAYS MIN <= 32	0			
DAYS MIN <= 0	0			

PRECIPITATION (INCHES)

RECORD

MAXIMUM	15.29	1911		
MINIMUM	0.44	1942		
TOTALS	3.26		4.87	-1.61
DAYS >= .01	8			
DAYS >= .10	6			
DAYS >= .50	3			
DAYS >= 1.00	0			
GREATEST				
24 HR. TOTAL	1.13	04/13 TO 04/14		

SNOWFALL (INCHES)

TOTALS	0.0		0.0	0.0
SINCE 7/1	1.0			
SNOWDEPTH AVG.	0			
DAYS >= TRACE	0			
GREATEST				
SNOW DEPTH	0			

DEGREE DAYS

HEATING TOTAL	158		147	11
SINCE 7/1	2649		2996	-347
COOLING TOTAL	48		50	-2
SINCE 1/1	61		61	0

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WEATHER CONDITIONS. NUMBER OF DAYS WITH

THUNDERSTORM	5	RAIN	6
SNOW	0	FOG	8
FOG W/VIS <= 1/4 MILE	0		

- INDICATES NEGATIVE NUMBERS.
R INDICATES RECORD WAS SET OR TIED.
MM INDICATES DATA IS MISSING.
T INDICATES TRACE AMOUNT.

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CXUS54 KMRX 011345

CLMCHA

CLIMATE REPORT

NATIONAL WEATHER SERVICE MORRISTOWN, TN

945 AM EDT FRI APR 01 2022

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...THE CHATTANOOGA AIRPORT CLIMATE SUMMARY FOR THE MONTH OF **MARCH** 2022...

CLIMATE NORMAL PERIOD: 1991 TO 2020

CLIMATE RECORD PERIOD: 1879 TO 2022

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL
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TEMPERATURE (F)

HIGHEST	83	03/30		
LOWEST	22	03/13		
AVG. MAXIMUM	68.1		64.1	4.0
AVG. MINIMUM	43.1		42.2	0.9
MEAN	55.6		53.2	2.4
DAYS MAX >= 90	0			
DAYS MAX <= 32	0			
DAYS MIN <= 32	3			
DAYS MIN <= 0	0			

PRECIPITATION (INCHES)

RECORD

MAXIMUM	16.32	1980		
MINIMUM	0.93	1910		
TOTALS	5.91		5.34	0.57
DAYS >= .01	11			
DAYS >= .10	10			
DAYS >= .50	5			
DAYS >= 1.00	2			
GREATEST				
24 HR. TOTAL	1.88	03/08 TO 03/09		

SNOWFALL (INCHES)

TOTALS	1.0		1.1	-0.1
SINCE 7/1	1.0			
SNOWDEPTH AVG.	0			
DAYS >= TRACE	1			
GREATEST				
SNOW DEPTH	1	03/12		

DEGREE DAYS

HEATING TOTAL	292		377	-85
SINCE 7/1	2491		2848	-357
COOLING TOTAL	8		10	-2
SINCE 1/1	13		11	2

.....

WEATHER CONDITIONS. NUMBER OF DAYS WITH

THUNDERSTORM	4	RAIN	10
SNOW	0	FOG	13
FOG W/VIS <= 1/4 MILE	0		

- INDICATES NEGATIVE NUMBERS.
R INDICATES RECORD WAS SET OR TIED.
MM INDICATES DATA IS MISSING.
T INDICATES TRACE AMOUNT.

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WFO Monthly/Daily Climate Data

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CXUS54 KMRX 011030

CF6TYS

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

7-Day Rainfall
1.24"

STATION: KNOXVILLE MCGHEE TYSON AIRPORT
MONTH: MAY
YEAR: 2022
LATITUDE: 35 49 N
LONGITUDE: 83 59 W

TEMPERATURE IN F:					:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND			
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	78	65	72	8	0	7	0.45	0.0	0	12.1	23	220	M	M	6	13	30	220
2	81	59	70	6	0	5	0.00	0.0	0	3.9	13	210	M	M	7	1	17	210
3	83	57	70	5	0	5	0.00	0.0	0	11.7	30	230	M	M	6		41	220
4	81	62	72	7	0	7	0.01	0.0	0	9.5	17	240	M	M	8	13	28	240
5	82	55	69	4	0	4	0.26	0.0	0	3.9	15	320	M	M	8	13	19	320
6	76	57	67	2	0	2	0.72	0.0	0	10.3	47	240	M	M	9	135	64	250
7	63	55	59	-7	6	0	0.15	0.0	0	8.9	17	260	M	M	10	1	23	250
8	69	54	62	-4	3	0	0.00	0.0	0	6.6	14	30	M	M	9		17	30
9	78	52	65	-1	0	0	0.00	0.0	0	3.0	9	40	M	M	4		16	20
10	82	55	69	3	0	4	0.00	0.0	0	2.9	9	350	M	M	3	1	13	360
11	84	57	71	4	0	6	0.00	0.0	0	2.6	10	240	M	M	4		14	250
12	83	58	71	4	0	6	0.00	0.0	0	5.1	16	40	M	M	3	1	21	20
13	82	63	73	6	0	8	0.04	0.0	0	4.9	18	140	M	M	6	3	25	130
14	82	60	71	4	0	6	0.00	0.0	0	3.6	10	290	M	M	7	12	15	310
15	82	63	73	5	0	8	0.00	0.0	0	4.7	14	270	M	M	4		19	280
16	81	58	70	2	0	5	0.00	0.0	0	6.9	15	230	M	M	5		20	230
17	82	54	68	0	0	3	0.00	0.0	0	2.1	10	320	M	M	3		14	20
18	86	54	70	2	0	5	0.00	0.0	0	8.0	22	220	M	M	7		29	240
19	89	70	80	11	0	15	0.00	0.0	0	11.8	22	210	M	M	8		29	200
20	90	72	81	12	0	16	0.00	0.0	0	14.3	29	230	M	M	5		38	230
21	90	70	80	11	0	15	T	0.0	0	7.9	20	240	M	M	4		29	240
22	86	67	77	8	0	12	0.58	0.0	0	9.2	24	230	M	M	5	13	29	220
23	70	61	66	-4	0	1	1.32	0.0	0	6.8	17	20	M	M	10	1	24	40
24	77	62	70	0	0	5	T	0.0	0	4.5	10	30	M	M	10	1	14	40
25	86	65	76	6	0	11	T	0.0	0	7.0	21	180	M	M	9		28	190
26	79	66	73	3	0	8	1.18	0.0	0	5.8	21	170	M	M	10	1	28	160
27	77	62	70	-1	0	5	0.06	0.0	0	9.1	23	260	M	M	7	1	30	240
28	77	57	67	-4	0	2	0.00	0.0	0	4.3	9	10	M	M	6		13	360
29	85	58	72	1	0	7	0.00	0.0	0	2.9	9	290	M	M	3		13	310
30	88	63	76	4	0	11	T	0.0	0	4.2	16	80	M	M	3		23	70
31	89	66	78	6	0	13	0.00	0.0	0	3.5	12	270	M	M	2		14	260
SM	2518	1877			9	202	4.77	0.0		202.0			M		191			
AV	81.2	60.5								6.5	FASTST		M	M	6		MAX(MPH)	
										47	240						64	250

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: KNOXVILLE MCGHEE TYSON AIRPORT
 MONTH: MAY
 YEAR: 2022
 LATITUDE: 35 49 N
 LONGITUDE: 83 59 W

[TEMPERATURE DATA]

[PRECIPITATION DATA]

SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 70.9	TOTAL FOR MONTH: 4.77	1 = FOG OR MIST
DPTR FM NORMAL: 3.0	DPTR FM NORMAL: 0.64	2 = FOG REDUCING VISIBILITY
HIGHEST: 90 ON 21,20	GRTST 24HR 1.90 ON 22-23	TO 1/4 MILE OR LESS
LOWEST: 52 ON 9		3 = THUNDER
	SNOW, ICE PELLETS, HAIL	4 = ICE PELLETS
	TOTAL MONTH: 0.0 INCH	5 = HAIL
	GRTST 24HR 0.0	6 = FREEZING RAIN OR DRIZZLE
	GRTST DEPTH: 0	7 = DUSTSTORM OR SANDSTORM:
		VSBY 1/2 MILE OR LESS

[NO. OF DAYS WITH]

[WEATHER - DAYS WITH]

MAX 32 OR BELOW: 0	0.01 INCH OR MORE: 10
MAX 90 OR ABOVE: 2	0.10 INCH OR MORE: 7
MIN 32 OR BELOW: 0	0.50 INCH OR MORE: 4
MIN 0 OR BELOW: 0	1.00 INCH OR MORE: 2

[HDD (BASE 65)]

TOTAL THIS MO. 9	CLEAR (SCALE 0-3) 3
DPTR FM NORMAL -44	PTCLDY (SCALE 4-7) 20
TOTAL FM JUL 1 3153	CLOUDY (SCALE 8-10) 8
DPTR FM NORMAL -372	

[CDD (BASE 65)]

TOTAL THIS MO. 202	
DPTR FM NORMAL 59	[PRESSURE DATA]
TOTAL FM JAN 1 241	HIGHEST SLP 30.28 ON 10
DPTR FM NORMAL 57	LOWEST SLP 29.49 ON 6

[REMARKS]

#FINAL-05-22#

WFO Monthly/Daily Climate Data

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CXUS54 KMRX 101030

CF6TYS

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

7 Day Rainfall: 0.8"

STATION: KNOXVILLE MCGHEE TYSON AIRPORT
MONTH: JUNE
YEAR: 2022
LATITUDE: 35 49 N
LONGITUDE: 83 59 W

TEMPERATURE IN F:					:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND			
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	91	68	80	8	0	15	0.00	0.0	0	3.7	10	260	M	M	2		14	260
2	87	68	78	6	0	13	0.37	0.0	0	6.1	18	50	M	M	7	3	33	40
3	81	64	73	1	0	8	0.01	0.0	0	5.5	14	30	M	M	8		20	30
4	81	61	71	-2	0	6	0.00	0.0	0	7.7	16	20	M	M	5		23	30
5	84	61	73	0	0	8	0.00	0.0	0	4.0	10	110	M	M	6		15	90
6	86	62	74	1	0	9	0.05	0.0	0	5.7	25	240	M	M	7	13	35	240
7	82	67	75	1	0	10	0.48	0.0	0	9.0	24	200	M	M	9	13	30	200
8	83	69	76	2	0	11	0.27	0.0	0	10.1	33	230	M	M	10	13	39	230
9	82	64	73	-1	0	8	0.00	0.0	0	7.2	16	250	M	M	6		25	270
SM	757	584			0	88	1.18	0.0		59.0			M		60			
AV	84.1	64.9								6.6	FASTST		M	M	7	MAX(MPH)		
								MISC	----		33	230					39	230

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: KNOXVILLE MCGHEE TYSON AIRPORT
MONTH: JUNE
YEAR: 2022
LATITUDE: 35 49 N
LONGITUDE: 83 59 W

[TEMPERATURE DATA]

[PRECIPITATION DATA]

SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 74.5

DPTR FM NORMAL: 1.5

HIGHEST: 91 ON 1

LOWEST: 61 ON 5, 4

TOTAL FOR MONTH: 1.18

DPTR FM NORMAL: 0.01

GRTST 24HR 0.53 ON 6- 7

SNOW, ICE PELLETS, HAIL

TOTAL MONTH: 0.0 INCH

GRTST 24HR 0.0

1 = FOG OR MIST

2 = FOG REDUCING VISIBILITY

TO 1/4 MILE OR LESS

3 = THUNDER

4 = ICE PELLETS

5 = HAIL

6 = FREEZING RAIN OR DRIZZLE

GRTST DEPTH: 0

7 = DUSTSTORM OR SANDSTORM:

VSBY 1/2 MILE OR LESS

8 = SMOKE OR HAZE

9 = BLOWING SNOW

X = TORNADO

[NO. OF DAYS WITH]

[WEATHER - DAYS WITH]

MAX 32 OR BELOW:	0	0.01 INCH OR MORE:	5
MAX 90 OR ABOVE:	1	0.10 INCH OR MORE:	3
MIN 32 OR BELOW:	0	0.50 INCH OR MORE:	0
MIN 0 OR BELOW:	0	1.00 INCH OR MORE:	0

[HDD (BASE 65)]

TOTAL THIS MO.	0	CLEAR (SCALE 0-3)	1
DPTR FM NORMAL	0	PTCLDY (SCALE 4-7)	6
TOTAL FM JUL 1	3153	CLOUDY (SCALE 8-10)	2
DPTR FM NORMAL	-374		

[CDD (BASE 65)]

TOTAL THIS MO.	88		
DPTR FM NORMAL	14	[PRESSURE DATA]	
TOTAL FM JAN 1	329	HIGHEST SLP M ON M	
DPTR FM NORMAL	71	LOWEST SLP 29.79 ON	2

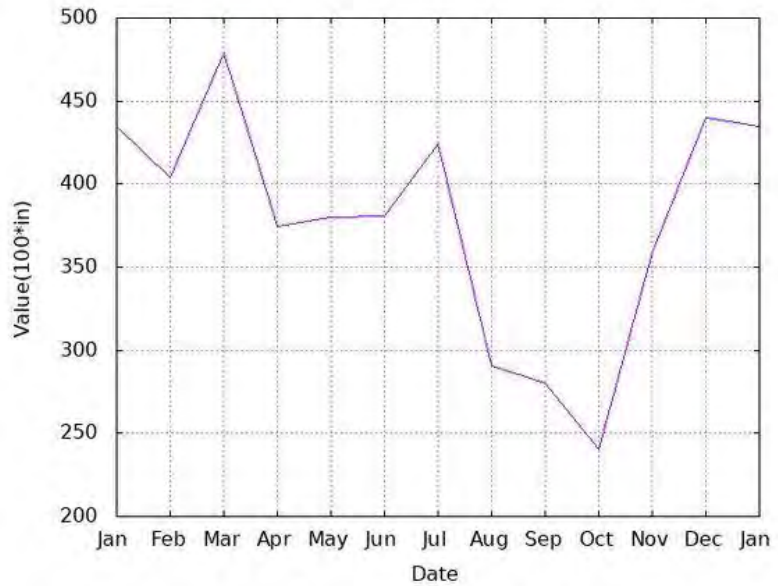
[REMARKS]

Knoxville Normal Weather Data

1991-2020

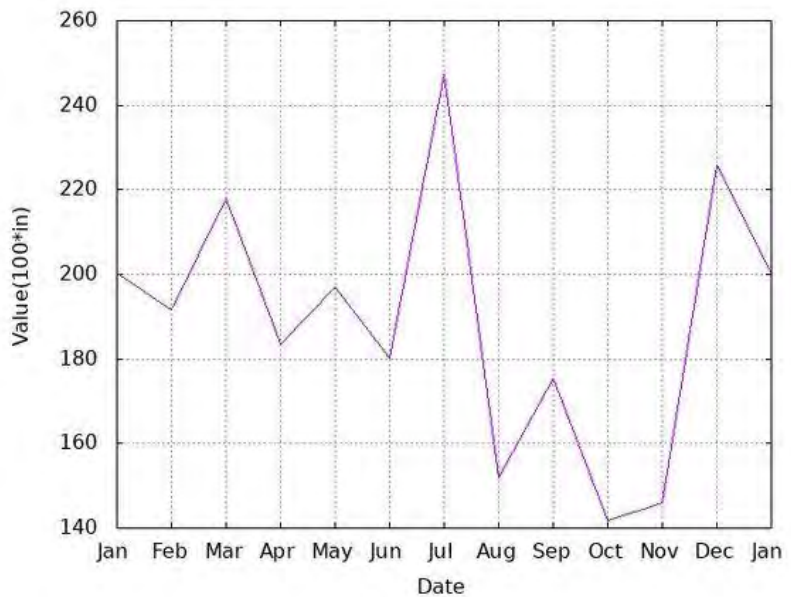
Mean (in.)

- 1) 4.346
- 2) 4.037
- 3) 4.790
- 4) 3.750
- 5) 3.802
- 6) 3.807
- 7) 4.239
- 8) 2.906
- 9) 2.803
- 10) 2.404
- 11) 3.586
- 12) 4.401



Standard Deviation (in.)

- 1) 2.002
- 2) 1.915
- 3) 2.180
- 4) 1.835
- 5) 1.969
- 6) 1.800
- 7) 2.474
- 8) 1.519
- 9) 1.754
- 10) 1.419
- 11) 1.459
- 12) 2.256



Appendix E
Certifications



11/1/10

Jason Mann
TDEC
3711 Middlebrook Pike
Knoxville, TN 37921

RE: Tennessee Qualified Hydrologic Professional Certification

Dear Mr. Mann

Congratulations, you have successfully completed the Tennessee Hydrologic Determination course. By completing the TN-HDT course, you have also earned 20 Professional Development Hours (PDH). You have now met all the requirements to become a certificated Tennessee Qualified Hydrologic Professional (TN-QHP). Your TN-QHP certification card is attached below.

The TN-QHP certification is valid for three years. You must complete a refresher course within that three year period and submit evidence of course completion along with a renewal application at least 90 days before expiration of your certificate. Should you allow your certification to lapse after 3 years, you will be required to retake the TN-HDT course and submit a new application in order to become a certified TN-QHP.

Please refer to the TDEC website, <http://tn.gov/environment/wpc> or the TN-HDT training website, www.tnhdt.org for refresher course details and application forms.

Sincerely,

Paul E. Davis, Director
Water Pollution Control

Cc: Timothy Gangaware
TN-HDT Training Program
Coordinator



Tennessee Qualified
Hydrologic Professional



This card certifies that:

Jason Mann

has successfully completed the 3-day TN HDT course and is a
Tennessee Qualified Hydrologic Professional

Certification number **1042-TN10**

Expires: **12/31/2014**

Paul E. Davis, P.E.
Director, TDEC-WPC

Timothy Gangaware, AICP
Director, TNWRRC-UT

Tennessee Department of Environment & Conservation



This is to certify that

Jason Mann

has successfully completed the three day course to become a
Tennessee Qualified Hydrologic Professional

TN QHP Number 1042-TN10

Paul E. Davis

Paul E. Davis, P.E.

Timothy Gangaware

Timothy Gangaware, A.I.C.P



*This certifies that the recipient has earned 20
Professional Development Hours*



Tennessee Department of Environment & Conservation

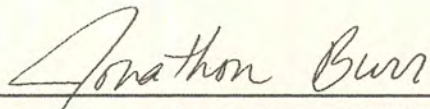


This is to certify that

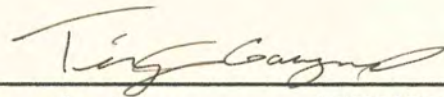
Jason Mann

successfully completed the one-day
Tennessee Hydrologic Determination Refresher Course

September 22, 2020



Jonathon Burr, DWR



Timothy Gangaware, TNWRRC



*This certifies that the recipient has earned 6
Professional Development Hours*



FW: Updated Etowah Waters Report 062222

Jason Dees <Jason.Dees@tn.gov>

Wed 6/22/2022 4:02 PM

To: Cali Dobbins <Cali.Dobbins@tn.gov>

 1 attachments (14 MB)

Revised Etowah Industrial Park Report 062222.pdf;

Upload please.

From: Jason Mann <jmann@geoservicesllc.com>**Sent:** Wednesday, June 22, 2022 2:23 PM**To:** John Gentry (jgentry@mcminncountytn.gov) <jgentry@mcminncountytn.gov>; Jason Dees <Jason.Dees@tn.gov>**Cc:** Cierra Homic <chomic@geoservicesllc.com>; Clay Biden <cbiden@geoservicesllc.com>; Byron Barton <bbarton@geoservicesllc.com>**Subject:** [EXTERNAL] Updated Etowah Waters Report 062222

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Hello All,

GEOServices was asked to include the pond as a jurisdictional water.

This report has been updated to reflect that the pond is jurisdictional.

This should satisfy TDEC's needs.

Please let me know if we can be of further service.

Thanks for everything.

Sincerely,

Jason Mann, PE

Senior Project Manager

GEOServices, LLC

2561 Willow Point Way

Knoxville, TN 37931

Cell: 865-776-8208

jmann@geoservicesllc.com