



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**), Channel 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.

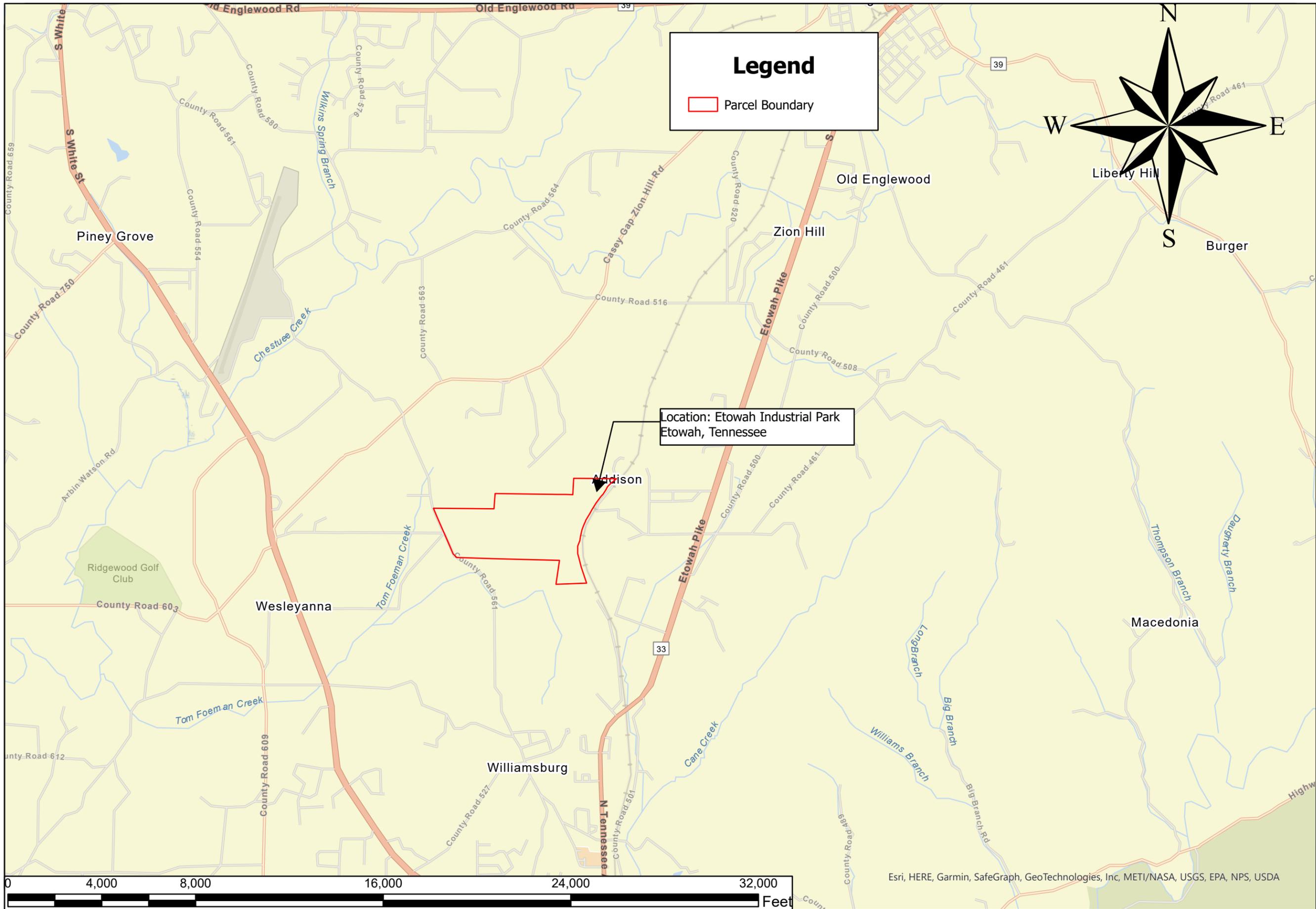
Wetland E – An approximately 0.35-acre wetland was delineated during this investigation. The jurisdictional feature is hydrologically connected to a stream (Channel 7) on site.

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.

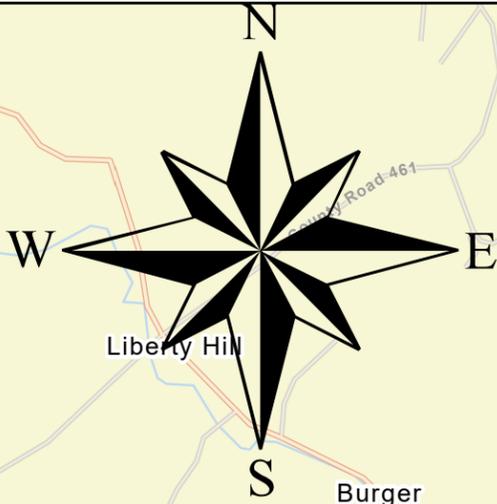
Figure 2 illustrates the georeferenced locations of the water resources in question, and is included in **Appendix A**.

Appendix A
Figures



Legend

Parcel Boundary



Location: Etowah Industrial Park
Etowah, Tennessee

NOTES:

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



Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

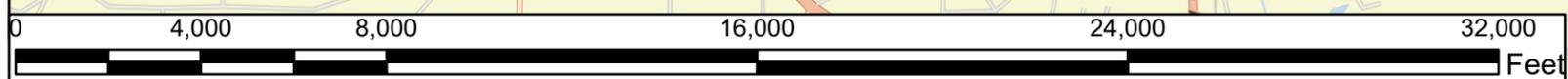
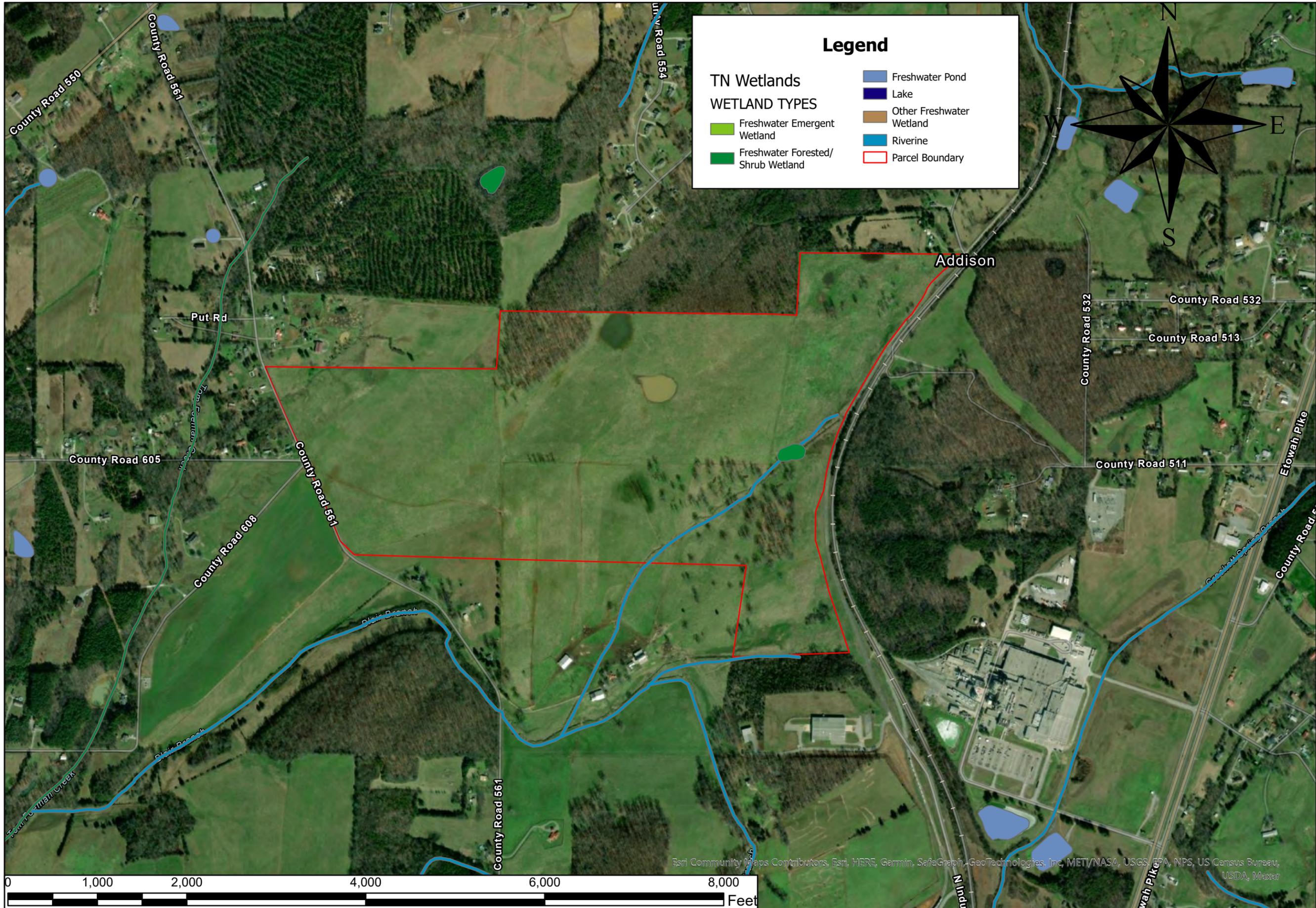


FIGURE 1



Legend

TN Wetlands	
WETLAND TYPES	
Freshwater Emergent Wetland	Freshwater Pond
Freshwater Forested/Shrub Wetland	Lake
	Other Freshwater Wetland
	Riverine
	Parcel Boundary

NOTES:

REVISED NWI MAP

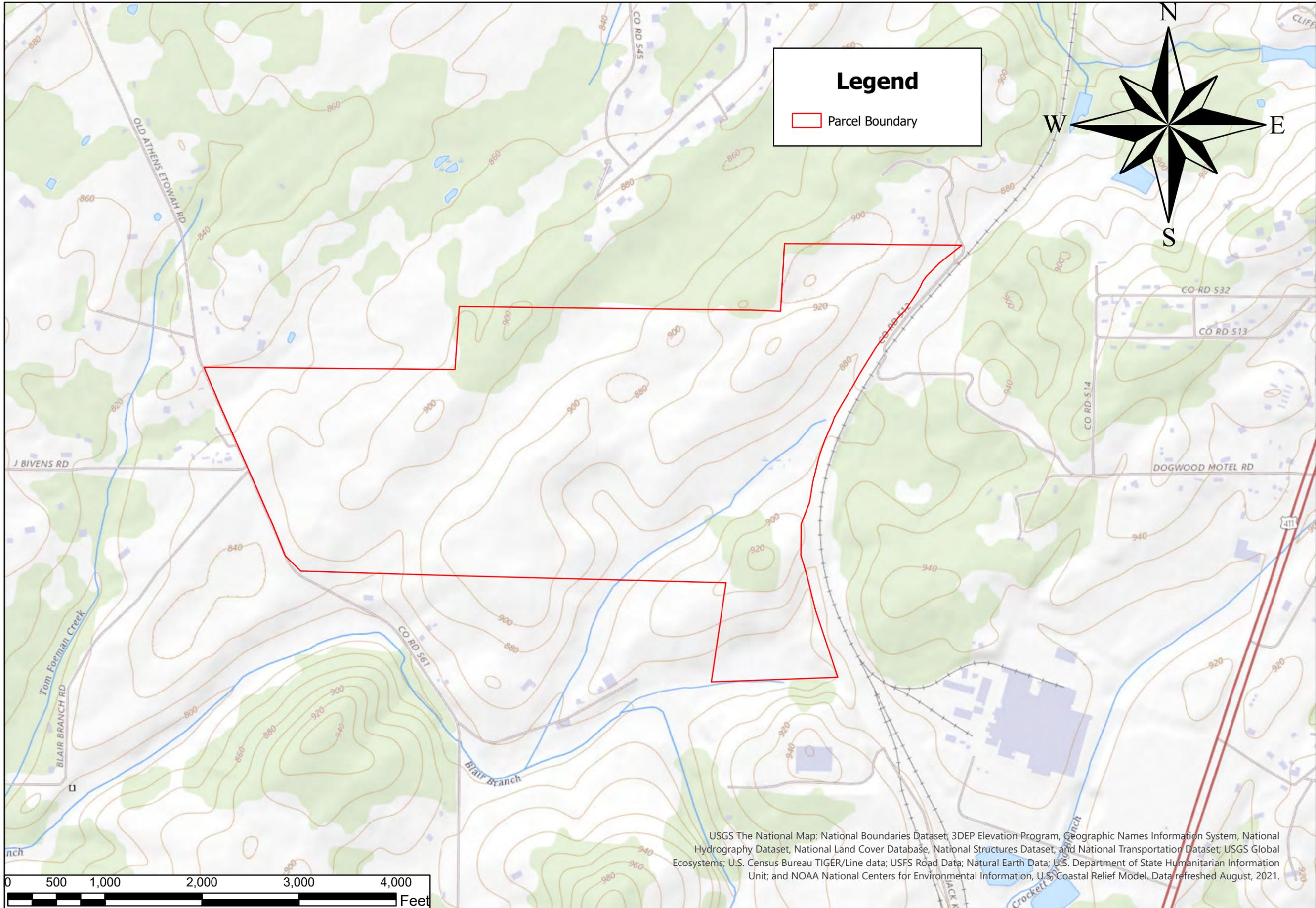
WATER RESOURCE INVENTORY
 ETOWAH INDUSTRIAL PARK
 ETOWAH, TENNESSEE

DRAWN BY:	CB
REVIEWED BY:	JM
SCALE:	AS SHOWN
JOB NO.:	24-22451
DATE:	6/10/22



Esri Community Maps Contributors, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar

FIGURE 5



Legend

Parcel Boundary



NOTES:

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



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.

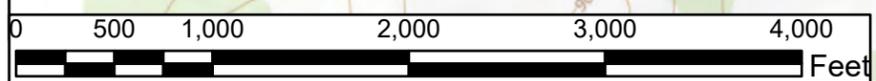
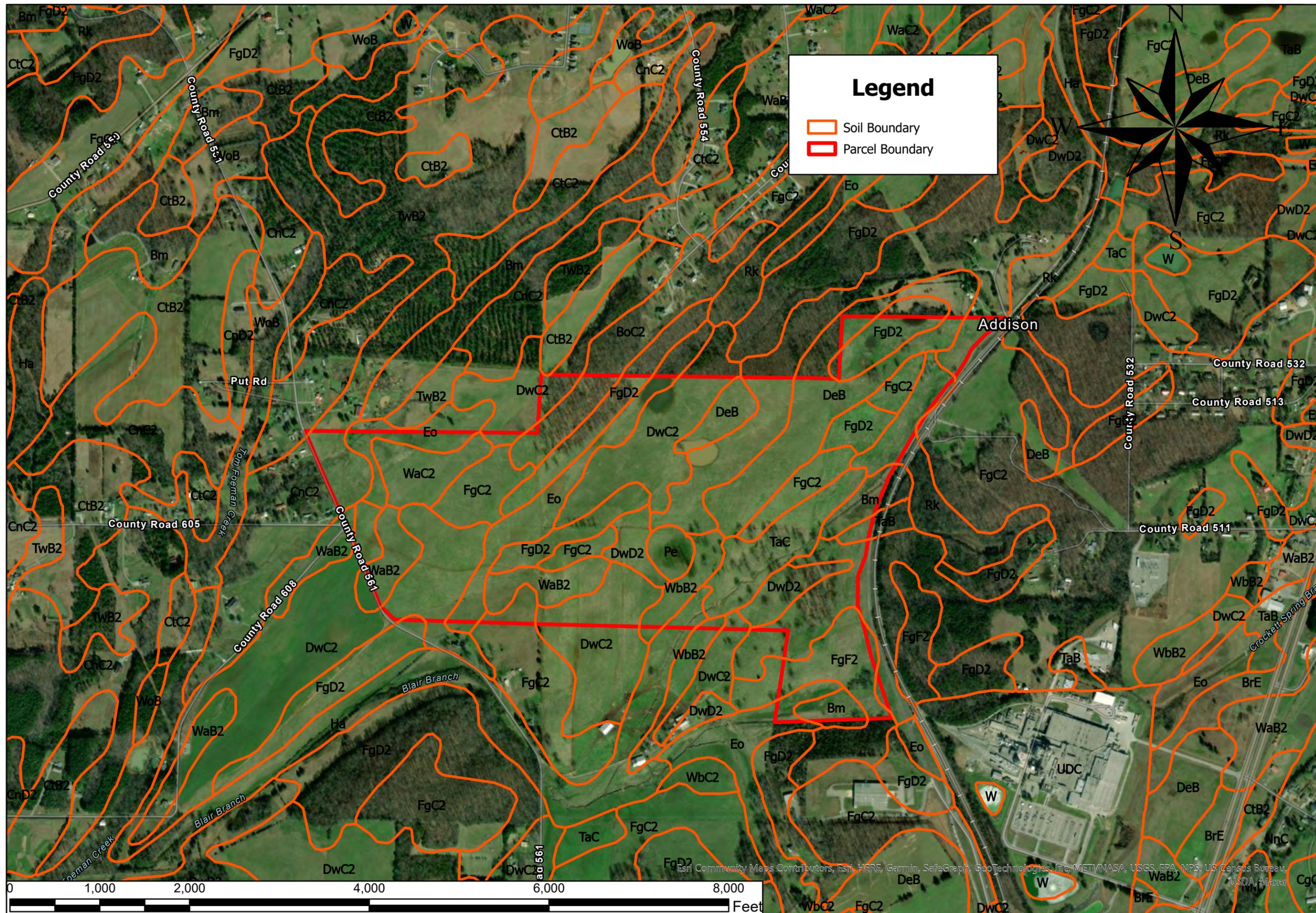


FIGURE 3



Legend

- Soil Boundary
- Parcel Boundary



NOTES:

REVISED SOIL MAP
WATER RESOURCE INVENTORY ETOWAH INDUSTRIAL PARK ETOWAH, TENNESSEE

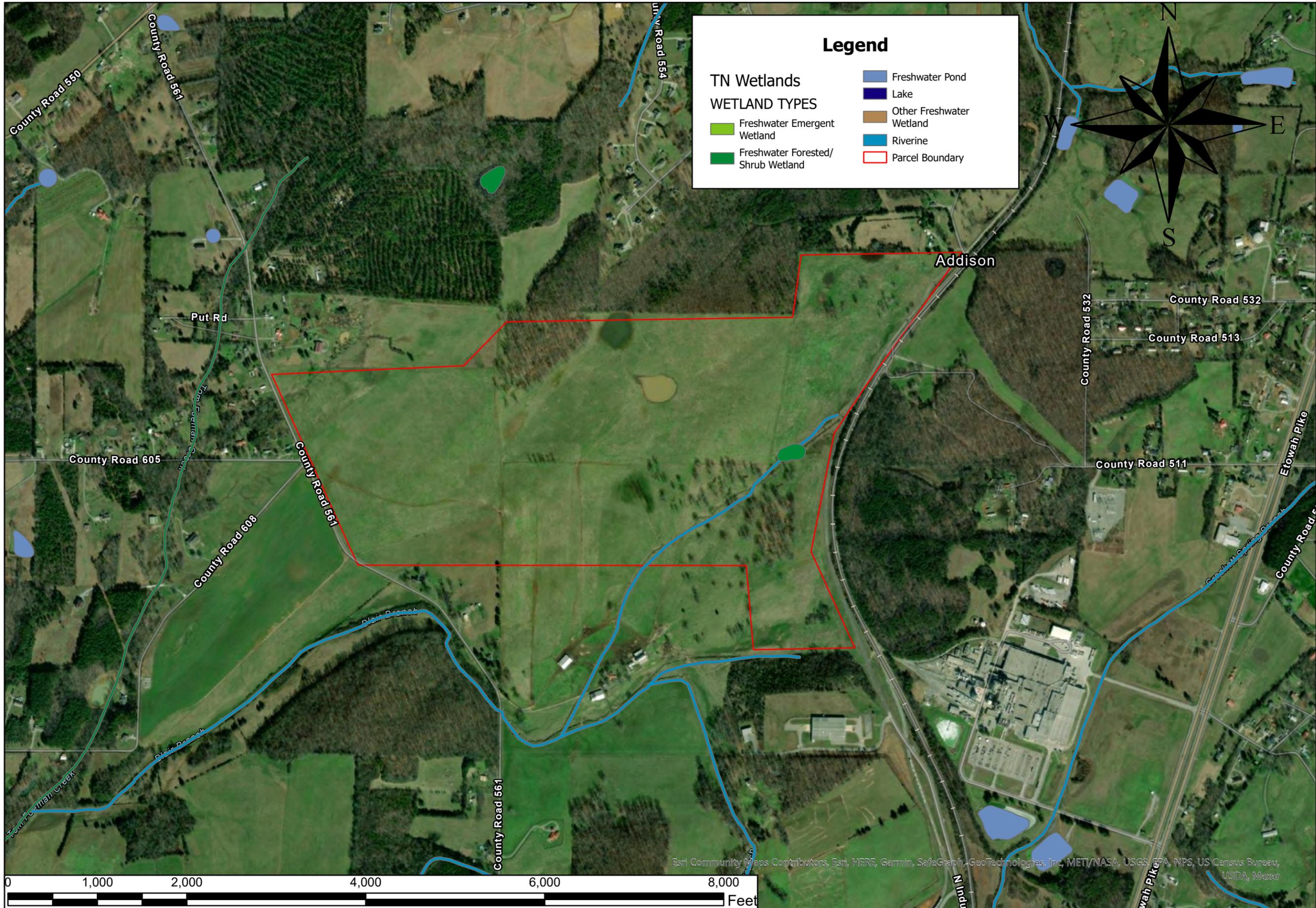
CB	JM	AS SHOWN	24-22451	6/10/22
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DRAWN BY:	REVIEWED BY:	SCALE:	JOB NO.:	DATE:
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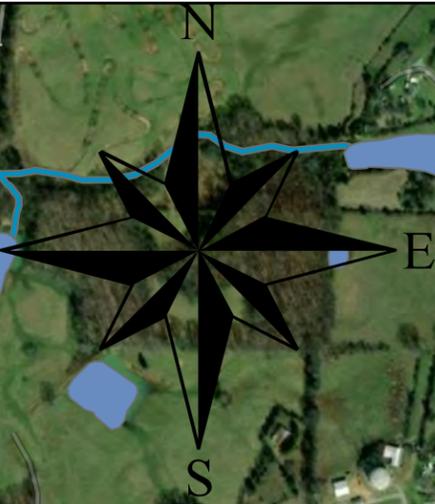
FIGURE 4

Esri, Community Maps Contributors, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar



Legend

TN Wetlands	
WETLAND TYPES	
 Freshwater Emergent Wetland	 Freshwater Pond
 Freshwater Forested/Shrub Wetland	 Lake
	 Other Freshwater Wetland
	 Riverine
	 Parcel Boundary



NOTES:

NWI MAP	WATER RESOURCE INVENTORY ETOWAH INDUSTRIAL PARK ETOWAH, TENNESSEE		
	DRAWN BY: CB	REVIEWED BY: JM	SCALE: AS SHOWN

JOB NO.:	24-22451
DATE:	6/2/22



Esri Community Maps Contributors, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar

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

Project/Site: North Etowah Industrial Park City/County: McMinn Sampling Date: 6/1/22

Applicant/Owner: _____ State: TN Sampling Point: DP 1

Investigator(s): Jason Mann, Clayton Biden, Cierra Homic Section, Township, Range: _____

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

Subregion (LRR or MLRA): N 126 Lat: 35.3767 ° Long: -84.5226 ° Datum: _____

Soil Map Unit Name: BM - Bloomingdale silty clay loam NWI classification: Freshwater Forested

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 _____ 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 _____
Remarks: _____ _____ _____	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply)	<u>Secondary Indicators</u> (minimum of two required)
<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)	_____ 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)

Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>4</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: _____

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

Sampling Point: DP1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix nigra</u>	<u>5</u>	<u>Y</u>	<u>OBL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>5</u> = Total Cover		
50% of total cover: _____		20% of total cover: _____	

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
	_____ = Total Cover		
50% of total cover: _____		20% of total cover: _____	

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Juncus effusus</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>
2. <u>Carex lurida</u>	<u>10</u>	<u>N</u>	<u>OBL</u>
3. <u>Solanum carolinense</u>	<u>2</u>	<u>N</u>	<u>FACU</u>
4. <u>Verbascum thapsus</u>	<u>2</u>	<u>N</u>	<u>FACU</u>
5. <u>Carduus nutans</u>	<u>5</u>	<u>N</u>	<u>UPL</u>
6. <u>Juniperus virginiana</u>	<u>2</u>	<u>N</u>	<u>FACU</u>
7. <u>Ligustrum sinense</u>	<u>15</u>	<u>N</u>	<u>FACU</u>
8. <u>Murdannia keisak</u>	<u>25</u>	<u>N</u>	<u>OBL</u>
9. <u>Alisma triviale</u>	<u>4</u>	<u>N</u>	<u>OBL</u>
10. _____	_____	_____	_____
11. _____	_____	_____	_____
	<u>95</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: _____	

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 44 x 1 = 44
 FACW species 30 x 2 = 60
 FAC species _____ x 3 = _____
 FACU species 15 x 4 = 60
 UPL species 5 x 5 = 25
 Column Totals: 100 (A) 189 (B)
 Prevalence Index = B/A = 1.89

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 Four Vegetation Strata:
Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody Vine – All woody vines greater than 3.28 ft in height.

B/A = 1.89

Hydrophytic Vegetation Present? Yes X No _____

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		
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 No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
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 <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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 100 x 3 = 300

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: 100 (A) 300 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

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

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		
0-6	10YR 4/6	100					sandy	
6-12	10YR 3/3	100					Sandy	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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 <u>X</u>
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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: 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 No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

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) <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)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> 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

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<u>Sapling Stratum</u> (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>80</u> x 1 = <u>80</u>
3. _____	_____	_____	_____	FACW species <u>20</u> x 2 = <u>40</u>
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
6. _____	_____	_____	_____	UPL species _____ x 5 = _____
_____ = Total Cover				Column Totals: <u>100</u> (A) <u>120</u> (B)
50% of total cover: _____ 20% of total cover: _____				Prevalence Index = B/A = <u>1.20</u>
<u>Shrub Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____	_____	_____	_____	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>100</u> = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<u>Herb Stratum</u> (Plot size: _____)				Definitions of Five Vegetation Strata:
1. <u>Juncus effusus</u>	<u>20</u>	<u>N</u>	<u>FACW</u>	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).
2. <u>Carex lurida</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
3. <u>Alisma triviale</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
4. <u>Murdannia keisak</u>	<u>20</u>	<u>N</u>	<u>OBL</u>	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.
5. _____	_____	_____	_____	Woody vine – All woody vines, regardless of height.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				B/A = 1.20
50% of total cover: <u>X</u> 20% of total cover: _____				
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

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 No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
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)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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. _____	_____	_____	_____	
_____ = 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 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%

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

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 _____ 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 _____
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)
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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

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																								
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)																								
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)																								
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																								
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
6. _____	_____	_____	_____																									
_____ = Total Cover				Prevalence Index worksheet:																								
50% of total cover: _____ 20% of total cover: _____				<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%; text-align: right;">Total % Cover of:</td> <td style="width:30%;"></td> <td style="width:40%; text-align: right;">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;"><u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;"><u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;"><u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species</td> <td>_____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;"><u>20</u></td> <td>x 5 = <u>100</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;"><u>100</u> (A)</td> <td style="text-align: center;"><u>235</u> (B)</td> </tr> <tr> <td colspan="3" style="text-align: right;">Prevalence Index = B/A = <u>2.35</u></td> </tr> </table>	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	_____	x 4 = _____	UPL species	<u>20</u>	x 5 = <u>100</u>	Column Totals:	<u>100</u> (A)	<u>235</u> (B)	Prevalence Index = B/A = <u>2.35</u>		
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	_____	x 4 = _____																										
UPL species	<u>20</u>	x 5 = <u>100</u>																										
Column Totals:	<u>100</u> (A)	<u>235</u> (B)																										
Prevalence Index = B/A = <u>2.35</u>																												
<u>Sapling Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:																								
1. _____				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation																								
2. _____				<input type="checkbox"/> 2 - Dominance Test is >50%																								
3. _____				<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹																								
4. _____				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)																								
5. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																								
6. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																								
_____ = Total Cover				Definitions of Five Vegetation Strata:																								
50% of total cover: _____ 20% of total cover: _____				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).																								
<u>Shrub Stratum</u> (Plot size: _____)				Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.																								
1. <u>Acer ruberum</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.																								
2. _____				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.																								
3. _____				Woody vine – All woody vines, regardless of height.																								
4. _____																												
5. _____																												
6. _____																												
_____ = Total Cover				B/A = 2.35																								
50% of total cover: _____ 20% of total cover: _____																												
<u>Herb Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____																								
1. <u>Leersia oryzoides</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>																									
2. <u>Solidage 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. _____																												
_____ = Total Cover																												
50% of total cover: <u>X</u> 20% of total cover: _____																												
<u>Woody Vine Stratum</u> (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.)																												

SOIL

Sampling Point: DP5

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 5/1	70	5YR 4/6	30	D	PL	Clay	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> (MLRA 147, 148)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> (MLRA 136, 147)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	
<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	

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

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

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 No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
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)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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. _____	_____	_____	_____	
_____ = 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 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%

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

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 _____ 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 _____
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)
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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 _____
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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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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.	60	Y	OBL	Leersia oryzoides
2.	10	N	UPL	Solidago juncea
3.	10	N	OBL	Carex lurida
4.	15	N	FACW	Juncus effusus
5.	5	N	FAC	Rumex crispus
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>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 _____	x 4 = _____
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>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

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 = 1.65

Hydrophytic Vegetation Present? Yes X No _____

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 No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
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)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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. _____	_____	_____	_____	
_____ = 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 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%

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

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 _____ 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 _____
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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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: _____
<p>Remarks: (Include photo numbers here or on a separate sheet.)</p>				

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>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 = 1.35

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

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 = 1.35

Hydrophytic Vegetation Present? Yes No _____

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 No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
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 <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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. _____	_____	_____	_____	
_____ = 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 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%

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

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 _____ 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 _____
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

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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>55</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>5</u>	<u>N</u>	<u>FACW</u>
4.	<u>Rumex crispus</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
5.	<u>Cyperus difformis</u>	<u>15</u>	<u>N</u>	<u>OBL</u>
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 <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 = 1.25

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

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 No _____

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

Sampling Point: DP12

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
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. _____	_____	_____	_____	
_____ = 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 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%

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

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 Commercial		
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

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 Commercial		
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°

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°

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°

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°

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°

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°

**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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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.

\$\$

Climatological Report (Monthly)

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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

.....

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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Climatological Report (Monthly)

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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
---------	-------------------	---------	-----------------	--------------------------

.....
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.

\$\$

WFO Monthly/Daily Climate Data

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[40](#) [41](#) [42](#) [43](#) [44](#) [45](#) [46](#) [47](#) [48](#) [49](#) [50](#)

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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)		
										MISC	---->	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

8 = SMOKE OR HAZE
 9 = BLOWING SNOW
 X = TORNADO

[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	DPTR	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	TOTAL FOR MONTH: 1.18	1 = FOG OR MIST
DPTR FM NORMAL: 1.5	DPTR FM NORMAL: 0.01	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
HIGHEST: 91 ON 1	GRTST 24HR 0.53 ON 6- 7	3 = THUNDER
LOWEST: 61 ON 5, 4	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
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

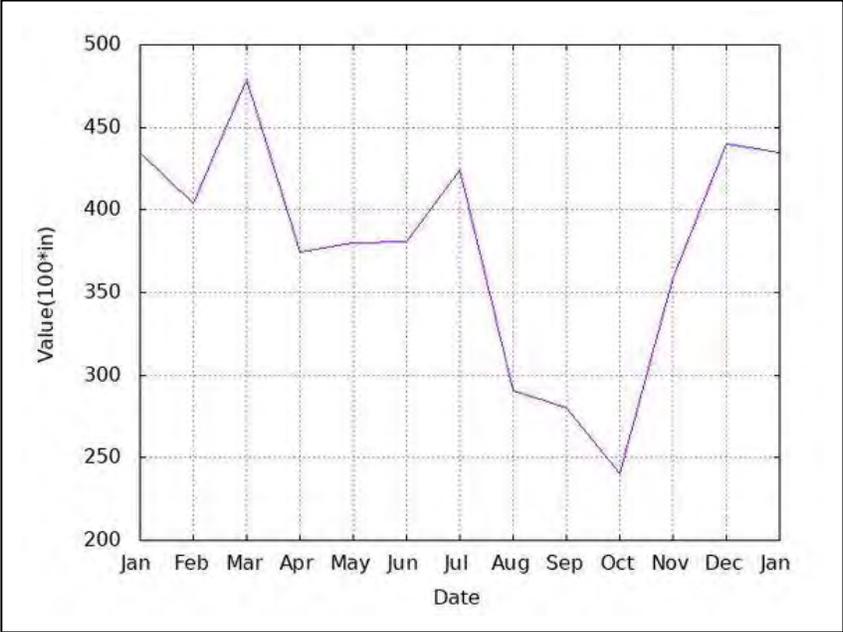
[REMARKS]

Knoxville Normal Weather Data

1991-2020

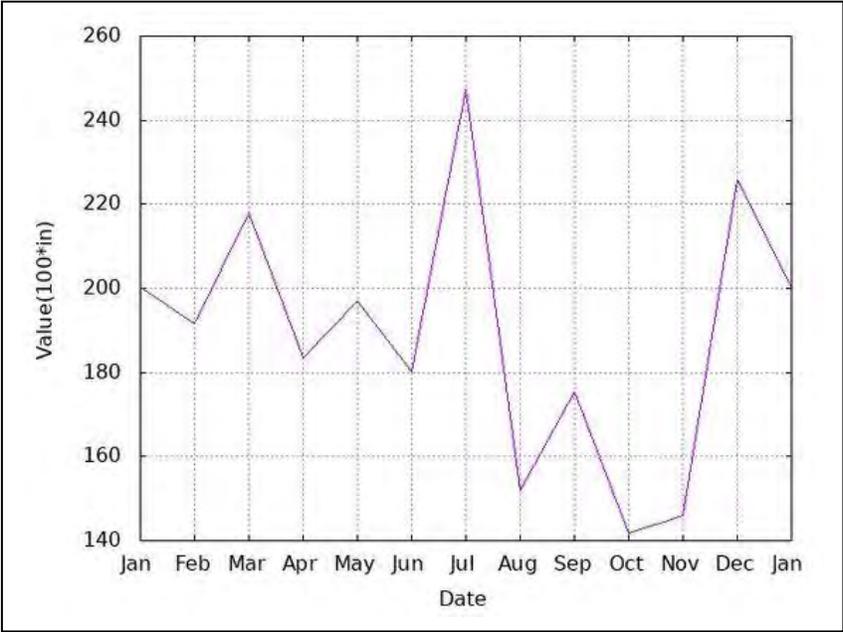
Mean (in.)

- 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, P.E.

Timothy Gangaware, A.I.C.P



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



Tennessee Department of Environment & Conservation

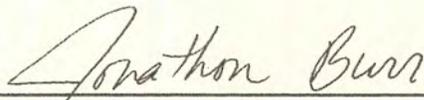


This is to certify that

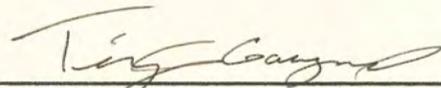
Jason Mann

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