HYRDOLOGICAL ASSESSMENT REPORT

10444 OOLTEWAH GEORGETWON ROAD
PARCEL # 070 036
OOLTEWAH, TENNESSEE

Prepared For:

Mr. Mark Jooma
6143 Ooltewah Georgetown Rd.
Ooltewah, TN 37363

Prepared by:

GEOServices, LLC
163 Business Park Drive, Suite 15
Lebanon, TN 37087

Project No. 34-214107

June 18, 2021

June 18, 2021

Mr. Mark Jooma
6143 Ooltewah Georgetown Rd.
Ooltewah, TN 37363

Attention: Mr. Mark Jooma

Subject: **Hydrological Assessment Report**
10444 Ooltewah Georgetown Road
Parcel # 070 036
Ooltewah, Tennessee

Dear Mr. Jooma,

GEOServices has completed a hydrologic determination and wetland delineation for the Proposed Development site located at 10444 Ooltewah Georgetown Road in Ooltewah, Hamilton County, Tennessee.

GEOServices appreciates the opportunity by providing these 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

Cody L. Givens
Natural Resource Scientist

Michael J. Kendall, P.G., E.P
Executive Director

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Appendicies

EXECUTIVE SUMMARY

GEOServices, LLC (GEOServices) conducted a hydrologic determination and wetland delineation for the Proposed Development site located at 10444 Ooltewah Georgetown Road in Ooltewah, Hamilton County, Tennessee. The Subject Property consists of one (1) parcel of partially developed land that consist open fields and densely forested areas. The one (1) parcel of land (Parcel # 070 036) that makes up the Subject Property encompass approximately 92-acres.

The hydrologic determination and wetland delineation conducted within the Subject Property resulted in the identification and location of two (2) ponds, four (4) streams, four (4) wetlands, and four (4) wet weather conveyances.

This executive summary is intended to be taken in context with the complete report and is not designed to be used as a separate document. The following summarizes the findings of the wetland delineation and hydrologic determination.

This report is a determination of the potential regulatory status of wetland and non-wetland waters of the U.S. (WOUS) (i.e., significant bodies of water, watercourses, and/or floodplains) located within the Subject Property pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The wetland delineation was performed in accordance with the *Eastern Mountain and Piedmont Regional Supplement (Version 2.0) to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual* (1987 Manual).

GEOServices staff performed the hydrologic determination and wetland delineation, within the Subject Property on April 22-23, 2021. The wetland delineation performed included determining the size, shape, and location of any wetlands identified, thereby aiding in the determination of the regulatory status of any wetlands identified in the Subject Property. The hydrologic determination performed included determining if any streams and/or wet weather conveyances existed within the Subject Property.

Floodplain maps from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were available for the Subject Property. According to FEMA Data, the Subject Property is located in Zone-X Area of Minimal Flood Hazard Panel: 47065C0300G effective date 2/3/2016. Zone X- Area of Minimal Flood Hazard are defined as areas determined to be outside the 1 % and 0.2% annual chance floodplain.

1.0 INTRODUCTION

GEOServices, LLC (GEOServices) conducted a hydrologic determination and wetland delineation for the Proposed Development site located at 10444 Ooltewah Georgetown Road in Ooltewah, Hamilton County, Tennessee. The Subject Property consists of one (1) parcel of partially developed land that consist of open fields and densely forested areas. The one (1) parcel of land (Parcel # 070036) that makes up the Subject Property encompasses approximately 92-acres. Appendix A contains Figure 1 – Site Location and Figure 2 – Topographical Map.

The hydrologic determination and wetland delineation conducted within the Subject Property resulted in the identification and location of two (2) ponds, four (4) streams, four (4) wetlands, and four (4) wet weather conveyances.

The purpose of the site inspection was to determine if any wetlands, streams, and/or wet weather conveyances were present within the Subject Property. If encountered, the boundaries of those features were delineated, and a preliminary determination was made of whether those features could potentially qualify as jurisdictional as defined by the U.S. Army Corps of Engineers (USACE). Any stream and/or wet weather conveyance encountered was assessed using the Tennessee Department of Environment and Conversation Standard Operating Procedure for conducting Hydrologic Determinations. In addition, available aerial photographs, National Wetland Inventory (NWI) Map, U.S. Geological Survey (USGS) Topographic maps, soil survey maps, and floodplain maps for the property were reviewed to evaluate overall site characteristics of the Subject Property.

Wetland delineations were performed in accordance with the *Eastern Mountain and Piedmont Regional Supplement (Version 2.0) to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual* (1987 Manual). The determination of a wetland depends on three basic parameters: 1) presence of hydrophytic vegetation, 2) presence of hydric soils, and 3) wetland hydrology for a specific period of time. The parameters are virtually inter-related and present within wetland systems. Identification of non-wetland watercourses was performed utilizing existing mapping of known watercourses, including the National Hydrography Dataset (NHD) and topographic maps, as well as observations of a stream and channel characteristics, such as indicators of an ordinary high-water mark (OHWM) and defined bed and bank during the site reconnaissance.

1.1 Scope of Services

The Scope of Services for hydrologic determinations and wetland delineations included the following components:

- Background documentation review of aerial photographs (Aerial Photography Field Office 2016), National Wetland Inventory (NWI) Maps (US Fish and Wildlife Service [USFWS] 2015), National Hydrography Dataset (U.S. Geological Survey [USGS] 2014), USGS Topographic Maps, and Federal Emergency Management Agency Flood Insurance Rate Maps (FEMA FIRM Maps)

- Site reconnaissance to evaluate specific site characteristics and features within the Subject Property, including a wetland delineation and identification of WOUS.

- Any suspect drainage features were analyzed following the Tennessee Department of Environment and Conservation (TDEC) standard operating procedures for Hydrologic Determinations

- Generation of sitemaps illustrating the locations of the surveyed wetland boundaries and other notable features

- Preparation and submittal of this report summarizing the findings of the above-described tasks, including photographic documentation

2.0 SITE DESCRIPTION

The Subject Property consists of one (1) parcel of partially developed land that consist of open fields along with densely forested areas. The one (1) parcel of land (Parcel # 070 036) that makes up the Subject Property encompass approximately 92-acres. The property owner for the Property is listed as Viola Morgan. The approximate geographic center of the site is located at Latitude: North 35.221095° Longitude: West -84.994143°. The sites surface water flows multi-directionally on the Subject Property. The Natural Resource features located on-site are listed in the table below.

Site Number	Latitude Upstream Starting	Longitude Downstream Ending	Estimated number of aquatic resources in review area
Pond-1	35.22464935	-84.997065	~ 0.08 Acres
Pond-2	35.224355	-84.997276	~ 0.07 Acres
Stream-1	35.22456, -84.9968	35.22309, -84.9991	~ 990 Linear Feet
Stream-2	35.22197, -84.9937	35.22309, -84.9989	~ 1,825 Linear Feet
Stream-3	35.22236, -84.9945	35.22235, -84.9948	~ 85 Linear Feet
Stream-4	35.21999, -84.9920	35.21991, -84.9937	~ 563 Linear Feet
Wetland-1	35.221530	-84.995385	~ 0.44 Acres
Wetland-2	35.221890	-84.994033	~ 0.03 Acres
Wetland-3	35.223958	-84.997569	~ 0.04 Acres
Wetland-4	35.224024	-84.997609	~ 0.01 Acres
WWC-1	35.22741, -84.9975	35.22701, -84.9985	~ 389 Linear Feet
WWC-2	35.22501, -84.9955	35.22456, -84.9968	~ 503 Linear Feet
WWC-3	35.22468, -84.9969	35.22462, -84.9967	~ 60 Linear Feet
WWC-4	35.22020, -84.9919	35.21999, -84.9919	~ 410 Linear Feet

The site is bordered to the north by forested land and a power line right-of way; to the south by open fields and forested land; to the east by densely forested land, and to the west by residential properties followed by forested land, open fields and Ooltewah Georgetown Road.

3.0 BACKGROUND DOCUMENTATION REVIEW

A review of background documentation was performed utilizing National Wetland Inventory (NWI) maps, FEMA FIRMS, and County Soil Survey Maps. These sources of information were reviewed for the Subject Property as the information was utilized in an attempt to design infrastructure to avoid and or minimize impacts to the natural resource features found onsite. As such, the following subsection addresses each resource reviewed. The Aquatic Feature maps are included Appendix B.

3.1 National Wetland Inventory Map Review

A review of the NWI map was conducted to determine the likely presence, location, size, and type of wetland(s) which may be located within the Subject Property. The USFWS generates NWI maps through aerial photograph interpretation. GEOServices noted that the NWI map might not show the extent or existence of wetland systems accurately in a specific area, nor do the maps always correctly identify wetlands present or absent; therefore, the map(s) were utilized for preliminary analysis only. Field reconnaissance is necessary to determine the actual presence and type of wetlands within the Subject Property.

The NWI map did not identify any wetlands on the Subject Property. However, the NWI map did identify one (1) Riverine feature in the southwestern portion of the Subject Property. This feature will be discussed in greater detail in Section 4.0 below. The NWI map is located in Appendix C.

3.2 FEMA FIRM Floodplain Map Review

A review of the FEMA FIRM floodplain was conducted to determine the presence, extent, location, and zone of floodplain areas in the proposed Project. FIRMs are maps that show floodplain areas along rivers and tributaries. The maps record the following data: 100-year floodplain (1% chance of annual flooding) and the 0.2% annual chance of flooding area, the height of the base flood (Base Flood Elevations), and the risk premium zones developed from topographical information across a floodplain. The FEMA generates FIRM floodplain maps for flood insurance purposes.

The FEMA FIRM Map- According to FEMA Data, the Subject Property is located in Zone-X Area of Minimal Flood Hazard Panel: 47065C0300G effective date 2/3/2016. Zone X- Area of Minimal Flood Hazard are defined as areas determined to be outside the 1 % and 0.2% annual chance floodplain.

3.3 Soil Survey Map Review

The Hamilton County Soil Survey indicates a number of different soil types are present within the Subject Project as listed in Table 1 below. None of the below-listed soils identified were identified on the Hydric Soils list of Hamilton County with the exception to Hamblen silt loam (Ha) which includes a minor hydric component of Melvin silt loam (Me) and Tupelo silt loam (Tu) which includes a minor hydric component of Bloomingdale (Bd). The NRCS Soils Survey is located in Appendix E.

Table 1: Potential Soils Located on the Subject Property

Hamilton County	Symbol	Soil Name	Description	Hydric
	AeC	Allen loam, 5 to 12 percent slopes	Loamy colluvium derived from sandstone and shale	No
	AeD	Allen loam, 12 to 25 percent slopes	Loamy colluvium derived from sandstone and shale	No
	BuF	Bouldin-Gilpin complex, 20 to 60 percent slopes	Cobbly and stony colluvium derived from limestone, sandstone, and shale	No
	CaB	Capshaw silt loam, 2 to 6 percent slopes	Loess and/or clayey alluvium over clayey residuum weathered from limestone	No
	CbC	Colbert silt loam, 2 to 12 percent slopes	Clayey residuum weathered from argillaceous limestone	No
	CoC	Collegedale silt loam, 2 to 12 percent slopes	Clayey residuum weathered from limestone and shale	No
	CoD	Collegedale silt loam, 12 to 25 percent slopes	Clayey residuum weathered from limestone and shale	No
	Ha	Hamblen silt loam, 0 to 2 percent slopes, occasionally flooded, hydric minor component	Fine-loamy alluvium derived from limestone, sandstone, and shale	Yes, Minor Component
	HcE	Hanceville loam, 25 to 40 percent slopes	Clayey residuum weathered from sandstone and shale	No
	MoE	Montevallo shaly silt loam, 20 to 45 percent slopes	Channery residuum weathered from acid shale	No
	RaD	Ramsey loam, 8 to 25 percent slopes	Loamy residuum weathered from sandstone	No

	RcF	Ramsey-Rock outcrop complex, 15 to 70 percent slopes	Loamy residuum weathered from sandstone	No
	TaC	Talbott silt loam, 2 to 12 percent slopes	Clayey residuum weathered from limestone	No
	TaD	Talbott silt loam, 12 to 25 percent slopes	Clayey residuum weathered from limestone	No
	Tu	Tupelo silt loam, 0 to 3 percent slopes	Clayey alluvium derived from limestone	Yes, Minor Component

4.0 SITE RECONNAISSANCE & CHARACTERISTICS

GEOServices conducted the site reconnaissance on April 22-23, 2021. The purpose of the site reconnaissance was to determine if wetland, stream, and/ or wet weather conveyance conditions existed on within the Subject Property. Any suspect areas were identified, and multiple transects were performed to visually classify the soils, vegetation, and hydrogeology present across the Subject Property. Once the general characteristics were observed, data points were taken with a shovel, and the site was walked to identify the wetland boundary, based upon physical characteristics (Hydric soil, hydrology, and vegetation). In addition, eight (8) drainage features were observed during the field investigation. The features were scored using the Tennessee Department of Environment and Conservation Hydrologic Determination Field Data Form v1.5. The only one (1) of the eight (8) features located onsite was identified on the South Cleveland US Geological Survey 7.5 Minute Topographic Quadrangle for the Subject Property. For the purpose of this report, the four (4) features located onsite has been found to be wet weather conveyances and the remaining four (4) features have found to be streams.

To summarize, two (2) ponds, four (4) streams, four (4) wetlands, and four (4) wet weather conveyances. were observed on the Subject Property and are described as follows:

Pond-1 was located in the west-central portion of the Subject Property. This feature was assessed during the site reconnaissance and was found to meet the criteria of a freshwater pond. This feature was determined to meet the criteria of a freshwater pond per the Tennessee Department of Environment and Conservation (TDEC) guidance with a direct connection to downstream surface waters.

Pond-2 was located in the west-central portion of the Subject Property. This feature was assessed during the site reconnaissance and was found to meet the criteria of a freshwater pond. This feature was determined to meet the criteria of a freshwater pond per the Tennessee Department of Environment and Conservation (TDEC) guidance with a surface connection to downstream surface waters.

Stream-1 did not display any primary indicators for a stream at the time of the field assessment. The channels secondary indicators consisted mostly of moderate to strong geomorphology with a moderately to strongly pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of moderately pronounced visible riffle-pool sequences and a moderate to strong natural valley or drainageway. Hydrology indicators were observed to be moderate to strong with visible flow found throughout the feature and 48 hours

since a significant (i.e., greater than 0.1 inch) rain fall event. Weak to moderate amounts of wrack lining were located within the feature along with hydric soil in the channel bed. Biology indicators were mostly weak to moderate with a weak amount's filamentous algae and periphyton located within the feature along with weak number of amphibians consisting of three (3) frogs. A weak to moderate amount wetland plants existed within the channel bed that consisted of Stilt grass (*Microstegium vimineum*). The channel ultimately scored a 29 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Stream-2 did display a primary indicator for a stream at the time of the field assessment with the presence of a naturally occurring groundwater table connection. The channels secondary indicators consisted mostly of moderate to strong geomorphology with a moderately to strongly pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of moderately pronounced visible riffle-pool sequences and a moderate to strong natural valley or drainageway. Hydrology indicators were observed to be mostly moderate with visible flow within some sections of the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak to moderate amounts of wrack lining were located within the feature along with moderate amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak to moderate with a weak amounts filamentous algae and periphyton located within the feature along with a few species of caddis fly in the upper reaches of the channel. A weak to moderate amount wetland plants existed within the channel bed that consisted of Rush Grass (*Juncus effusus*). The channel ultimately scored a 29 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Stream-3 did not display a primary indicator for a stream at the time of the field assessment. The channels secondary indicators consisted mostly of moderate to strong geomorphology with a moderately to strongly pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of weak to moderate amounts of depositional bar and benches along with a moderate to strong natural valley or drainageway. Hydrology indicators were observed to be mostly moderate with visible flow within some sections of the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak to moderate amounts of wrack lining were located within the feature along with weak amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak with a weak amounts visible iron oxidizing bacteria / fungus located within the channel along with a couple of caddis fly casings in the central portion of the channel. The channel ultimately scored a 24 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Stream-4 did display a primary indicator for a stream at the time of the field assessment with the presence of a naturally occurring groundwater table connection. The channels secondary indicators consisted mostly of moderate to strong geomorphology with a moderately to strongly pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of moderately pronounced visible riffle-pool sequences and a strongly natural valley or drainageway. Hydrology indicators were observed to be mostly weak to moderate with visible flow within some sections of the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak to moderate amounts of wrack lining were located within the feature along with moderate amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak to moderate with weak amounts filamentous algae and periphyton located within the feature along with a few caddis fly casings in the upper reaches of the channel. A weak to moderate amount wetland plants existed within the channel bed that consisted of Stilt grass (*Microstegium vimineum*). The channel ultimately scored a 24 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Wet Weather Conveyance-1 did not display a primary indicator for a stream at the time of the field assessment. The channels secondary indicators consisted mostly of weak geomorphology with a weakly pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of weak amounts of sediment sorting along with weakly pronounced riffle-pool sequencing. Hydrology indicators were observed to be mostly absent to weak with no visible flow or pooling with the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak amounts of wrack lining were located within the feature along with weak amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak with the exception of moderate to strong amounts of fibrous roots and rooted plants located within the channel. The channel ultimately scored a 9 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Wet Weather Conveyance-2 did not display a primary indicator for a stream at the time of the field assessment. The channels secondary indicators consisted mostly of weak to moderate geomorphology with a moderately pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of weak to moderate sinuosity within the channel along with weakly pronounced riffle-pool sequencing. Hydrology indicators were observed to be mostly absent to weak with no visible flow or pooling with the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak amounts of wrack lining were located within the feature along with weak amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak with the exception of weak to moderate amounts of fibrous roots and rooted plants located within the channel. The channel ultimately

scored a 15.5 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Wet Weather Conveyance-3 did not display a primary indicator for a stream at the time of the field assessment. The channels secondary indicators consisted mostly of weak geomorphology with a weakly pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of weakly pronounced riffle-pool sequencing along with weak sorting of soil and sediment with the channel bed. Hydrology indicators were observed to be mostly absent to weak with no visible flow or pooling with the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak amounts of wrack lining were located within the feature along with weak amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak with the exception of weak to moderate amounts of fibrous roots and rooted plants located within the channel. The channel ultimately scored a 10.75 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Wet Weather Conveyance-4 did not display a primary indicator for a stream at the time of the field assessment. The channels secondary indicators consisted mostly of weak to moderate geomorphology with a moderately pronounced bed and back found throughout the length of the feature. Other indicators of geomorphology consisted of weakly pronounced riffle-pool sequencing along with a strongly pronounced natural valley or drainageway along the channel margins. Hydrology indicators were observed to be mostly absent to weak with no visible flow or pooling with the feature and 48 hours since a significant (i.e., greater than 0.1 inch) rain fall event. Weak to moderate amounts of wrack lining were located within the feature along with weak amounts of sediment on plants and debris within the channel. Biology indicators were mostly weak with the exception of moderate amounts of fibrous roots located in the channel along with a weak to moderate amount of rooted plants additionally. The channel ultimately scored a 14.75 on the TDEC Hydrologic Determination Field Data Sheet (HDFD) and is considered a Stream.

Wetland-1 was located in the east-central portion of the portion of the Subject Property. Data points were taken to define the boundary of Wetland-1. Wetland-1 included species of American Elm (*Ulmus americana*), Common Rush (*Juncus effusus*), and Sweet Gum (*Liquidambar styraciflua)* Hydrology, hydrophytic vegetation, and hydric soil indicators were observed in this area. Wetland-1 consisted of plant species with a Facultative and Facultative Wet Wetland Indictor status. Visual hydrology indicators consisted of algal matting and crusting, saturation within the soil profile, and drift deposits. The soil from the data points taken met the criteria for the F3 Depleted Matrix indicator needed to confirm hydric soil conditions along with the

necessary redox concentrations needed for hydric soils.

Wetland-2 was located in the east-central portion of the portion of the Subject Property. Data points were taken to define the boundary of Wetland-2. Wetland-2 included species of American Elm (*Ulmus americana*), Sweet Gum (*Liquidambar styraciflua*), and Common Rush (*Juncus effusus)*. Hydrology, hydrophytic vegetation, and hydric soil indicators were observed in this area. Wetland-2 consisted of plant species with a Facultative and Facultative Wet Wetland Indictor status. Visual hydrology indicators consisted of saturation within the soil profile along with drift deposits, and oxidized rhizospheres on living roots. The soil from the data points taken met the criteria for the F3 Depleted Matrix indicator needed to confirm hydric soil conditions along with the necessary redox concentrations needed for hydric soils.

Wetland-3 was located in the western portion of the portion of the Subject Property. Data points were taken to define the boundary of Wetland-3. Wetland-3 included species of Common Rush (*Juncus effusus)* and American Elm (*Ulmus americana*). Hydrology, hydrophytic vegetation, and hydric soil indicators were observed in this area. Wetland-3 consisted of plant species with a Facultative and Facultative Wet Wetland Indictor status. Visual hydrology indicators consisted of saturation within the soil profile along with drift deposits, algal matting/ crusting, and oxidized rhizospheres on living roots. The soil from the data points taken met the criteria for the F3 Depleted Matrix indicator needed to confirm hydric soil conditions along with the necessary redox concentrations needed for hydric soils.

Wetland-4 was located in the western-central portion of the Subject Property. Data points were taken to define the boundary of Wetland-4. Wetland-4 included species of Common Rush (*Juncus effusus*), American Elm (*Ulmus americana*), and Red Maple (*Acer rubrum*). Hydrology, hydrophytic vegetation, and hydric soil indicators were observed in this area. Wetland-4 consisted of plant species with a Facultative and Facultative Wet Wetland Indictor status. Visual hydrology indicators consisted of drift deposits along with saturation within the soil profile, and oxidized rhizospheres on living roots. The soil from the data points taken met the criteria for the F3 Depleted Matrix indicator needed to confirm hydric soil conditions along with the necessary redox concentrations needed for hydric soils.

Data forms for the above hydrologic determination are in Appendix F and data sheets for the wetland delineation are attached in Appendix G.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following natural resource features (with respective approximate sizes) were identified on within the Subject Property:

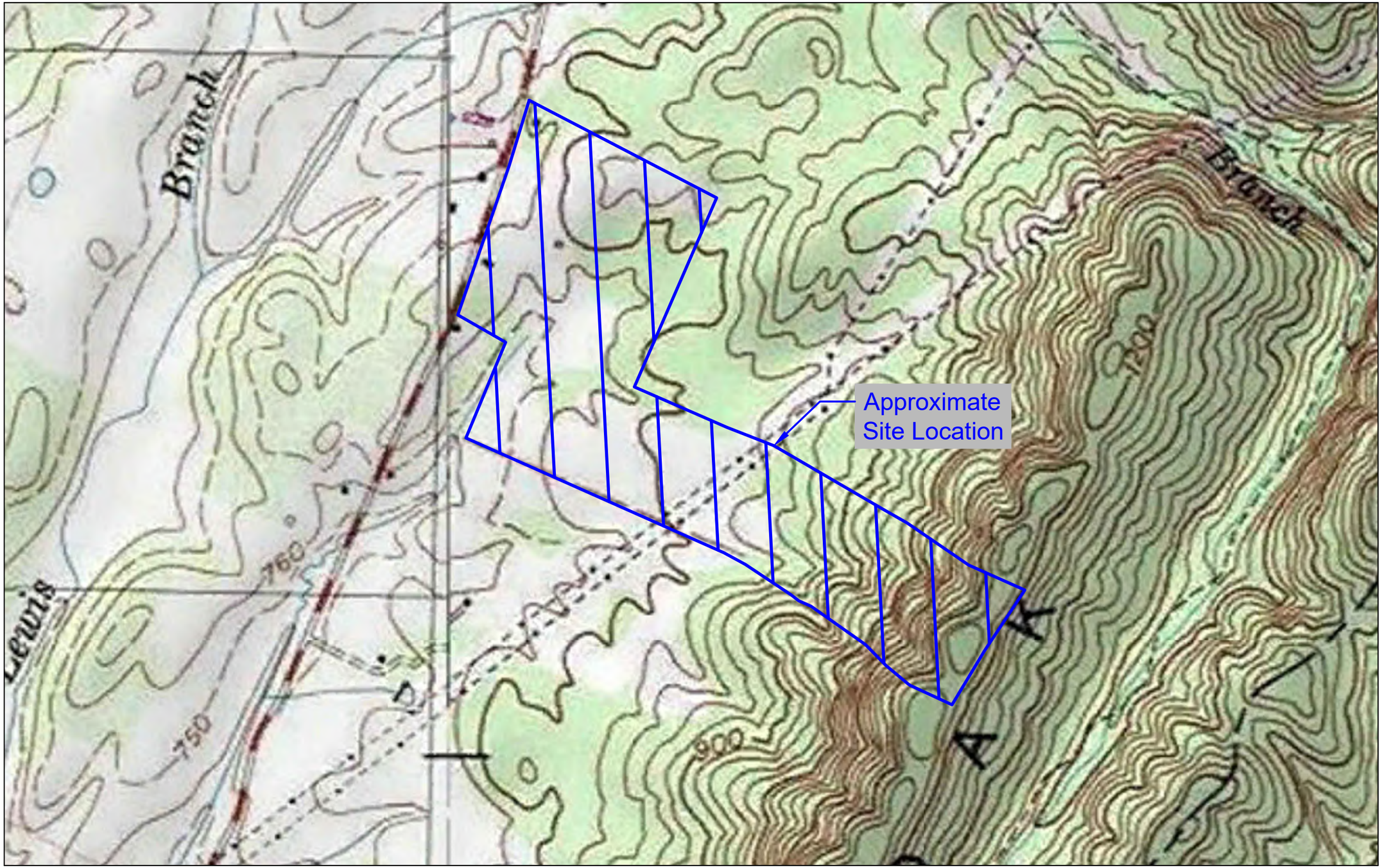
- Pond-1- Approximately- .08-Acres
- Pond-2- Approximately- .07-Acres
- Stream-1- Approximately- 990 Linear Feet
- Stream-2- Approximately- 1,825 Linear Feet
- Stream-3- Approximately- 85 Linear Feet
- Stream-4- Approximately- 563 Linear Feet
- Wetland-1- Approximately- .44-Acres
- Wetland-2- Approximately- .03-Acres
- Wetland-3- Approximately- .04 Acres
- Wetland-4- Approximately- .01-Acres
- WWC-1- Approximately- 389 Linear Feet
- WWC-2- Approximately- 503 Linear Feet
- WWC-3- Approximately- 60 Linear Feet
- WWC-4- Approximately- 410 Linear Feet

The ponds, streams, wetlands, and wet weather conveyances identified in this study will need to be verified by the U.S. Army Corps of Engineers (USACE) and the Tennessee Department of Environment and Conservation (TDEC) prior to any land disturbing activities. It is recommended that the area be professionally surveyed and placed on the engineering drawings.

Appendix A

Figures

N



Source Provided by: MYTOPO

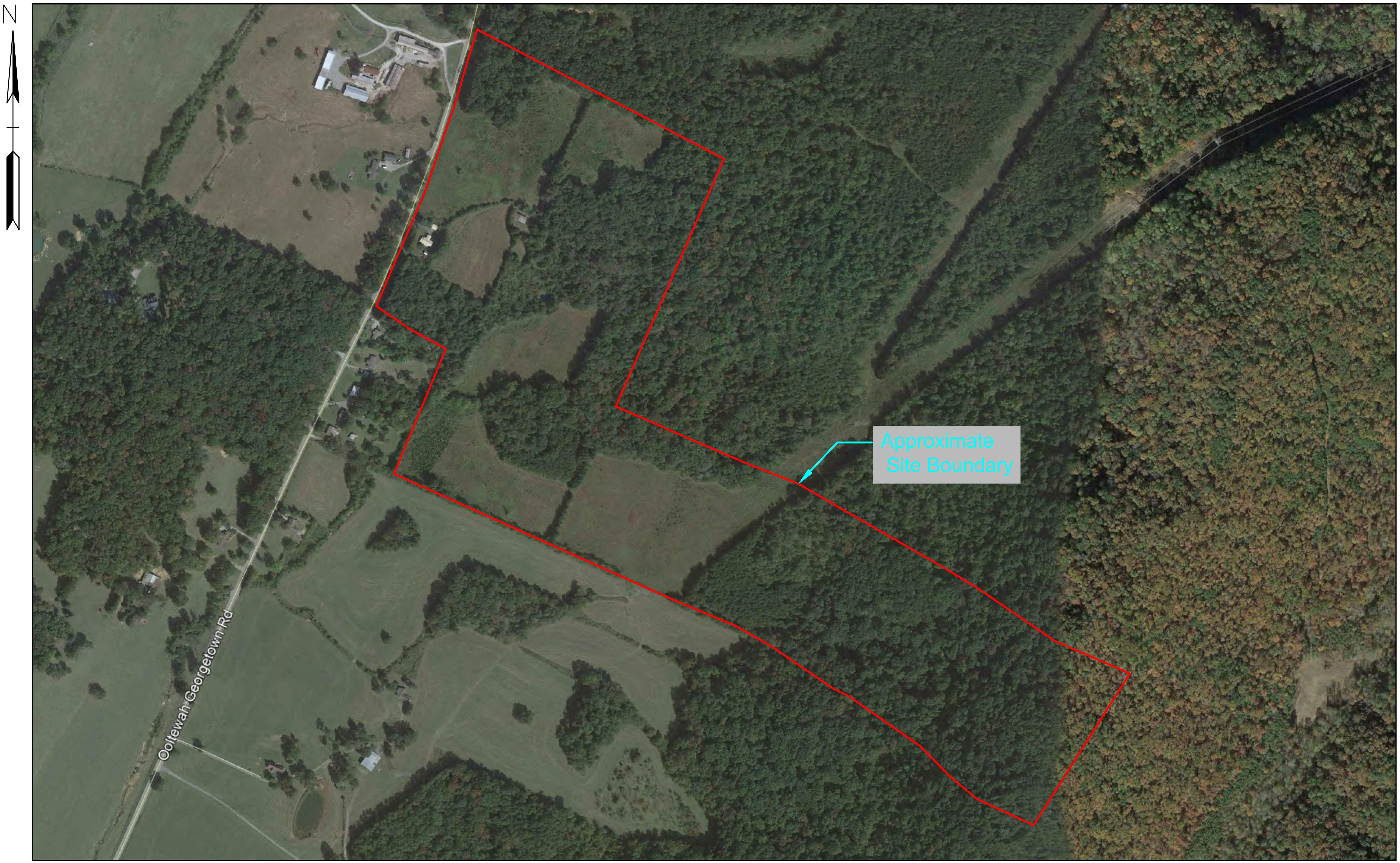
GEOS
Geotechnical, Environmental and Materials Engineers

USGS Topographic Map
10444 Ooltewah Georgetown Rd
Ooltewah, Tennessee

DATE:
05/24/2021

GEOS Project No.
34-214107

FIGURE:
1



Aerial Source Provided by: Google Earth Pro, (10/07/2020)

GEOS Geotechnical, Environmental and Materials Engineers

Site Vicinity
10444 Ooltewah Georgetown Rd
Ooltewah, Tennessee

DATE: 05/24/2021

GEOS Project No. 34-214107

FIGURE: 2

Appendix B

Aquatic Feature Map

N

Wet Weather Conveyance-1
Wet Weather Conveyance-3
Wet Weather Conveyance-2
Pond-1
Wetland-4
Pond-2
Stream-1
Wetland-3
Stream-2
Stream-3
Wetland-2
Wetland-1
Wet Weather Conveyance-4
Stream-4
Approximate Site Boundary
Ooltewah Georgetown Rd

11 12 13 14 15 16 17 18 19
1 2 3 4 5 6 7 8 9 10

Aerial Source Provided by: Google Earth Pro, (10/07/2020)

Data Point Location & Identifier

GEOS
Geotechnical, Environmental and Materials Engineers

Feature Map
10444 Ooltewah Georgetown Rd
Ooltewah, Tennessee

DATE: 05/24/2021
GEOS Project No. 34-214107
FIGURE: 3

Appendix C

NWI Map

U.S. Fish and Wildlife Service

National Wetlands Inventory

10444 Ooltewah-Georgetown RD

May 25, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

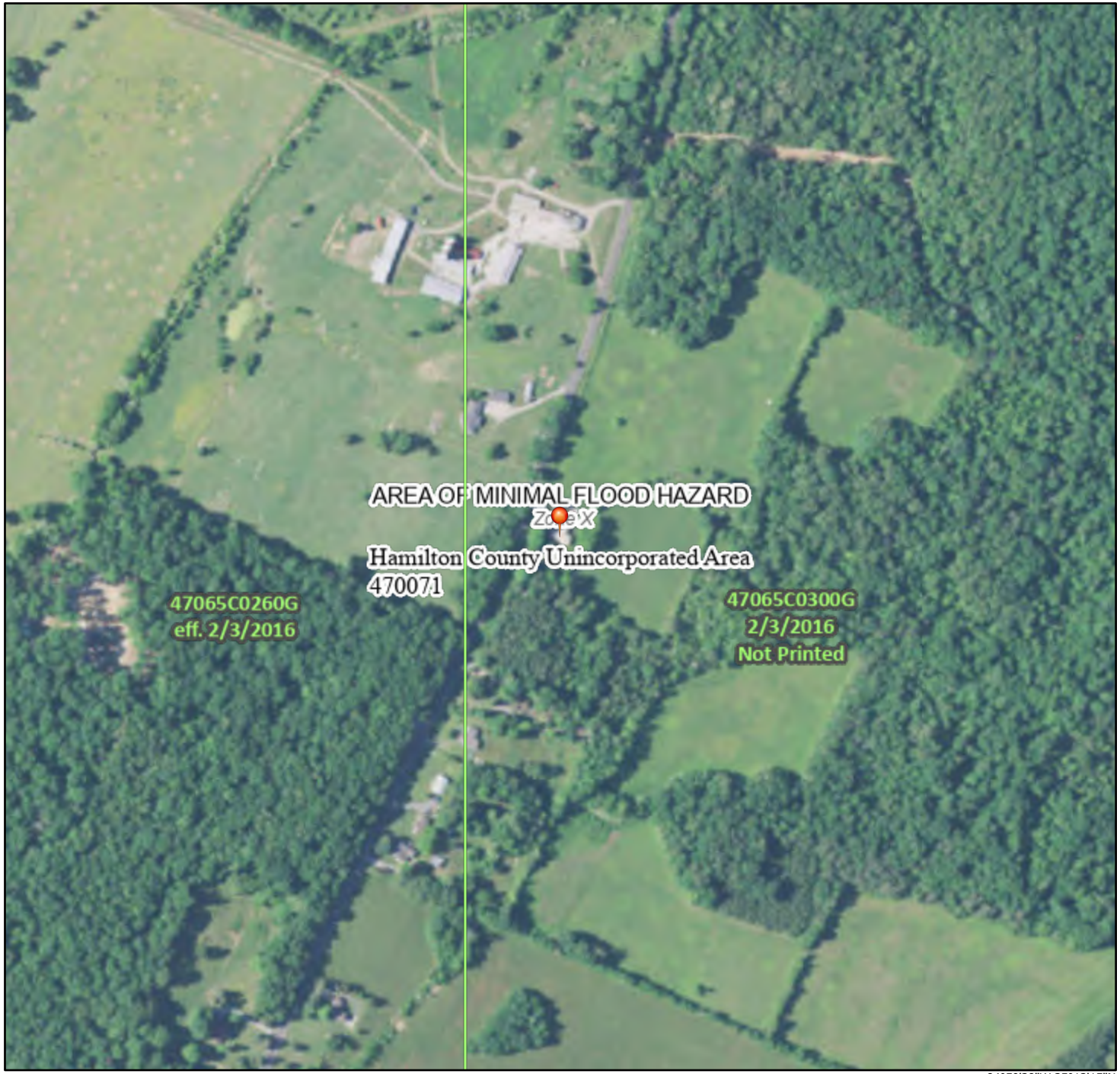
Appendix D

FEMA FIRM Panel

National Flood Hazard Layer FIRMette

FEMA

85°0'16"W 35°13'45"N



84°59'38"W 35°13'15"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/25/2021 at 11:00 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix E

NRCS Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hamilton County, Tennessee

May 25, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hamilton County, Tennessee
Survey Area Data: Version 17, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 29, 2019—Aug 30, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AeC	Allen loam, 5 to 12 percent slopes	1.6	1.6%
AeD	Allen loam, 12 to 25 percent slopes	0.3	0.3%
BuF	Bouldin-Gilpin complex, 20 to 60 percent slopes	12.2	12.6%
CaB	Capshaw silt loam, 2 to 6 percent slopes	6.4	6.6%
CbC	Colbert silt loam, 2 to 12 percent slopes	46.6	47.8%
CoC	Collegedale silt loam, 2 to 12 percent slopes	0.8	0.9%
CoD	Collegedale silt loam, 12 to 25 percent slopes	5.2	5.3%
Ha	Hamblen silt loam, 0 to 2 percent slopes, occasionally flooded, hydric minor component	4.0	4.1%
HcE	Hanceville loam, 25 to 40 percent slopes	2.9	2.9%
MoE	Montevallo shaly silt loam, 20 to 45 percent slopes	5.2	5.3%
RaD	Ramsey loam, 8 to 25 percent slopes	3.6	3.7%
RcF	Ramsey-Rock outcrop complex, 15 to 70 percent slopes	3.4	3.5%
TaC	Talbott silt loam, 2 to 12 percent slopes	1.3	1.4%
TaD	Talbott silt loam, 12 to 25 percent slopes	0.0	0.0%
Tu	Tupelo silt loam, 0 to 3 percent slopes	3.9	4.0%
Totals for Area of Interest		**97.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the

landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present

or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hamilton County, Tennessee

AeC—Allen loam, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2tg8v
Elevation: 630 to 1,980 feet
Mean annual precipitation: 55 to 64 inches
Mean annual air temperature: 47 to 68 degrees F
Frost-free period: 180 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Allen and similar soils: 92 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allen

Setting

Landform: Hillslopes, alluvial fans
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Parent material: Loamy colluvium derived from sandstone and shale

Typical profile

A - 0 to 7 inches: loam
BE - 7 to 12 inches: loam
Bt1 - 12 to 24 inches: clay loam
Bt2 - 24 to 35 inches: clay loam
Bt3 - 35 to 51 inches: clay loam
Bt4 - 51 to 74 inches: clay loam

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

AeD—Allen loam, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2tg8t
Elevation: 630 to 1,980 feet
Mean annual precipitation: 55 to 64 inches
Mean annual air temperature: 47 to 68 degrees F
Frost-free period: 180 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Allen and similar soils: 96 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Allen

Setting

Landform: Hillslopes, alluvial fans
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Parent material: Loamy colluvium derived from sandstone and shale

Typical profile

A - 0 to 7 inches: loam
BE - 7 to 12 inches: loam
Bt1 - 12 to 24 inches: clay loam
Bt2 - 24 to 35 inches: clay loam
Bt3 - 35 to 51 inches: clay loam
Bt4 - 51 to 74 inches: clay loam

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

BuF—Bouldin-Gilpin complex, 20 to 60 percent slopes

Map Unit Setting

National map unit symbol: 1354d
Elevation: 640 to 2,300 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Bouldin and similar soils: 55 percent
Gilpin and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bouldin

Setting

Landform: Escarpments
Landform position (three-dimensional): Side slope, base slope
Parent material: Cobbly and stony colluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 7 inches: stony loam
H2 - 7 to 18 inches: stony loam
H3 - 18 to 80 inches: very stony clay loam

Properties and qualities

Slope: 20 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Gilpin

Setting

Landform: Escarpments
Landform position (three-dimensional): Side slope
Parent material: Loamy residuum weathered from interbedded sedimentary rock

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 24 inches: channery silt loam
H3 - 24 to 30 inches: very channery silt loam
Cr - 30 to 40 inches: bedrock

Properties and qualities

Slope: 20 to 60 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

CaB—Capshaw silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 1354f
Elevation: 640 to 950 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Capshaw and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Capshaw

Setting

Landform: Stream terraces
Parent material: Loess and/or clayey alluvium over clayey residuum weathered from limestone

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 15 inches: silty clay loam
H3 - 15 to 24 inches: silty clay
H4 - 24 to 45 inches: clay
H5 - 45 to 60 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 48 to 84 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

CbC—Colbert silt loam, 2 to 12 percent slopes

Map Unit Setting

National map unit symbol: 1354g
Elevation: 500 to 950 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Colbert and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colbert

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope, crest
Parent material: Clayey residuum weathered from argillaceous limestone

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 14 inches: clay
H3 - 14 to 45 inches: clay
H4 - 45 to 55 inches: clay
R - 55 to 59 inches: bedrock

Properties and qualities

Slope: 2 to 12 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 42 to 55 inches

Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

CoC—Collegedale silt loam, 2 to 12 percent slopes

Map Unit Setting

National map unit symbol: 1354k
Elevation: 700 to 1,200 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Collegedale and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Collegedale

Setting

Landform: Ridges
Landform position (three-dimensional): Crest
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 80 inches: clay

Properties and qualities

Slope: 2 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

CoD—Collegedale silt loam, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: 1354l
Elevation: 700 to 1,200 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Collegedale and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Collegedale

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 80 inches: clay

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Ha—Hamblen silt loam, 0 to 2 percent slopes, occasionally flooded, hydric minor component

Map Unit Setting

National map unit symbol: 2w2p4

Elevation: 840 to 1,260 feet
Mean annual precipitation: 46 to 52 inches
Mean annual air temperature: 47 to 68 degrees F
Frost-free period: 180 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hamblen and similar soils: 90 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hamblen

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam
Bw - 9 to 40 inches: silt loam
C - 40 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 21 to 36 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water capacity: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Melvin

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

HcE—Hanceville loam, 25 to 40 percent slopes

Map Unit Setting

National map unit symbol: 13559
Elevation: 600 to 1,800 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Hanceville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanceville

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 36 inches: clay
H3 - 36 to 64 inches: clay loam
R - 64 to 68 inches: bedrock

Properties and qualities

Slope: 25 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

MoE—Montevallo shaly silt loam, 20 to 45 percent slopes

Map Unit Setting

National map unit symbol: 1355m
Elevation: 500 to 1,800 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Montevallo and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montevallo

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Parent material: Channery residuum weathered from acid shale

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 18 inches: very channery silt loam
Cr - 18 to 28 inches: bedrock

Properties and qualities

Slope: 20 to 45 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

RaD—Ramsey loam, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2w2mv

Elevation: 1,200 to 2,580 feet
Mean annual precipitation: 55 to 64 inches
Mean annual air temperature: 47 to 65 degrees F
Frost-free period: 180 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition
Ramsey and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramsey

Setting
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Typical profile
A - 0 to 8 inches: loam
Bw1 - 8 to 14 inches: loam
Bw2 - 14 to 16 inches: sandy loam
R - 16 to 26 inches: bedrock

Properties and qualities
Slope: 8 to 25 percent
Depth to restrictive feature: 15 to 19 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.3 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

RcF—Ramsey-Rock outcrop complex, 15 to 70 percent slopes

Map Unit Setting
National map unit symbol: 2w2mz
Elevation: 1,200 to 2,580 feet
Mean annual precipitation: 55 to 64 inches
Mean annual air temperature: 47 to 65 degrees F
Frost-free period: 180 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Ramsey and similar soils: 55 percent
Rock outcrop: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramsey

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Typical profile

A - 0 to 8 inches: loam
Bw1 - 8 to 14 inches: loam
Bw2 - 14 to 16 inches: sandy loam
R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 15 to 19 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

TaC—Talbott silt loam, 2 to 12 percent slopes

Map Unit Setting

National map unit symbol: 13561
Elevation: 460 to 1,400 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Talbott and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Talbott

Setting

Landform: Ridges
Landform position (three-dimensional): Crest, side slope
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 36 inches: clay
R - 36 to 40 inches: bedrock

Properties and qualities

Slope: 2 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

TaD—Talbott silt loam, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: 13562
Elevation: 460 to 1,400 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: Not prime farmland

Map Unit Composition

Talbott and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Talbott

Setting

Landform: Ridges
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 36 inches: clay
R - 36 to 40 inches: bedrock

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Tu—Tupelo silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 13564

Elevation: 640 to 970 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 192 to 218 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tupelo and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tupelo

Setting

Landform: Stream terraces, depressions on flood plains
Parent material: Clayey alluvium derived from limestone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 16 inches: silt loam
H3 - 16 to 26 inches: silty clay
H4 - 26 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water capacity: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Bloomingdale

Percent of map unit: 8 percent
Landform: Stream terraces, depressions on depressions on flood plains
Hydric soil rating: Yes

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Appendix F

TDEC Field Data Sheets

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens – GEOS	Project ID : 34-214107
Site Name/Description: 10444 Ooltewah-Georgetown Road Hydrological Assessment	
Site Location: 10444 Ooltewah-Georgetown Rd, Ooltewah, TN	
HUC (12 digit): 060200010401	Lat/Long: S: 35.227411, -84.997531
Previous Rainfall (7-days) : .03 inches	E: 35.227014, -84.998591
Precipitation this Season vs. Normal : abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data : CoCoRaHS	
Watershed Size :	County: Hamilton
Soil Type(s) / Geology : Talbott silt loam	Source: NRCS
Surrounding Land Use : Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 9

Justification / Notes : See Notes Section →

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.25)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	(1)	2	3	1
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	(1)	2	3	1
4. Sorting of soil textures or other substrate	0	(1)	2	3	1
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	.5
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	(0)	0.5	1	1.5	0
9. Natural levees	(0)	1	2	3	0
10. Headcuts	(0)	1	2	3	0
11. Grade controls	0	(0.5)	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	1.5	1.25
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0
					+
					6.25

B. Hydrology (Subtotal = 1.75)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	(0)	1	2	3	0
15. Water in channel and >48 hours since sig. rain	(0)	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	.75
17. Sediment on plants or on debris	0	(0.5)	1	1.5	.5
18. Organic debris lines or piles (wrack lines)	0	(0.5)	1	1.5	.5
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0
					+
					1.75

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

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

Total Points = 9

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

Notes : The entire channel was dry at the time of the field assessment. Some minor grade controlling and wrackline were visible in the upstream and central portions at the time of the assessment. A moderate amount of visible leaves covered the channel bottom. Upland plants and trees were found in the channel with a large presence of Chinese Privet (Ligustrum sinense). No aquatic life was located in the channel during the field assessment.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 9-22-21
Assessors/Affiliation: Cody Givens - GEOS	Project ID: 34-214107
Site Name/Description: 10444 Dolteweh - Georgetown Rd Hydrological Assessment	
Site Location: 10444 Dolteweh - Georgetown Rd, Dolteweh, TN	
HUC (12 digit): 060200010401	Lat/Long: S: 35.225011, -84.995597
Previous Rainfall (7-days): .03 inches	E: 35.224866, -84.996827
Precipitation this Season vs. Normal: abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data: CoCoCahs	
Watershed Size:	County: Hamilton
Soil Type(s) / Geology: Tidelo silt loam & Cadsow silt loam	Source: NRCS
Surrounding Land Use: Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 15.5

Justification / Notes: See notes Section →

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.75)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	(2)	3	2
2. Sinuous channel	0	1	(1.5)	3	1.5
3. In-channel structure: riffle-pool sequences	0	(1)	2	3	1
4. Sorting of soil textures or other substrate	0	(1)	2	3	1
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	(1)	2	3	1
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	(0.5)	1	1.5	.5
9. Natural levees	(0)	1	2	3	0
10. Headcuts	0	(1)	2	3	1
11. Grade controls	0	(0.5)	1	1.5	.5
12. Natural valley or drainageway	0	0.5	1	(1.5)	1.25
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0
					+ 9.75

B. **Hydrology** (Subtotal = 2.75)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	(0)	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	(1)	2	3	.5
16. Leaf litter in channel (January – September)	1.5	(1)	0.5	0	1.25
17. Sediment on plants or on debris	0	(0.5)	1	1.5	.5
18. Organic debris lines or piles (wrack lines)	0	(0.5)	1	1.5	.5
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0
					+ 2.75

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

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

Total Points = 15.5

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

Notes : No pools of flow was visible within the feature at the time of the field assessment. A small headcut was located in the upstream portion of the feature near the starting point of the channel. Some logs and leaf debris were found in the channel and seemed to be acting in moderate longevity as grade controls. Visible wrack lining was found within the channel in small quantities. No aquatic life was located in the feature during the assessment.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens – GEOS	Project ID: 34-214107
Site Name/Description: 10444 Ooltewah – Georgetown Road Hydrological Assessment	
Site Location: 10444 Ooltewah – Georgetown Rd, Ooltewah, TN	
HUC (12 digit): 060200010401	Lat/Long: S: 35.224681, -84.996931
Previous Rainfall (7-days): .03 inches	E: 35.224625, -84.996791
Precipitation this Season vs. Normal: abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data: CoCoRaLS	
Watershed Size:	County: Hamilton
Soil Type(s) / Geology: Capshaw silt loam	Source: NRCS
Surrounding Land Use: Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 10.75

Justification / Notes: See Notes Section →

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	(1)	2	3	1
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	(1)	2	3	1
4. Sorting of soil textures or other substrate	0	(0.5)	1	2	3	.5
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	(0.5)	1	2	3	.5
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	(0.5)	1	1.5	.25
9. Natural levees	(0)	1	2	3	0
10. Headcuts	(0)	1	2	3	0
11. Grade controls	0	(0.5)	1	1.5	.25
12. Natural valley or drainageway	0	0.5	(1)	1.5	1
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0
					5.5

B. Hydrology (Subtotal = 2.25)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	(0)	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	(0.5)	1	2	3	.5
16. Leaf litter in channel (January – September)	1.5	(1)	0.5	0	1
17. Sediment on plants or on debris	0	(0.5)	1	1.5	.5
18. Organic debris lines or piles (wrack lines)	0	(0.5)	1	1.5	.25
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0
					2.25

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

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

Total Points = 10.75

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

Notes : No flow was present in the feature at the time of the field assessment. Small amounts of grade controls were visible that consisted of roots and leaf/limb debris. Minor wrack lines are visible in the upstream portion of the feature. No aquatic life was present in the feature at the time of the field assessment.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens - GEOS	Project ID: 34-219107
Site Name/Description: 10444 Dolterwah - Georgetown Road Hydrological Assessment	
Site Location: 10444 Dolterwah - Georgetown Rd, Dolterwah, TN	
HUC (12 digit): 060200104011	Lat/Long: S: 35.220202, -84.990811
Previous Rainfall (7-days): .03 inches	E, 35.219996, -84.991998
Precipitation this Season vs. Normal: abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data: CoCoRahs	
Watershed Size:	County: Hamilton
Soil Type(s) / Geology: Bouldin - Gilpin Complex	Source: NRCS
Surrounding Land Use: Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 14.75

Justification / Notes: See Notes Section →

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9.75)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	(2)	3	2
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	(1)	2	3	1
4. Sorting of soil textures or other substrate	0	(1)	2	3	1
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	(1)	2	3	1
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	(0.5)	1	1.5	.5
9. Natural levees	(0)	1	2	3	0
10. Headcuts	0	(1)	2	3	1
11. Grade controls	0	0.5	(1)	1.5	.75
12. Natural valley or drainageway	0	0.5	1	(1.5)	1.5
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0
					+ 9.75

B. Hydrology (Subtotal = 2.5)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	(0)	1	2	3	0
15. Water in channel and >48 hours since sig. rain	(0)	1	2	3	0
16. Leaf litter in channel (January – September)	1.5	(1)	0.5	0	1.25
17. Sediment on plants or on debris	0	(0.5)	1	1.5	.5
18. Organic debris lines or piles (wrack lines)	0	0.5	(1)	1.5	.75
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0
					+ 2.5

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

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

Total Points = 14.75

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

Notes : No flow or saturation was found in the channel during the field assessment. A good amount of leaf cover was located in the bottom of the channel. Grade controls were located in the feature which consisted of large logs and small limbs/leaf debris. The grade controls were acting in a moderate longevity within the channel. No aquatic life was found during the assessment.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens – GEOS	Project ID : 34-214107
Site Name/Description: 10444 Dolltewah-Georgetown Road Hydrological Assessment	
Site Location: 10444 Dolltewah-Georgetown Road, Dolteweh, TN	
HUC (12 digit): 060200010401	Lat/Long: S: 35.224563 / -84.996825
Previous Rainfall (7-days) : .03 inches	E: 35.223099 / -84.999110
Precipitation this Season vs. Normal : abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data : coCoRaHS	
Watershed Size :	County: Hamilton
Soil Type(s) / Geology : Hamblen silt loam	Source: NRCS
Surrounding Land Use : Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 29

Justification / Notes : See Notes section →

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 13.5)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	2 (0)	3	2.5
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	(2)	3	2
4. Sorting of soil textures or other substrate	0	1	(2)	3	2
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	1 (0)	(2)	3	1.5
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	0.5 (0)	1	1.5	.75
9. Natural levees	(0)	1	2	3	0
10. Headcuts	0	(1)	2	3	1
11. Grade controls	0	0.5	(1)	1.5	1
12. Natural valley or drainageway	0	0.5	1 (0)	1.5	1.25
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0

+ (13) 13

B. Hydrology (Subtotal = 9.5)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	0	1 (0)	2	3	1.5
15. Water in channel and >48 hours since sig. rain	0	1	2 (0)	(3)	3
16. Leaf litter in channel (January – September)	(1.5)	1	0.5	0	1.5
17. Sediment on plants or on debris	0	0.5 (0)	(2)	1.5	.75
18. Organic debris lines or piles (wrack lines)	0	0.5 (0)	(2)	1.5	.75
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = (1.5)		1.5

+ (9) 9

C. Biology (Subtotal = 7)	Absent	Weak	Moderate	Strong	
20. Fibrous roots in channel bed [1]	3	(2)	1	0	2
21. Rooted plants in the thalweg [1]	3	2 (0)	1	0	1.5
22. Crayfish in stream (exclude in floodplain)	(0)	1	2	3	0
23. Bivalves/mussels	(0)	1	2	3	0
24. Amphibians	0	(0.5)	1	1.5	.5
25. Macrobenthos (record type & abundance)	0	(1)	2	3	1
26. Filamentous algae; periphyton	0	(1)	2	3	1
27. Iron oxidizing bacteria/fungus	0	(0.5)	1	1.5	.5
28. Wetland plants in channel bed [2]	0	(0.5)	1	1.5	.5

+ 7

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

Total Points = 29

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

Notes : Visible flow was found throughout the channel at the time of the field assessment. Areas of riffle-run pool sequences were found throughout. Iron sheening was found within different locations of the channel. Grade controls were also visible that consisted on small logs and limb debris. A few frogs where located in the central portion of the feature along with microinvertebrate casing. A few species of Saltgrass were visible along the channel margins as well.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens - GEOS	Project ID: 34-214107
Site Name/Description: 10444 Ooltewah-Georgetown Rd Hydrological Assessment	
Site Location: 10444 Ooltewah-Georgetown Rd, Ooltewah, TN	
HUC (12 digit): 060200104 01	Lat/Long: S: 35.22197, -84.99372 E: 35.223090, -84.998992
Previous Rainfall (7-days): .03 inches	
Precipitation this Season vs. Normal: abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data: coCoRahs	
Watershed Size:	County: Hamilton
Soil Type(s) / Geology: Colbert silt loam	Source: NRCS
Surrounding Land Use: Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 29

Justification / Notes: See Notes Section →

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 13.75)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	2 (1)	3	2.5
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	(2)	3	2
4. Sorting of soil textures or other substrate	0	1	(2)	3	2
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	1	(2)	3	2
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	0.5 (0)	1	1.5	.75
9. Natural levees	(0)	1	2	3	0
10. Headcuts	0	1 (0)	2	3	1.5
11. Grade controls	0	0.5 (0)	1	1.5	.75
12. Natural valley or drainageway	0	0.5	1 (0)	1.5	1.25
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0
					+ 13.75

B. Hydrology (Subtotal = 6.75)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	0	1	(2)	3	2
15. Water in channel and >48 hours since sig. rain	0	1 (0)	(2)	3	1.5
16. Leaf litter in channel (January – September)	(1.5)	1	0.5	0	1.5
17. Sediment on plants or on debris	0	0.5	(1)	1.5	1
18. Organic debris lines or piles (wrack lines)	0	0.5 (0)	1	1.5	.75
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0
					+ 6.75

C. Biology (Subtotal = 8.5)	Absent	Weak	Moderate	Strong	
20. Fibrous roots in channel bed [1]	3	(2)	1	0	2
21. Rooted plants in the thalweg [1]	3	(2)	1	0	2
22. Crayfish in stream (exclude in floodplain)	0	(1)	2	3	1
23. Bivalves/mussels	(0)	1	2	3	0
24. Amphibians	0	(0.5)	1	1.5	.5
25. Macrobenthos (record type & abundance)	0	(1)	2	3	1
26. Filamentous algae; periphyton	0	(1)	2	3	1
27. Iron oxidizing bacteria/fungus	0	(0.5)	1	1.5	.5
28. Wetland plants in channel bed [2]	0	(0.5)	1	1.5	.5
					+ 8.5

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

Total Points = 29

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

Notes : A groundwater table connection was located in the far upstream starting point of the feature during the assessment. visible flow was found in the channel but not present throughout. A large bed cut was found in the central portion of the feature. large logs and bolder clusters were found in the channel and were acting as moderate grade controls. A few species of gallis fly were located in the upstream portion of the feature - wetland plant species of soft Rush (Juncus effusus) was found in the upstream starting point of the feature.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens- GEOS	Project ID: 34-214107
Site Name/Description: 10444 Dolltevah-Georgetown Road Hydrological Assessment	
Site Location: 10444 Dolltevah-Georgetown Rd, Dolltevah, TN	
HUC (12 digit): 060200104011	Lat/Long: S: 35.222363, -84.994555
Previous Rainfall (7-days): .03 inches	E: 35.222354, -84.994819
Precipitation this Season vs. Normal: abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data: CoCoRaHS	
Watershed Size:	County: Hamilton
Soil Type(s) / Geology: Colbert silt loam	Source: NRCS
Surrounding Land Use: Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 24

Justification / Notes: See notes section →

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 11.75)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	2	(3)	2.5
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	(2)	3	1.5
4. Sorting of soil textures or other substrate	0	1	(2)	3	1.5
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	1	(2)	3	1.5
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	0.5	(1)	1.5	.75
9. Natural levees	(0)	1	2	3	0
10. Headcuts	0	(1)	2	3	1
11. Grade controls	0	0.5	(1)	1.5	.75
12. Natural valley or drainageway	0	0.5	1	(1.5)	1.25
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0

+ 11.75

B. **Hydrology** (Subtotal = 5.75)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	0	(1)	2	3	1
15. Water in channel and >48 hours since sig. rain	0	1	(2)	3	2
16. Leaf litter in channel (January – September)	(1.5)	1	0.5	0	1.5
17. Sediment on plants or on debris	0	(0.5)	1	1.5	.5
18. Organic debris lines or piles (wrack lines)	0	0.5	(1)	1.5	.75
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0

+ 5.75

C. **Biology** (Subtotal = 6.5)	Absent	Weak	Moderate	Strong	
20. Fibrous roots in channel bed [1]	3	(2)	1	0	2
21. Rooted plants in the thalweg [1]	3	(2)	1	0	2
22. Crayfish in stream (exclude in floodplain)	(0)	1	2	3	0
23. Bivalves/mussels	(0)	1	2	3	0
24. Amphibians	(0)	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	(1)	2	3	1
26. Filamentous algae; periphyton	0	(1)	2	3	1
27. Iron oxidizing bacteria/fungus	0	(0.5)	1	1.5	.5
28. Wetland plants in channel bed [2]	(0)	0.5	1	1.5	0

+ 6.5

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

Total Points = 24

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

Notes : Visible flow was located in the channel at the time of the field assessment. flow was found in riffle-run-pool sequences. A head cut was found near the upstream starting point of the feature. Grade controls consisting of large boulder clusters along with logs were found in the channel likewise. A couple of caddis fly casings were found in the central portion of the feature.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: N/A	Date/Time: 4-22-21
Assessors/Affiliation: Cody Givens- GEOS	Project ID: 34-214107
Site Name/Description: 1044 Ooltewah-Georgetown Road Hydrological Assessment	
Site Location: 1044 Ooltewah-Georgetown Rd, Ooltewah, TN	
HUC (12 digit): 060200101040 1	Lat/Long: S: 35.219995, -84.992010 E: 35.219915, -84.993772
Previous Rainfall (7-days): .03 inches	
Precipitation this Season vs. Normal: abnormally wet elevated (average) low abnormally dry unknown Source of recent & seasonal precip data: CoCoRaHS	
Watershed Size:	County: Hamilton
Soil Type(s) / Geology: Collegedale silt loam	Source: NRCS
Surrounding Land Use: Agricultural and 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	N/A	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	N/A	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	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) = 28

Justification / Notes: See Notes Section →

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 13.5)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	2	(3)	2.5
2. Sinuous channel	0	(1)	2	3	1
3. In-channel structure: riffle-pool sequences	0	1	(2)	3	2
4. Sorting of soil textures or other substrate	0	1	(2)	3	1.5
5. Active/relic floodplain	(0)	0.5	1	1.5	0
6. Depositional bars or benches	0	1	(2)	3	2
7. Braided channel	(0)	1	2	3	0
8. Recent alluvial deposits	0	0.5	(1)	1.5	.75
9. Natural levees	(0)	1	2	3	0
10. Headcuts	0	1	(2)	3	1.5
11. Grade controls	0	0.5	(1)	1.5	.75
12. Natural valley or drainageway	0	0.5	1	(1.5)	1.5
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3		0
					13.5

B. Hydrology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	0	1	(2)	3	2
15. Water in channel and >48 hours since sig. rain	0	1	(2)	3	1.5
16. Leaf litter in channel (January – September)	(1.5)	1	0.5	0	1.5
17. Sediment on plants or on debris	0	0.5	(1)	1.5	.75
18. Organic debris lines or piles (wrack lines)	0	0.5	(1)	1.5	.75
19. Hydric soils in channel bed or sides of channel	No = (0)		Yes = 1.5		0
					6.5

C. Biology (Subtotal =)	Absent	Weak	Moderate	Strong	
20. Fibrous roots in channel bed [1]	3	(2)	1	0	2
21. Rooted plants in the thalweg [1]	3	(2)	1	0	2
22. Crayfish in stream (exclude in floodplain)	0	(1)	2	3	1
23. Bivalves/mussels	(0)	1	2	3	0
24. Amphibians	(0)	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	(1)	2	3	1
26. Filamentous algae; periphyton	0	(1)	2	3	1
27. Iron oxidizing bacteria/fungus	0	(0.5)	1	1.5	.5
28. Wetland plants in channel bed [2]	0	(0.5)	1	1.5	.5
					8

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

Total Points = 28

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

Notes : A groundwater table connection was located at the starting point of the feature at a large headcut. Flow was visible throughout the majority of the feature but some areas consisted of pools of water subsurface. Large boulder clusters were present in the feature and were acting as relic grade controls. A small population of crayfish were found within the channel along with a few caddis fly casings.

Appendix G

USACE Wetland Delineation Field Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-1

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221892 Long: -84.995103 Datum: _____

Soil Map Unit Name: Capshaw silt loam and Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-4"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	15	-	FACW
2. Liquidambar styraciflua	10	-	FAC
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	25	= Total Cover	
Herb Stratum (Plot size:)			
1. Juncus effusus	15	-	FACW
2. Schedonorus arundinaceus	10	-	FACU
3. Sorghum halepense	20	-	FACU
4. Carex abscondita	30	-	FAC
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	75	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	30	x 2 =	60
FAC species	40	x 3 =	120
FACU species	30	x 4 =	120
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 ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	96	10yr 4/6	4	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-2

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221691 Long: -84.995414 Datum: _____

Soil Map Unit Name: Capshaw silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-2"

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	0	= Total Cover	
Herb Stratum (Plot size:)			
1. Rubus argutus		-	FACU
2. Sorghum halepense		-	FACU
3. Schedonorus arundinaceus		-	FAC
4. Andropogon virginicus		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	0	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	30	x 2 =	60
FAC species	40	x 3 =	120
FACU species	30	x 4 =	120
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 ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/3	98	10yr 4/6	2	C	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-3

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221506 Long: -84.995377 Datum: _____

Soil Map Unit Name: Capshaw silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-4"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Liquidambar styraciflua	15	-	FAC
2. Ulmus americana	15	-	FACW
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	30 = Total Cover		
Herb Stratum (Plot size:)			
1. Schedonorus arundinaceus	20	-	FACU
2. Juncus effusus	20	-	FACW
3. Sorghum halepense	15	-	FACU
4. Carex abscondita	15	-	FAC
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	70 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	35	x 2 =	70
FAC species	30	x 3 =	90
FACU species	35	x 4 =	140
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 ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	97	10yr 4/6	3	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-4

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221044 Long: -84.995763 Datum: _____

Soil Map Unit Name: Capshaw silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. Solidago canadensis	20	-	FACU
2. Sorghum halepense	20	-	FACU
3. Schedonorus arundinaceus	30	-	FACU
4. Andropogon virginicus	20	-	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	90	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species		x 3 =	
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		380 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-5

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221287 Long: -84.995560 Datum: _____

Soil Map Unit Name: Capshaw silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-4"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-5

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Liquidambar styraciflua	5	-	FAC
2. Ulmus americana	10	-	FACW
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	15 = Total Cover		
Herb Stratum (Plot size:)			
1. Juncus effusus	30	-	FACW
2. Schedonorus arundinaceus	20	-	FACU
3. Carex abscondita	15	-	FAC
4. Sorghum halepense	20	-	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	85 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	40	x 2 =	80
FAC species	20	x 3 =	60
FACU species	40	x 4 =	160
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 ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	97	10 yr 4/6	3	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-6

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221505 Long: -84.995117 Datum: _____

Soil Map Unit Name: Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-6

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. Sorghum halepense	35	-	FACU
2. Schedonorus arundinaceus	30	-	FACU
3. Andropogon virginicus	10	-	FACU
4. Rubus argutus	15	-	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	90	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species		x 3 =	
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		380 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/4	98	10 yr 4/6	2	C	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-7

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.222025 Long: -84.995009 Datum: _____

Soil Map Unit Name: Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-7

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda	25	-	FAC
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. Solidago canadensis	15	-	FACU
2. Rubus argutus	20	-	FACU
3. Schedonorus arundinaceus	30	-	FACU
4.		-	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	65	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	65	x 4 =	260
UPL species		x 5 =	
Column Totals:	100 (A)		355 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-8

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221855 Long: -84.994032 Datum: _____

Soil Map Unit Name: Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-3"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-8

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2. Liquidambar styraciflua	5	-	FAC
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	15 = Total Cover		
Herb Stratum (Plot size:)			
1. Juncus effusus	40	-	FACW
2. Solidago canadensis	20	-	FACU
3. Schedonorus arundinaceus	25	-	FACU
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	85 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	50	x 2 =	100
FAC species	5	x 3 =	15
FACU species	45	x 4 =	180
UPL species		x 5 =	
Column Totals:	100 (A)		295 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-8

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	96	10 yr 4/6	4	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-9

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.221813 Long: -84.994140 Datum: _____

Soil Map Unit Name: Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-9

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	10 = Total Cover		
Herb Stratum (Plot size:)			
1. Schedonorus arundinaceus	30	-	FACW
2. Solidago canadensis	25	-	FACU
3. Sorghum halepense	25	-	FACU
4. Andropogon virginicus	10	-	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	90 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species		x 3 =	
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		380 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL Sampling Point: DP-9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-10

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35. 221860 Long: -84.993913 Datum: _____

Soil Map Unit Name: Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-10

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Juniperus virginana	10	-	FACU
2. Ulmus americana	5	-	FACW
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	15	= Total Cover	
Herb Stratum (Plot size:)			
1. Rubus argutus	10	-	FACU
2. Solidago canadensis	20	-	FACU
3. Schedonorus arundinaceus	30	-	FACU
4. Sorghum halepense	25	-	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	85	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	5	x 2 =	10
FAC species		x 3 =	
FACU species	95	x 4 =	380
UPL species		x 5 =	
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

The vegetation had been altered by agricultural practices prior to the field reconnaissance (i.e., Bushhogging-Hay Production).

SOIL

Sampling Point: DP-10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-11

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35. 223906 Long: -84.998831 Datum: _____

Soil Map Unit Name: Colbert silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-4"

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-11

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis occidentalis	35	-	FACU
2. Carya ovata	20	-	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ligustrum sinense	25	-	FACU
2. Juniperus virginiana	10	-	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	35	= Total Cover	
Herb Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	0	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. Toxicodendron radicans	10	-	FAC
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	10	x 3 =	30
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: DP-11

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 3/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-12

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.223982 Long: -84.997510 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-3"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-12

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	10 = Total Cover		
Herb Stratum (Plot size:)			
1. Juncus effusus	25	-	FACW
2. Carex grayi	15	-	FACW
3. Schedonorus arundinaceus	20	-	FACU
4. Andropogon virginicus	10	-	FACU
5. Sorghum halepense	20	-	FACU
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	90 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	50	x 2 =	100
FAC species		x 3 =	
FACU species	50	x 4 =	200
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 ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

Vegeation had been altered prior to site visit. (i.e. Bush-hogging / Hay Production)

SOIL

Sampling Point: DP-12

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	96	10 yr 4/6	3	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-13

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.223906 Long: -84.997590 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-13

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	0	= Total Cover	
Herb Stratum (Plot size:)			
1. Sorghum halepense	25	-	FACU
2. Schedonorus arundinaceus	30	-	FACU
3. Rubus argutus	10	-	FACU
4. Solidago canadensis	15	-	FACU
5. Chasmanthium latifolium	20	-	FACU
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

Vegeation had been altered prior to site visit. (i.e. Bush-hogging / Hay Production)

SOIL

Sampling Point: DP-13

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-14

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.223922 Long: -84.997686 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ✔ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-4"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-14

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	10	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	10 = Total Cover		
Herb Stratum (Plot size:)			
1. Carex grayi	15	-	FACW
2. Schedonorus arundinaceus	20	-	FACU
3. Juncus effusus	25	-	FACW
4. Solidago canadensis	15	-	FACU
5. Sorghum halepense	15	-	FACU
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	90 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	50	x 2 =	100
FAC species		x 3 =	
FACU species	50	x 4 =	200
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 ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

Vegeation had been altered prior to site visit. (i.e. Bush-hogging / Hay Production)

SOIL Sampling Point: DP-14

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	92	10 yr 4/6	8	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-15

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.223984 Long: -84.997689 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-15

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	0	= Total Cover	
Herb Stratum (Plot size:)			
1. Sorghum halepense	20	-	FACU
2. Schedonorus arundinaceus	30	-	FACU
3. Rubus argutus	10	-	FACW
4. Solidago canadensis	20	-	FACU
5. Chasmanthium latifolium	20	-	FACU
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	50	x 2 =	
FAC species		x 3 =	
FACU species	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	150 (A)		400 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

Vegeation had been altered prior to site visit. (i.e. Bush-hogging / Hay Production)

SOIL Sampling Point: DP-15

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4						L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-16

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.224034 Long: -84.997597 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✔ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0-3"

Wetland Hydrology Present? **Yes** ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-16

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	20	-	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Ulmus americana	15	-	FACW
2. Acer rubrum	15	-	FAC
3. Ligustrum sinense	10	-	FACU
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	40 = Total Cover		
Herb Stratum (Plot size:)			
1. Juncus effusus	40	-	FACW
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	40 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	55	x 2 =	110
FAC species	15	x 3 =	45
FACU species	30	x 4 =	120
UPL species		x 5 =	
Column Totals:	100 (A)		275 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

Vegeation had been altered prior to site visit. (i.e. Bush-hogging / Hay Production)

SOIL Sampling Point: DP-16

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 5/2	95	10 yr 4/6	5	D	M	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-17

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.223985 Long: -84.997625 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-17

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	0	= Total Cover	
Herb Stratum (Plot size:)			
1. Sorghum halepense	20	-	FACU
2. Schedonorus arundinaceus	35	-	FACU
3. Rubus argutus	10	-	FACU
4. Solidago canadensis	15	-	FACU
5. Chasmanthium latifolium	20	-	FACU
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

Vegeation had been altered prior to site visit. (i.e. Bush-hogging / Hay Production)

SOIL Sampling Point: DP-17

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-18

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.222842 Long: -84.998651 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-18

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	-	FACW
2. Acer rubrum	20	-	FAC
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ligustrum sinense	20	-	FACU
2. Juniperus virginiana	15	-	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	35	= Total Cover	
Herb Stratum (Plot size:)			
1. Solidago canadensis	15	-	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	15	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	50	x 4 =	200
UPL species		x 5 =	
Column Totals:	100 (A)		320 (B)

Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP-18

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 3/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 10444 Ooltewah Georgetown Road City/County: Ooltewah / Hamilton Sampling Date: 4-22-21

Applicant/Owner: Mr. Mark Jooma State: TN Sampling Point: DP-19

Investigator(s): Cody Givens-GEOS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR Lat: 35.222633 Long: -84.999146 Datum: _____

Soil Map Unit Name: Hamblen silt loam NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✔ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ 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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-19

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	-	FAC
2. Fraxinus pennsylvanica	15	-	FACW
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Ligustrum sinense	20	-	FACU
2. Juniperus virginiana	25	-	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	45	= Total Cover	
Herb Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	0	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. Toxicodendron radicans	10	-	FAC
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	15	x 2 =	30
FAC species	40	x 3 =	120
FACU species	45	x 4 =	180
UPL species		x 5 =	
Column Totals:	100 (A)		330 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

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

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP-19

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10yr 4/4	100					L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: 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) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

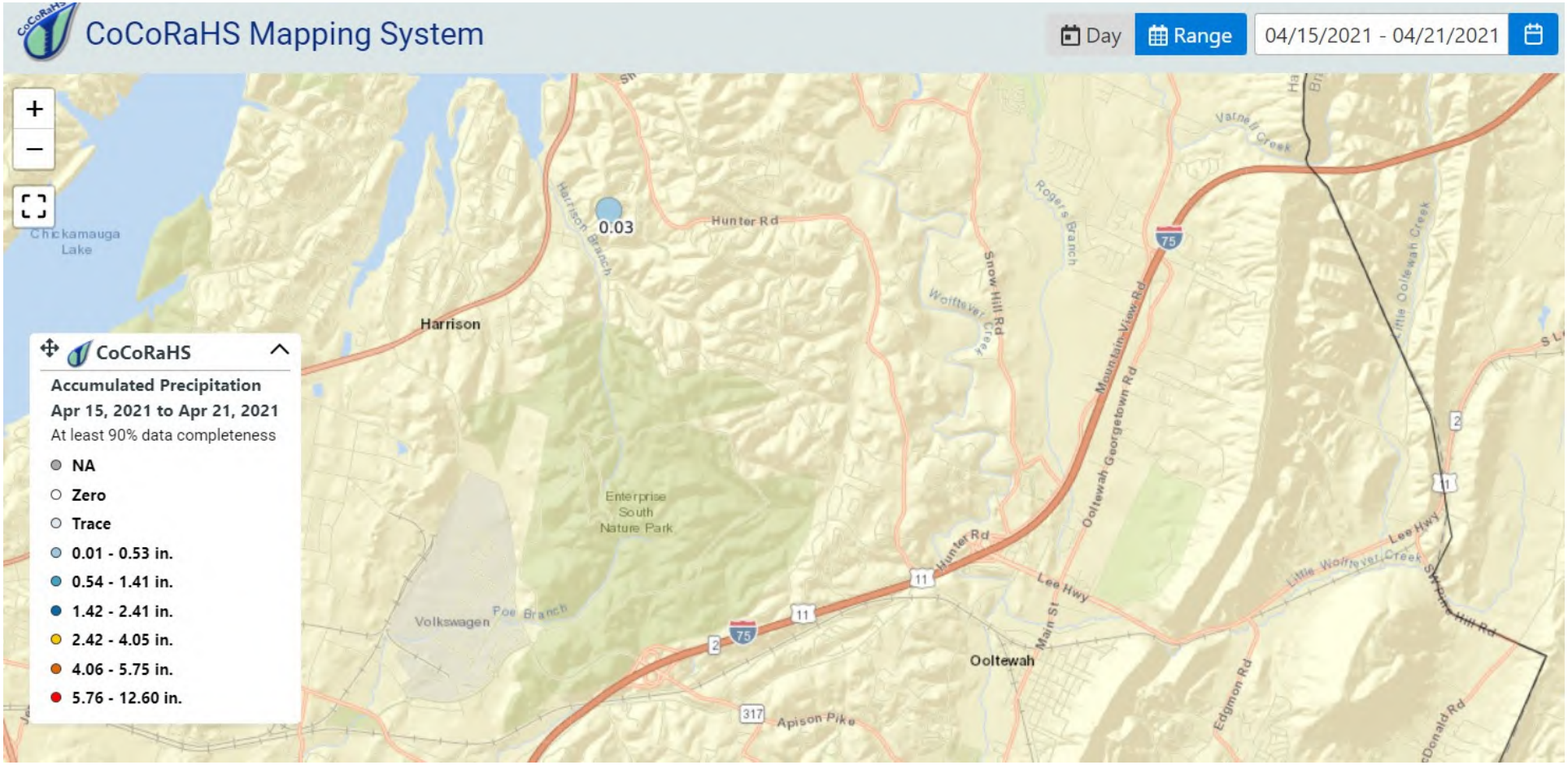
Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Appendix H

Weather Data


CoCoRaHS Mapping System
Day
Range
04/15/2021 - 04/21/2021
Chickamauga Lake
0.03
Hunter Rd
Harrison
Harrison Branch
Rogers Branch
Snow Hill Rd
Wolftever Creek
Mountain View Rd
Ooltewah Georgetown Rd
Varnell Creek
Little Ooltewah Creek
Enterprise South Nature Park
Volkswagen
Poe Branch
Lee Hwy
Main St
Ooltewah
Little Wolftever Creek
Edgmon Rd
Apison Pike
CoCoRaHS
Accumulated Precipitation
Apr 15, 2021 to Apr 21, 2021
At least 90% data completeness
NA
Zero
Trace
0.01 - 0.53 in.
0.54 - 1.41 in.
1.42 - 2.41 in.
2.42 - 4.05 in.
4.06 - 5.75 in.
5.76 - 12.60 in.

Appendix I

Field Photography

Photograph 1: View of WWC-1 facing west-southwest and downstream in the northwestern portion of the Subject Property.
(35.227052, -84.997988)

Photograph 2: View of WWC-1 facing west-southwest and downstream in the northwestern portion of the Subject Property.
(35.226995, -84.998263)

Photograph 3: View of WWC-2 facing west-southwest and downstream in the northeastern portion of the Subject Property.
(35224969, -84.995719)

Photograph 4: View of WWC-1 facing northeast and upstream in the northeastern portion of the Subject Property.
(35.224669, -84.996750)

Photograph 5: View of WWC-3 facing east and downstream in the northeastern portion of the Subject Property. (35.224675, -84.996904)

Photograph 6: View of WWC-4 facing west-southwest and downstream in the eastern portion of the Subject Property. (35.220194, -84.990964)

Photograph 7: View of WWC-4 facing west-southwest and downstream in the eastern portion of the Subject Property. (35.220046, -84.991919)

Photograph 8: View of WWC-4 facing east-northeast and upstream in the eastern portion of the Subject Property.

(35.220020,-84.991998)

Photograph 9: View of Stream-1 facing northeast and upstream in the southwestern portion of the Subject Property. (35.223177, -84.998916)

Photograph 10: View of Stream-1 facing north and upstream in the western portion of the Subject Property. (35.223798, -84.998328)

Photograph 11: View of Stream-1 facing north and upstream in the western portion of the Subject Property. (35.224023, -84.998012)

Photograph 12: View of Stream-2 facing west and downstream in the central portion of the Subject Property. (35.220161, -84.994371)

Photograph 13: View of Stream-2 facing west-northwest and downstream in the central portion of the Subject Property. (35.222226, -84.994513)

Photograph 14: View of Stream-2 facing west-northwest and downstream in the central portion of the Subject Property. (35.222397, -84.995216)

Photograph 15: View of Stream-3 facing northwest and upstream in the central portion of the Subject Property. (35.222368, -84.994742)

Photograph 16: View of Stream-3 facing west-southwest and downstream in the central portion of the Subject Property. (35.222355, -84.994605)

Photograph 17: View of Stream-4 facing east and upstream in the eastern portion of the Subject Property. (35.220062, -84.992210)

Photograph 18: View of Stream-4 facing east and upstream in the eastern portion of the Subject Property. (35.219950, -84.992960)

Photograph 19: View of Stream-4 facing west and downstream in the eastern portion of the Subject Property near the property boundary.
(35.219938, -84.993766)

Photograph 20: View of Pond-1 facing north in the west-central portion of the Subject Property.
(35.224620, -84.997083)

Photograph 21: View of Pond-2 facing west in the west-central portion of the Subject Property. (35.224332, -84.997222)

Photograph 22: View of Wetalnd-1 facing south in the central portion of the Subject Property. (35.221737, -84.995186)

Photograph 23: View of Wetalnd-1 facing east in the central portion of the Subject Property. (35.221492, -84.995337)

Photograph 24: View of soil located within Wetland-1. (Data Point-3)

Photograph 25: View of soil located outside of Wetland-1.
(Data Point-2)

Photograph 26: View of Wetalnd-2 facing west in the central portion of the Subject Property.
(35.221891, -84.994071)

Photograph 27: View of Wetalnd-2 facing west-northwest in the central portion of the Subject Property. (35.221898, -84.994084)

Photograph 28: View of soil located within Wetland-2. (Data Point-8)

Photograph 29: View of soil located outside of Wetland-2.
(Data Point-9)

Photograph 30: View of Wetland-3 facing south in the west-central portion of the Subject Property.
(35.223957, -84.997561)

Photograph 31: View of Wetland-3 facing east in the west-central portion of the Subject Property.
(35.224003, -84.997447)

Photograph 32: View of soil located within Wetland-3.
(Data Point-12)

Photograph 33: View of soil located outside of Wetland-3.
(Data Point-13)

Photograph 34: View of Wetland-4 facing west-southwest in the west-central portion of the Subject Property.
(35.224037, -84.997578)

Photograph 35: View of Wetland-4 facing northeast in the west-central portion of the Subject Property. (35.224027, -84.997637)

Photograph 36: View of soil located within Wetland-4. (Data Point-16)

Photograph 37: View of soil located outside of Wetland-4.
(Data Point-17)

[EXTERNAL] 21-124: Morgan Farms

Derek Blackwood <mapengr@epbfi.com>

Wed 5/17/2023 11:41 AM

To: Cali Dobbins <Cali.Dobbins@tn.gov>;Hannah L. Biggs <Hannah.L.Biggs@tn.gov>

Cc: Mccall Price <mccallprice@epbfi.com>

Cali & Hannah,

Please see the below plans & supporting documentation for the proposed CGP & ARAP permit review for Morgan Farms for review. I will have checks delivered as soon as possible. Let me know if you have any questions or need any additional information.

Morgan Farms

Thank you,

Derek Blackwood, P.E.
MAP Engineers, LLC
7380 Applegate Lane
Chattanooga, TN 37421
(423) 855-5554