

**3 Tees, LLC
1300 Jan Way
Kingsport, Tennessee**

**Horse Creek Quarry
Stream and Wetland Delineation**

November 16, 2023

PREPARED BY:

**STEPHEN E. MAXFIELD, P. E.
PROFESSIONAL ENGINEER
P.O. BOX 1745
HONAKER, VIRGINIA 24260
PHONE: (276) 979-6963**

3 Tees, LLC
Proposed Horse Creek Limestone Quarry
Horse Creek, Sullivan County, Tennessee
Stream and Wetland Delineation

TABLE OF CONTENTS

CORRESPONDENCE

Landowner – TDEC
TDEC – Engineer
Engineer - TDEC

NARRATIVE

Introduction
Methods
Weather Conditions
Results
 Summary Table
References

PRECIPITATION DATA

NRCS SOIL SURVEY

WETLAND DETERMINATION DATA FORM

Wetland 1

STREAM IDENTIFICATION FORMS

UNP-1, UNI-1, DS-1, DS-2, DS-3 ,DS-4

SITE PHOTOGRAPHS

MAPS

HUC MAP
NATIONAL WETLAND INVENTORY MAP (WETLAND)
NATIONAL WETLAND INVENTORY MAP (STREAM)
HORSE CREEK DELINEATION MAP

Preston H. Taylor

1740 Holston Dr
Bristol, TN 37620
423-306-5938

December 12, 2023

Tennessee Department of Environment and Conservation
Mining Section
3711 Middlebrook Pike
Knoxville, TN 37921

Subject: 3 Tees, LLC Proposed Quarry


To whom it may concern:

I am currently the owner of tracts 56.10, 56.20, and 59.00 located 3725 Sullivan Gardens Parkway. 3 Tees has the option to purchase these properties from me if they can be permitted for a quarry.

I understand that 3 Tees must undergo a rigorous permitting process to develop the quarry. I hereby grant access to the property to such agencies or regulators as necessary to evaluate or review any submittals by 3 Tees.

Thank you for your consideration in this matter.

Sincerely,


Preston H. Taylor, Jr.

From: Dan Murray <Dan.Murray@tn.gov>
Date: Mon, Dec 11, 2023 at 9:15 AM
Subject: RE: [EXTERNAL] 3 Tee application Hydrologic Determination for ARAP
NR23MS.016 & NPDES TN0070724
To: Cool Wood <coulwood1214@gmail.com>
CC: Daniel Lawrence <Daniel.Lawrence@tn.gov>, Bonnie Craighead
<Bonnie.Craighead@tn.gov>, Tina Robinson <Tina.A.Robinson@tn.gov>

Mr. Maxfield,

Thank you for the hydrologic determination (HD) submittal for Horse Creek Quarry. Review of the document found the following questions that must be addressed before a concurrence can be provided for the water features associated with this site.

1. The landowner's contact information and written permission to access the site must be provided with the HD submittal.
2. While the correct TDEC forms were completed it appears the applicant followed the North Carolina guidance document when evaluating the water features. The two organizations' methodologies are similar but they are not the same and use some different terminology that is not interchangeable. Please adjust your HD so that it follows the TDEC HD guidance available at <https://www.tn.gov/content/dam/tn/environment/water/policy-and-guidance/dwr-nr-g-03-hydrologic-determinations%E2%80%939304012020.pdf>. Alternatively, it is recommended that use a Qualified Hydrologic Professional (QHP) or QHP - In Training (QHPIT) to evaluate your site. A list of these individuals is available at <https://www.tnhdt.org/>.
3. Identification of the starting point and ending point for each linear feature determined to be a wet weather conveyance must be provided on a map or within the body of the HD submittal. A point on the HD Field Data Sheet is not sufficient.
4. Forms completed do not follow the TDEC HD guidance the submittal. Submittal used determination calls that are not available options (e.g. swale, intermittent stream, perennial stream) linear features can only be classified wet weather conveyance or stream under the TDEC protocol. Additionally, notes were not provided on the field forms that documented the information indicated on the score sheets.
5. None of the required precipitation data was provided indicating that the HD was conducted under normal precipitation conditions.
6. Information should be provided demonstrating the that cut & fill associated with replacing the crossing will not be in wetlands and that wetlands do not occur within the footprint of the area to be permitted.

When we receive a complete HD report that fully addresses the questions listed either I or someone from the Johnson City Environmental Field Office will schedule a site visit to evaluate the wet weather conveyances and wetlands associated with the proposed activities.

Thank you for your attention to this matter.

Dan



Dan Murray

TDEC Environmental Consultant | Biology & Water Quality Permitting

Tennessee Department of Environment and Conservation

Division of Mineral & Geologic Resources-Mining

[3711 Middlebrook Pike](#)

[Knoxville, TN 37921](#)

(865) 770-9473

Stephen E. Maxfield, P. E.
1745 Roman Ridge Road
Honaker, VA 24260
Phone: (276) 979-6963
Email: Coulwood1214@gmail.com

December 13, 2023

Dan Murray
Tennessee Department of Environment and Conservation
Mining Section
3711 Middlebrook Pike
Knoxville, TN 37921

Subject: 3 Tees Hydrologic Determination

Dear Mr. Murray:

The following is in response to your email dated December 11, 2023 on the above subject item.

1. See attached letter from landowner.
2. See revised narrative.
3. See map for points.
4. See revised forms.
5. See included precipitation data.
6. Wetlands are often found along streams and the area was investigated for such. No wetlands were located other than WL-1 previously noted.

I trust that the revised information shall fully address your comments. However, should you have any additional questions or concerns, please contact me.

Sincerely,



Stephen E. Maxfield, P. E.

INTRODUCTION

This report pertains to 3 Tees, LLC proposed Horse Creek Limestone Quarry in Sullivan County, at 3725 Sullivan Gardens Parkway, Kingsport, Tennessee. The quarry will be located approximately 1,000 ft. south of Horse Creek. The area is within the Sullivan Gardens 7.5" Quadrangle Map. A location map is provided with the delineation map at the end of this report.

The quarry itself shall encompass approximately 45 acres and shall mine limestone by the quarry method. A NPDES permit for the mining operation is currently being pursued through the Tennessee Department of Environment Mining Section.

In order to facilitate mining at this proposed operation roads, bridge, fills diversions, culverts, and sediment basins will be necessary. The proposed mine plan is to avoid the impacts to any jurisdictional waters of the United States (W.O.U.S.).

This report documents efforts on 3 Tees, LLC to locate, document, delineate, and map the water resources within this project area including the W.O. U. S., waters of the state, and other isolated waters. This report is submitted to the Army Corp of Engineers and the Tennessee Department of the Environment for review and confirmation. Following confirmation, all plans for the mine will be finalized and all necessary permits will be submitted to the appropriate regulatory authority.

METHODS

Wetlands

Prior to fieldwork, the site was subjected to a preliminary remote assessment using U.S.G.S. resources. These include the Sullivan Gardens, 7.5' Quadrangle topographic map, U.S.G.S. National Wetlands database and mapping, digital orthophotography. Soils were assessed using the USDA Soil Survey.

Remote assessment indicated a single wetland of 0.83 acres in the southern area of the property and an un-named perennial stream at the eastern boundary of the property. Mapping obtained from the remote assessment are attached.

The wetland field work followed the Routine On-Site Determination methodology for areas equal to or less than 5 acres in size described in the U. S. Army Corps of Engineers Wetlands Delineation Manual (U.S. Army Corps of Engineers Waterways Experiment Station, 1987) and the Eastern Mountains and Piedmont Regional Supplement. Utilization of these methods resulted in the identification of wetlands, which met the criteria for hydrophytic vegetation, hydric soils, and wetland hydrology. The wetland-upland boundaries were identified, located, and mapped to the Tennessee them by State Plane NAD '83 coordinate system. This was conducted on November 11, 2023. The map data was uploaded into CAD and wetland areas determined.

Once wetland conditions were confirmed in the field, soils, vegetation, and hydrology were evaluated at representative locations within the wetland and along the upland boundary. Plant species dominance was determined based on the percent aerial or basal coverage within a representative plot utilizing the "50/20" rule. Taxonomy was based on the U.S.G.S. List of Wetland Flora. Indicator status of plant species was taken from the National List of Plant Species That Occur in Wetlands: 1988 Region 3.

Soils profiles were characterized by digging test pits a minimum depth of 18 inches (or refusal) and utilizing Munsell Soil Color Charts and standard soil texturing methodology.

Wetland hydrology criteria were assessed by evaluating the geology and hydrologic regimes in the setting, visual observations, and soil pits in the surrounding area.

The wetland data obtained during the field evaluations was compiled on the 1987 COE Routine Wetland Determination Data Forms. Each wetland identified in the review area was numbered and compiled on a single form. The wetland and soil profiles were documented by digital photography. All wetlands were shown to scale on the delineation drawing, with photographs cross referenced on the drawing and forms.

Streams

Streams were assessed in accordance with the Tennessee Department of Environment and Conservation Division of Water Resources **Guidance for Making Hydrologic Determinations**. This document was based upon concepts and methodologies originally developed by the North Carolina Division of Water Quality's (NCDWQ). This method has been adopted and followed by many agencies. The method utilizes a scoring system to evaluate 28 attributes of geomorphic, hydrologic, and biologic indicators. Wet weather conveyances (WWC) were identified by scores of less than 19, intermittent streams were identified by scores greater than 19, but less than 30, and perennial streams were indicated by scores greater than 30.

Stream evaluation points were initially selected within the lower reach of streams within the review and scored utilizing the method. The data from each evaluation point was recorded on the Tennessee Division of Water Resources, Hydrologic Determination Field Data Sheet. The scores were tallied and the stream type was determined from the score. Additional evaluation points were selected upstream to determine the origin or transitions of perennial and intermittent stream reaches.

The locations of the stream evaluation points and transitions and origins of stream types were located in the Tennessee State Plane NAD '83 coordinate system. The data was uploaded into CAD and stream lengths determined. Each stream identified in the review area was numbered and shown to scale on the delineation drawing.

WEATHER CONDITIONS

Field work for the stream and wetland delineations was conducted on November 11, 2023. Weather conditions was assessed in accordance with the TDEC Guidelines. The 30 year mean and standard deviation of the precipitation for Kingsport, TN was obtained from the National Oceanic and Atmospheric Association (NOAA) Climatic Data Center. Monthly averages for the 3 month period preceding the field work was also obtained. This data is included at the end of this report. The table was evaluated in the table below and a determination was made that the weather conditions during the investigation was average.

	Month	Actual Rainfall 2023	Average Rainfall 30 yr.	Standard Deviation	Minus One Std. Deviation (DRY)	Plus One Std. Deviation (WET)	Condition (Elevated, Low, Average)	Condition Value	Month Weight value	Product of previous two columns
1st prior month	October	2.3	2.43	1.4	1.03	3.83	Average	2	3	6
2nd prior month	September	2.6	2.98	1.6	1.38	4.58	Average	2	2	4
3rd prior month	August	3.0	3.21	1.53	1.68	4.74	Average	2	1	2
									Sum	12

Note:

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

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

Conclusions: A total of 12 Indicates the weater conditions (precipitation were in the average range for the three months prior to November 11, 2023 for Kingsport, TN.

RESULTS

This study identified a single wetland area totaling 0.80 acres and 2 un-named tributaries to Horse Creek totaling 750 linear ft. in the review area. The local geology and the previous land alterations are major factors influencing the hydrology of the wetland identified. A dam was previously constructed in the stream to create an impoundment; however, it appears the karst topography did not allow the water to collect at any depth and provided the necessary hydrology for wetland development. As such this wetland and contributing streams are severed and not considered jurisdictional W.O.U.S. However, the intermittent stream is connected and is considered W.O.U.S. The drainage swale connecting to this stream does not have characteristics to be considered W.O.U.S. Regardless of the jurisdiction, these features will not be impacted by the proposed operation.

A summary of the wetlands and streams identified during this evaluation are included in following Table:

ID	Name	Quantity	Delineation
WL-1	NA	0.8 ac.	Palustrine Emergent Wetland
UNP-1	NA	636 ft.	Stream
DS-1	NA	797 ft.	WWC
DS-2	NA	275 ft.	WWC
DS-3	NA	478 ft.	WWC
DS-4	NA	430 ft.	WWC
UNI-1	NA	166 ft.	Stream
HC-1	Horse Creek	1,135 ft.	Stream

Notes:

1. Wetland WL-1 is isolated with no significant nexus to W.O. U. S.; however, impacts will be avoided.
2. Perennial Stream UNP-1 is isolated with no significant nexus to W.O. U. S.; however, impacts will be avoided.
3. Intermittent Stream UNI-1 has connection to Traditional Navigable Waters and impacts will be avoided.
4. Horse Creek has a length of 1,135 ft through the project area. A new bridge is proposed and excavation of a flood plain along the south side. However, all impacts shall be above the Ordinary High Water Mark (OHWM) which is the jurisdictional boundary of the stream.

REFERENCES

Cowardin, Lewis, etal. Classification of Wetlands and Deepwater Habitats of the United States. U. S. Department of the Interior, Washington, D. C.

Mitsch, William J., Wetlands. 2007 John Wiley and Sons, Inc., Hoboken, New Jersey.

Munsell Color. 1998. Munsell soil color charts. 1998 revised washable edition. GregtagMacbeth. New Windsor, New York.

North Carolina Division of Water Quality. 2005. Identification Methods for the Origins of Intermittent and Perennial Streams, Version 3.1. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, NC.

Reed, P.B. 1988. National list of plant species that occur in wetlands: Region III.

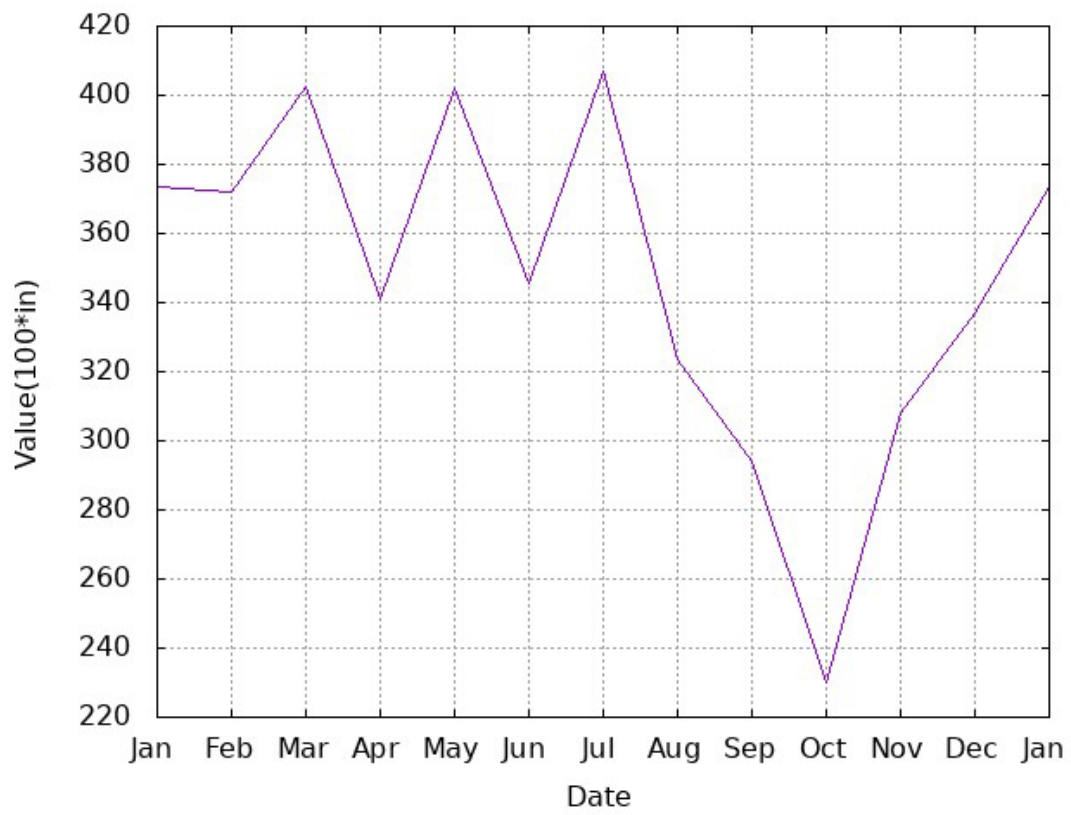
Seelinger, Marc. USACE Wetland Delineation with Regional Supplements. 2006 The Swamp School, Angier, NC.

U.S. Army Corps of Engineers. 1987. Corps of Engineers wetlands delineation manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

U.S. Army Corps of Engineers. 2022. National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams. Technical Report 22-26, Wetlands Regulatory Assistance Program (WRAP), Vicksburg, Mississippi.

U.S. Department of Agriculture, Natural Resource Conservation Service. 2006. Soil survey geographic database for Sullivan County, Tennessee. <http://nrcs.usda.gov>

30 Year Precipitation Average by Month Kingsport TN

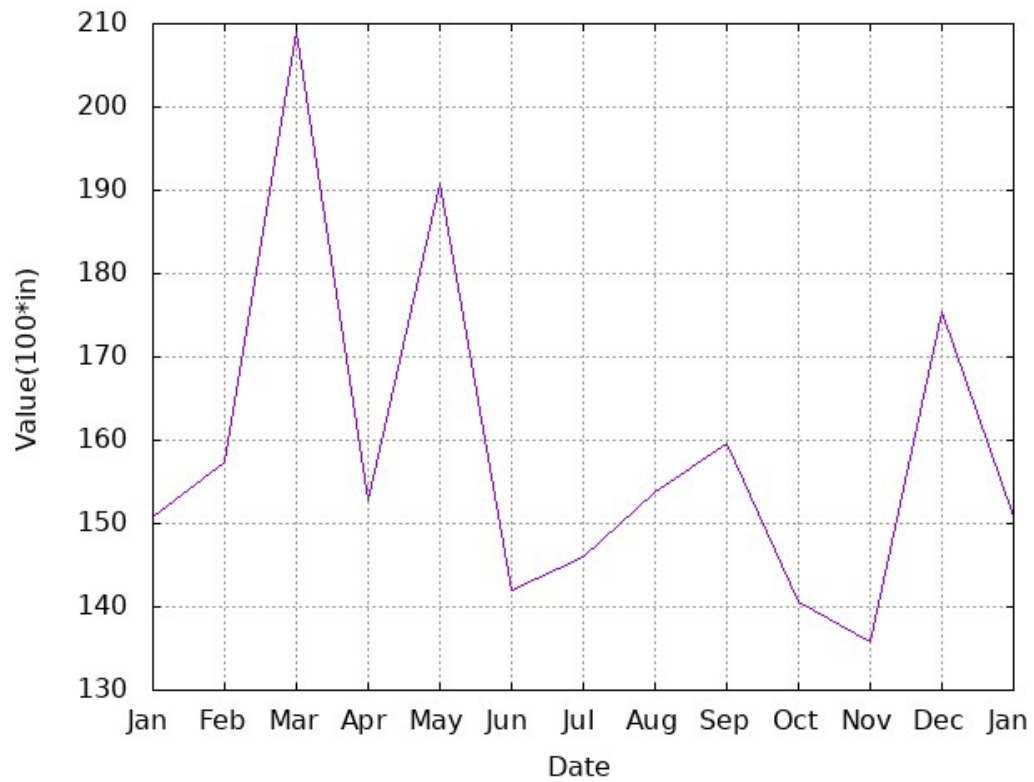


Values plotted [Get file](#)

Date submitted: **12/13/2023 at 12:47**

30 Year Precipitation Standard Deviation by Month Kingsport TN

30 Year Precipitation Standard Deviation by Month Kingsport TN



Values plotted [Get file](#)

Date submitted: **12/13/2023 at 12:46**

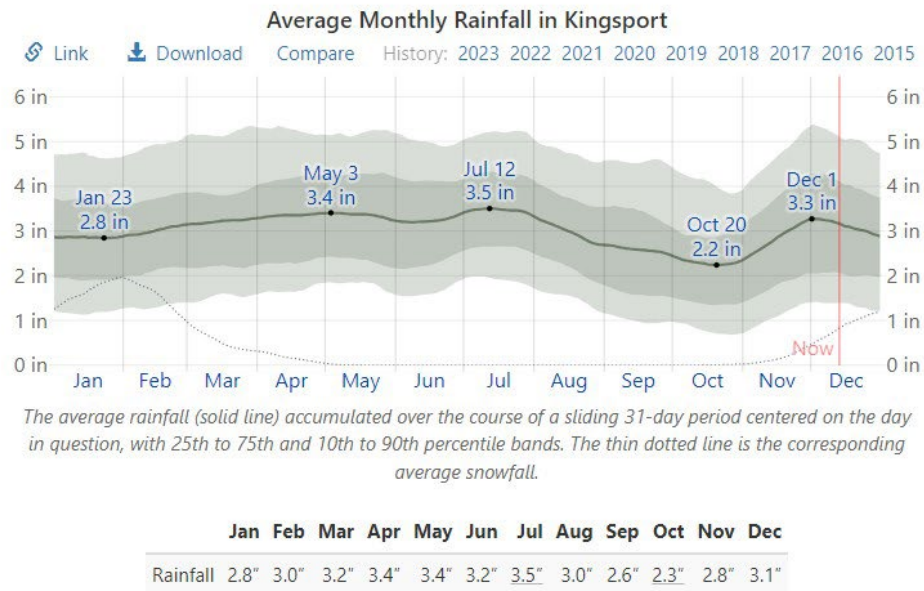
Monthly Precipitation Kingsport TN 2023

Rainfall

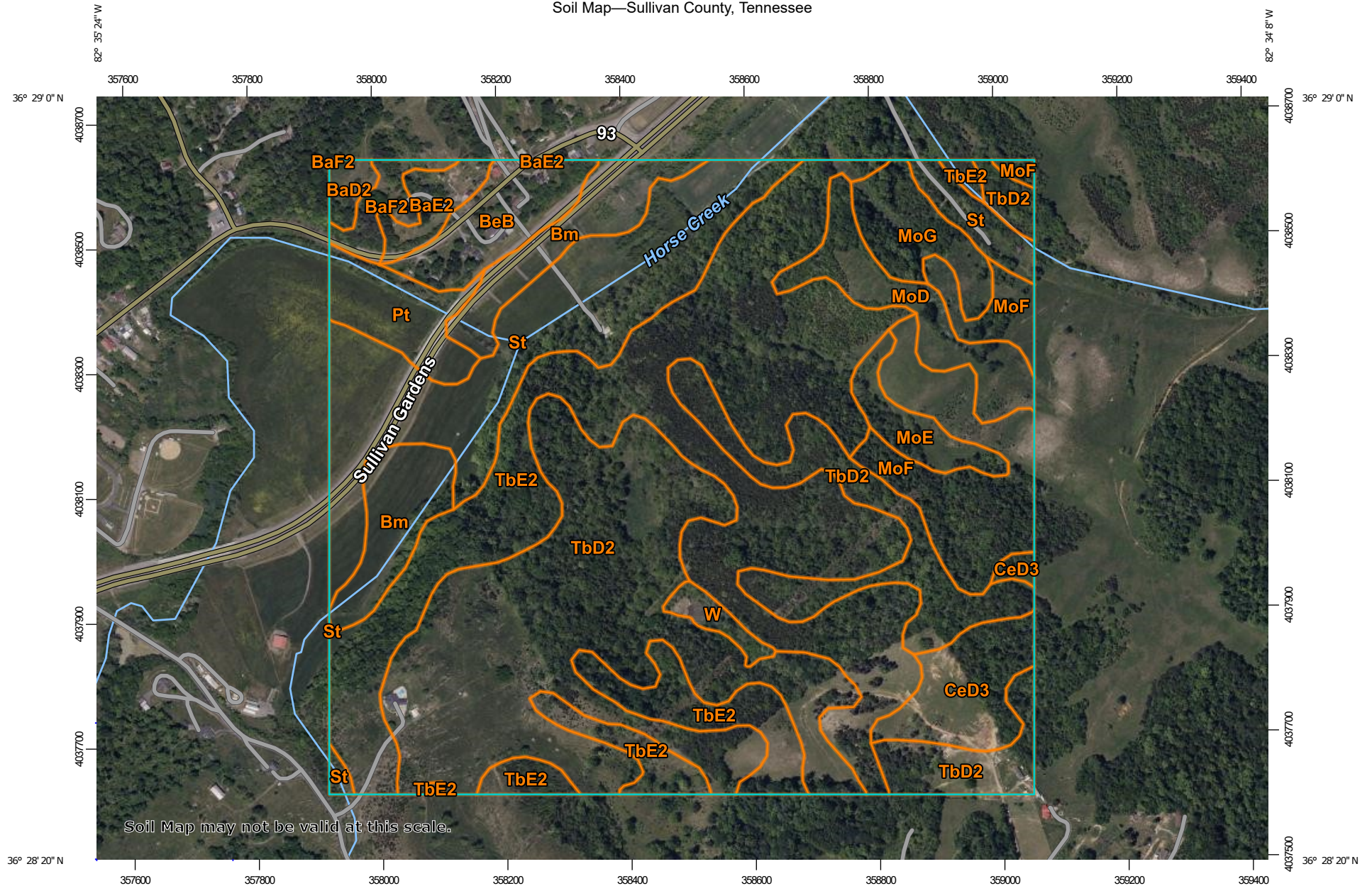
To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Kingsport experiences **some** seasonal variation in monthly rainfall.

Rain falls throughout the year in Kingsport. The month with the most rain in Kingsport is July, with an average rainfall of 3.5 inches.

The month with the least rain in Kingsport is October, with an average rainfall of 2.3 inches.



Soil Map—Sullivan County, Tennessee



Map Scale: 1:8,620 if printed on A landscape (11" x 8.5") sheet.

0 100 200 400 600 Meters

0 400 800 1600 2400 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

11/14/2023
Page 1 of 3

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 1:20,000.

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: Sullivan County, Tennessee

Survey Area Data: Version 20, Sep 12, 2023

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

Date(s) aerial images were photographed: May 5, 2022—Jun 19, 2022

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
BaD2	Bays silty clay loam, 12 to 20 percent slopes, eroded	1.6	0.5%
BaE2	Bays silty clay loam, 20 to 35 percent slopes, eroded	3.4	1.2%
BaF2	Bays silty clay loam, 35 to 65 percent slopes, eroded	3.0	1.1%
BeB	Bellamy loam, 2 to 5 percent slopes	8.1	2.8%
Bm	Bloomington silty clay loam, 0 to 2 percent slopes, occasionally flooded	14.9	5.2%
CeD3	Collegedale-Etowah complex, 12 to 20 percent slopes, severely eroded	9.2	3.2%
MoD	Montevallo channery silt loam, 12 to 20 percent slopes	9.1	3.2%
MoE	Montevallo channery silt loam, 20 to 35 percent slopes	4.4	1.5%
MoF	Montevallo channery silt loam, 35 to 50 percent slopes	18.4	6.4%
MoG	Montevallo channery silt loam, 50 to 80 percent slopes	6.8	2.4%
Pt	Pettyjon loam, 0 to 2 percent slopes, rarely flooded	7.1	2.5%
St	Steadman silty clay loam, 0 to 2 percent slopes, occasionally flooded	35.8	12.5%
TbD2	Talbott-Rock outcrop-Bradyville complex, 12 to 20 percent slopes, eroded	79.0	27.6%
TbE2	Talbott-Rock outcrop-Bradyville complex, 20 to 50 percent slopes, eroded	83.6	29.2%
W	Water	1.9	0.7%
Totals for Area of Interest		286.3	100.0%

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region See ERDC/EL TR-12-9; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp:11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
--	---

Project/Site: Horse Creek Quarry City/County: Sullivan Sampling Date: 11/11/23
Applicant/Owner: 3 Tees, LLC State: TN Sampling Point: WL-1
Investigator(s): Stephen E. Maxfield, P. E. Section, Township, Range: _____
Landform (hillside, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 35
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36 deg 28' 34" Long: 82 deg 34' 47" Datum: WGS84
Soil Map Unit Name: Talbot Rock Outcrop - Bradyville Complex NWI classification: PUBHh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks:
A dam was constructed in this valley years ago to construct a pond. However, the pond never impounded enough water to prevent wetland development likely due to karst topography.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply) <u>X</u> Surface Water (A1) <u>X</u> True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) <u>X</u> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) <u>X</u> Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators</u> (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) <u>X</u> Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
---	---

Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
--	---

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

Remarks:

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

 Sampling Point: WL-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>80</u></td> <td>x 1 = <u>80</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>80</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>80</u>	x 1 = <u>80</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>80</u> (A)	<u>80</u> (B)	Prevalence Index = B/A = <u>1.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>80</u>	x 1 = <u>80</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>80</u> (A)	<u>80</u> (B)																			
Prevalence Index = B/A = <u>1.00</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>3000 sqft</u>)																				
1. <u>cattail</u>	<u>70</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Rush</u>	<u>10</u>	<u>No</u>	<u>OBL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: <u>40</u> 20% of total cover: <u>16</u>																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: WL-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR 7/6	5						
2-9	N2 7/10BG	40						
9-17	N2 4/10B	55						

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

<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)
<input type="checkbox"/> Black Histic (A3)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1) (MLRA 136)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 122, 136)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147, 148)
<input type="checkbox"/> Dark Surface (S7)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> (MLRA 147, 148)
<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> (MLRA 136, 147)
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> (outside MLRA 127, 147, 148)
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: _____
Depth (inches): _____Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5

Named Waterbody: Un-named tributary of Horse Creek UNP-1		Date/Time: 11/11/23
Assessors/Affiliation: Stephen E. Maxfield		Project ID :
Site Name/Description: Proposed Horse Creek Quarry		
Site Location: 3725 Sullivan Gardens Parkway, Kingsport, Tennessee		
HUC (12 digit): 060101020702	Latitude: 336°28'31"	
Previous Rainfall (7-days) :	Longitude: 82°34'42"	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip. data :		
Watershed Size : 85 ac.	County: Sullivan	
Soil Type(s) / Geology : Talbot Rock Outcrop - Bradyville Complex	Source: NRCS	
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; font-weight: bold;"> Severe Moderate Slight X Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	X	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	X	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase		X Stream
6. Presence of fish (except <i>Gambusia</i>)		X Stream
7. Presence of naturally occurring ground water table connection		X Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed		X Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

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

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

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

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

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 23)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	3	0	1	2	3
2. Sinuous channel	2	0	1	2	3
3. In-channel structure: riffle-pool sequences	2	0	1	2	3
4. Sorting of soil textures or other substrate	3	0	1	2	3
5. Active/relic floodplain	2	0	0.5	1	1.5
6. Depositional bars or benches	2	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	1	0	0.5	1	1.5
9. Natural levees	1	0	1	2	3
10. Headcuts	1	0	1	2	3
11. Grade controls	3	0	0.5	1	1.5
12. Natural valley or drainageway	3	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	0	0	1	2	3

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

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

¹ Focus is on the presence of terrestrial plants.

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

Total Points = 36.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet Tennessee Division of Water Resources, Version 1.5

Named Waterbody: Un-named tributary of Horse Creek UNI-1		Date/Time: 11/11/23
Assessors/Affiliation: Stephen E. Maxfield		Project ID :
Site Name/Description: Proposed Horse Creek Quarry		
Site Location: 3725 Sullivan Gardens Parkway, Kingsport, Tennessee		
HUC (12 digit): 060101020702	Latitude: 36°28'51"	
Previous Rainfall (7-days) :	Longitude: 82°34'47"	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip. data :		
Watershed Size : 5 ac.	County: Sullivan	
Soil Type(s) / Geology : Talbot Rock Outcrop - Bradyville Complex	Source: NRCS	
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around;"> Severe Moderate Slight X Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		X WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	X	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except <i>Gambusia</i>)	X	Stream
7. Presence of naturally occurring ground water table connection		X Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed		X Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

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

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

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

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

Justification / Notes :

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 11.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	3	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	1	0	1	2	3
5. Active/relic floodplain	0	0	0.5	1	1.5
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	1	0	0.5	1	1.5
9. Natural levees	1	0	1	2	3
10. Headcuts	1	0	1	2	3
11. Grade controls	1	0	0.5	1	1.5
12. Natural valley or drainageway	0.5	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	3	0	1	2	3

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

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

¹ Focus is on the presence of terrestrial plants.

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

Total Points = 17.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5

Named Waterbody:	Un-named tributary of Horse Creek	DS-1	Date/Time:	11/11/23
Assessors/Affiliation:	Stephen E. Maxfield		Project ID :	
Site Name/Description:	Proposed Horse Creek Quarry			
Site Location:	3725 Sullivan Gardens Parkway, Kingsport, Tennessee			
HUC (12 digit):	060101020702	Latitude:	36°28'33"	
Previous Rainfall (7-days) :		Longitude:	82°34'36"	
Precipitation this Season vs. Normal :	abnormally wet	elevated	average	low
Source of recent & seasonal precip. data :	abnormally dry unknown			
Watershed Size :	7.3 ac.	County:	Sullivan	
Soil Type(s) / Geology :	Talbot Rock Outcrop - Bradyville Complex		Source:	NRCS
Surrounding Land Use :	Agricultural			
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :				
Severe Moderate Slight X Absent				

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	X	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		X WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except <i>Gambusia</i>)	X	Stream
7. Presence of naturally occurring ground water table connection	X	Stream
8. Flowing water in channel and 7 days since last precip $>0.1"$ in local watershed	X	Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

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

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

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

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 3

Justification / Notes :

No flow present. No defined bed or bank. Covered with leaf litter, tree limbs, branches with no recent flow evidence.

Secondary Field Indicator Evaluation

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

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

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

¹ Focus is on the presence of terrestrial plants.

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

Total Points = 3

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5

Named Waterbody: Un-named tributary of Horse Creek DS-2		Date/Time: 11/11/23
Assessors/Affiliation: Stephen E. Maxfield		Project ID :
Site Name/Description: Proposed Horse Creek Quarry		
Site Location: 3725 Sullivan Gardens Parkway, Kingsport, Tennessee		
HUC (12 digit): 060101020702	Latitude: 36°28'30"	
Previous Rainfall (7-days) :	Longitude: 82°34'43"	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip. data :		
Watershed Size : 7.3 ac.	County: Sullivan	
Soil Type(s) / Geology : Talbot Rock Outcrop - Bradyville Complex	Source: NRCS	
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <div style="display: flex; justify-content: space-around; font-weight: bold;"> Severe Moderate Slight X Absent </div>		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	X	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		X WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except <i>Gambusia</i>)	X	Stream
7. Presence of naturally occurring ground water table connection	X	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	X	Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

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

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

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

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 1

Justification / Notes :

No flow present. No defined bed or bank. Covered with leaf litter, tree limbs, branches with no recent flow evidence.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1.0)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	0	0	1	2	3
5. Active/relic floodplain	0	0	0.5	1	1.5
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	1.0	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	0	0	1	2	3

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

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

¹ Focus is on the presence of terrestrial plants.

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

Total Points = 1.0

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5

Named Waterbody: Un-named tributary of Horse Creek DS-3		Date/Time: 11/11/23
Assessors/Affiliation: Stephen E. Maxfield		Project ID :
Site Name/Description: Proposed Horse Creek Quarry		
Site Location: 3725 Sullivan Gardens Parkway, Kingsport, Tennessee		
HUC (12 digit): 060101020702	Latitude: 36°28'50"	
Previous Rainfall (7-days) :	Longitude: 82°34'45"	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip. data :		
Watershed Size : 64 ac.	County: Sullivan	
Soil Type(s) / Geology : Talbot Rock Outcrop - Bradyville Complex	Source: NRCS	
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate Slight X Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	X	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		X WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except <i>Gambusia</i>)	X	Stream
7. Presence of naturally occurring ground water table connection	X	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	X	Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

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

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

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

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 1.5

Justification / Notes :

No flow present. No defined bed or bank. Covered with leaf litter, tree limbs, branches with no recent flow evidence.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1.0)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	0	0	1	2	3
5. Active/relic floodplain	0	0	0.5	1	1.5
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	1.0	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	0	0	1	2	3

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

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

¹ Focus is on the presence of terrestrial plants.

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

Total Points = 1.5

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

Notes :

[illegible]

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5

Named Waterbody: Un-named tributary of Horse Creek DS-4		Date/Time: 11/11/23
Assessors/Affiliation: Stephen E. Maxfield		Project ID :
Site Name/Description: Proposed Horse Creek Quarry		
Site Location: 3725 Sullivan Gardens Parkway, Kingsport, Tennessee		
HUC (12 digit): 060101020702	Latitude: 36°28'50"	
Previous Rainfall (7-days) :	Longitude: 82°34'45"	
Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown		
Source of recent & seasonal precip. data :		
Watershed Size : 64 ac.	County: Sullivan	
Soil Type(s) / Geology : Talbot Rock Outcrop - Bradyville Complex	Source: NRCS	
Surrounding Land Use : Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate Slight X Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	X	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		X WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except <i>Gambusia</i>)	X	Stream
7. Presence of naturally occurring ground water table connection	X	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	X	Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

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

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

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

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 1.5

Justification / Notes :

No flow present. No defined bed or bank. No recent flow evidence.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1.0)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	0	0	1	2	3
5. Active/relic floodplain	0	0	0.5	1	1.5
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	1.0	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	0	0	1	2	3

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

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

¹ Focus is on the presence of terrestrial plants.

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

Total Points = 2.5

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

Notes :

[illegible]



Wetland WL-1



Wetland WL-1



Pit WL-1



Old spillway pipe from failed pond construction
WL-1



Stream UNP-1



Stream UNP-1



Stream UNP-1 extending beyond property



WWC DS-1



WWC DS-2



WWC DS-3

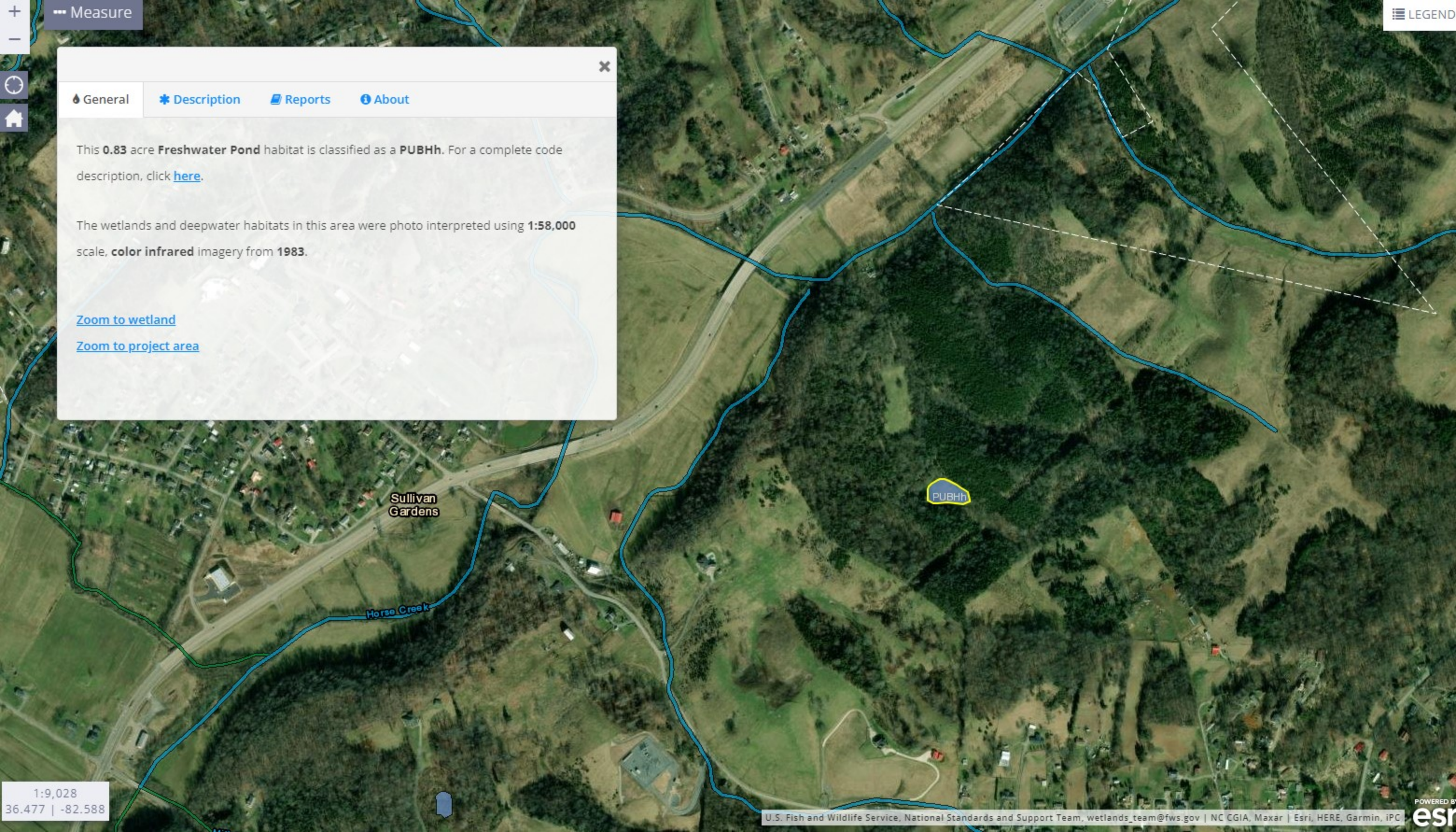


WWC DS-4



Stream UNI-1





✕

🔥 General

* Description

📄 Reports

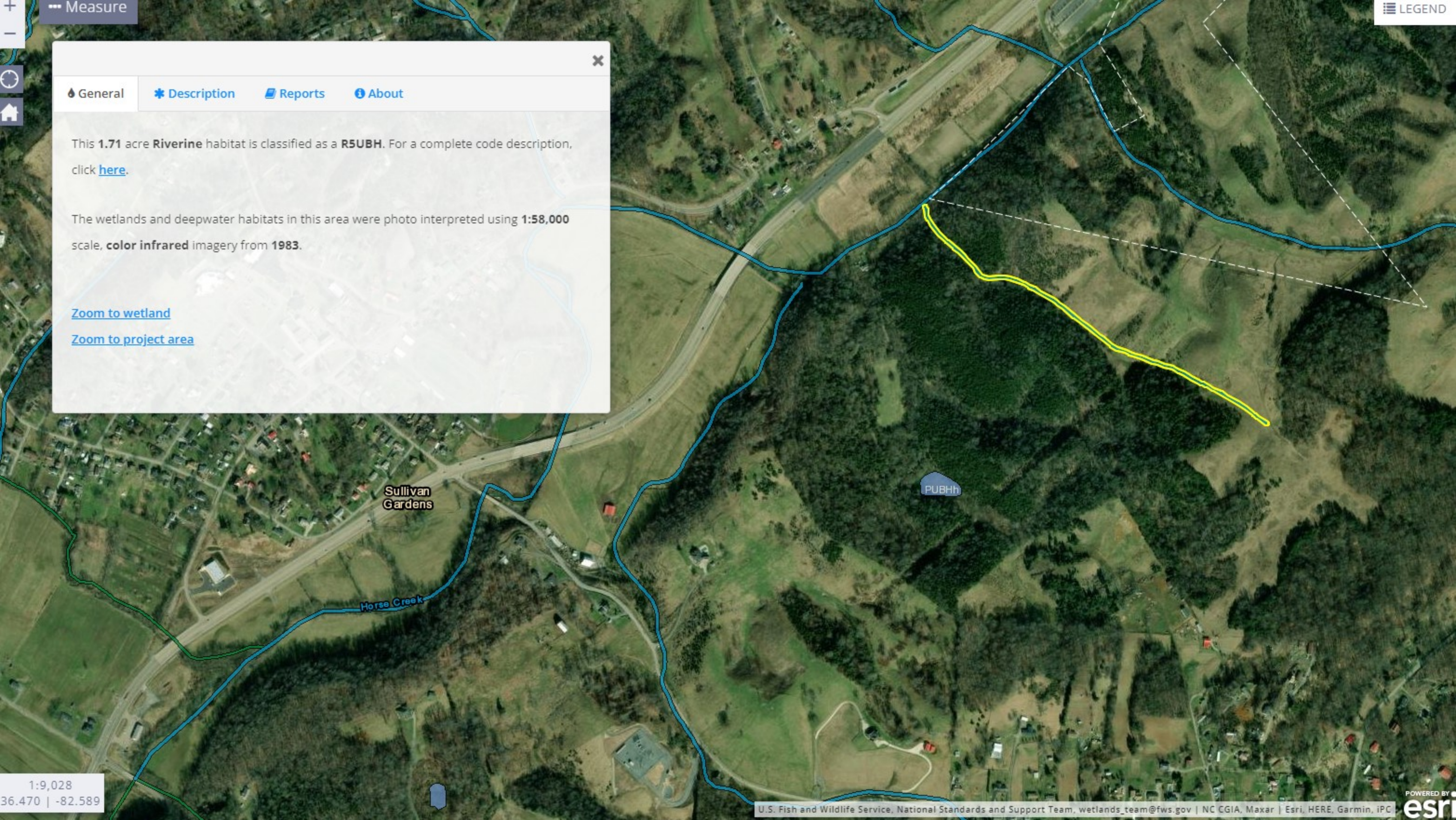
📄 About

This **0.83** acre **Freshwater Pond** habitat is classified as a **PUBHh**. For a complete code description, click [here](#).

The wetlands and deepwater habitats in this area were photo interpreted using **1:58,000** scale, **color infrared** imagery from **1983**.

[Zoom to wetland](#)

[Zoom to project area](#)



General Description Reports About

This **1.71** acre **Riverine** habitat is classified as a **R5UBH**. For a complete code description, click [here](#).

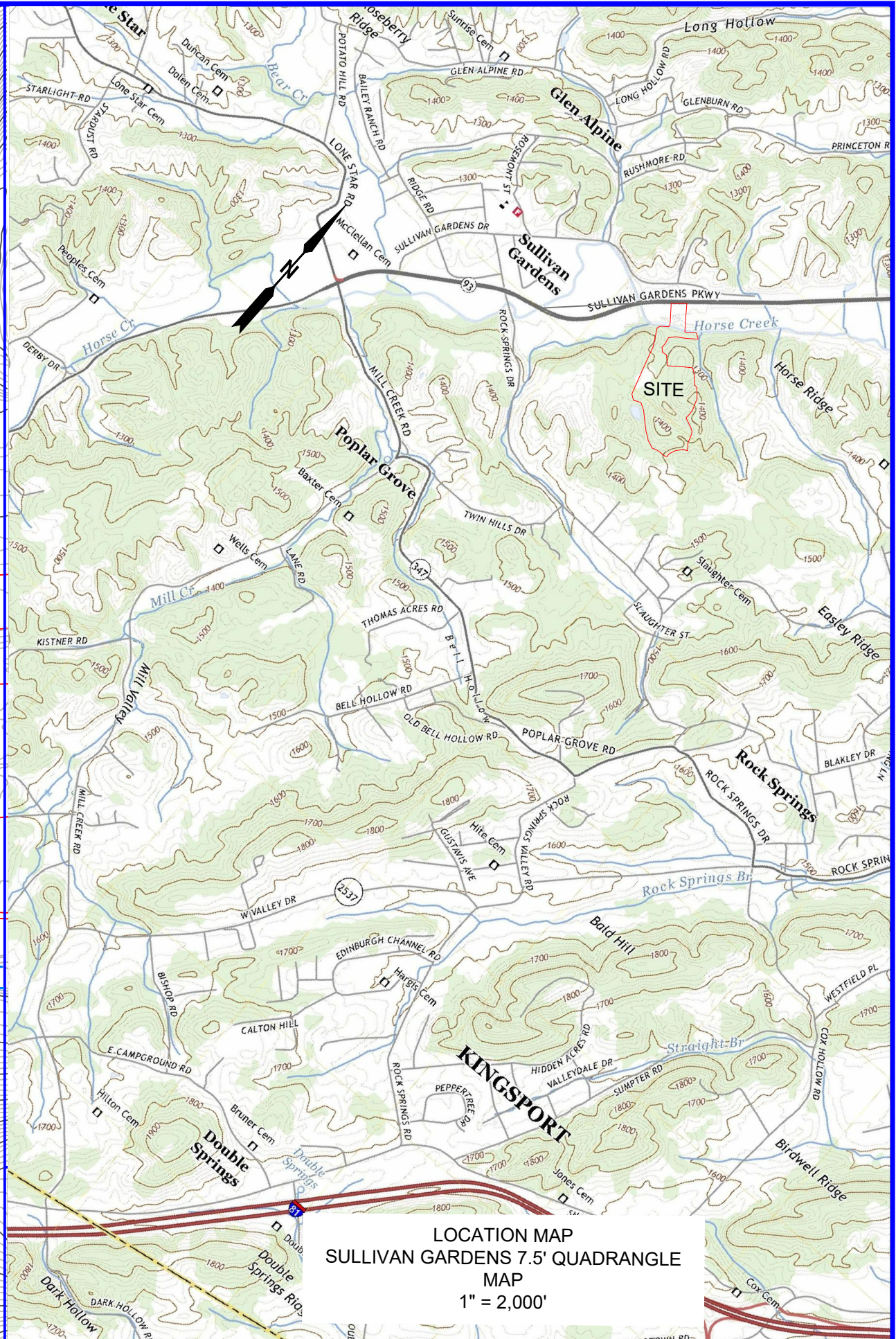
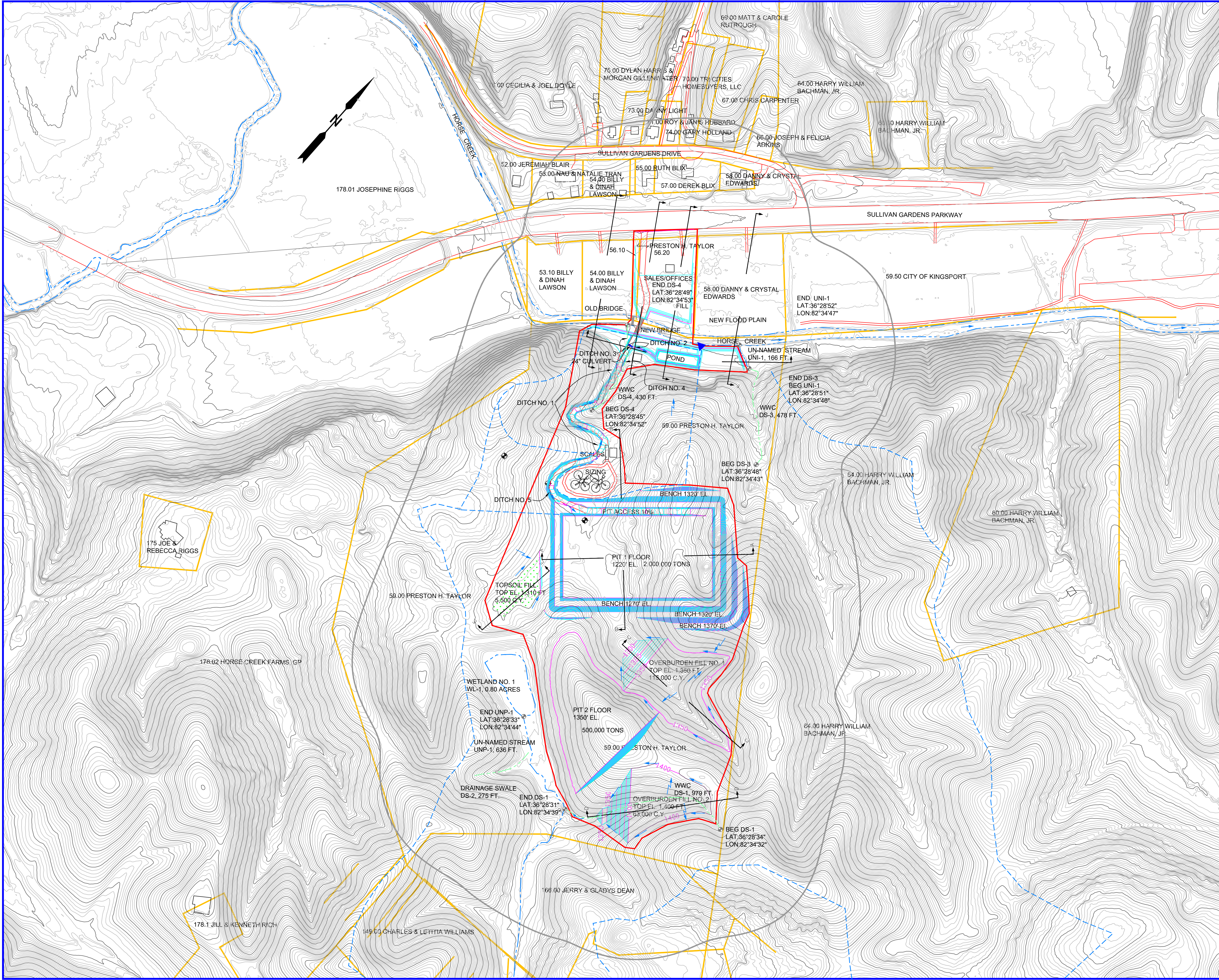
The wetlands and deepwater habitats in this area were photo interpreted using **1:58,000** scale, **color infrared** imagery from **1983**.

[Zoom to wetland](#)
[Zoom to project area](#)

Sullivan
Gardens

Horse Creek

PUBHh



The property lines represented on this map are compiled from information maintained by the local county Assessor's office and are a best-fit visualization of how all the properties in a county relate to one another. The property lines are determined by examining detailed property descriptions on deeds and by using surveys created by a licensed surveyor but are not conclusive evidence of property ownership in any court of law. This map shall not represent an actual land survey and shall not be used to divide or transfer property.

Legend	
Site Boundary	Existing Contours (2')
Property Line	Existing Contours (10')
500' Site Radius	Proposed Contours (2')
Drainage Divide	Proposed Contours (10')
Diversion/Drainage Direction	Culvert
Sheet Flow Direction	Building or Structure
Stream	NPDES Point
Berm	Borehole
Road	Topsoil Stockpile
Wet Weather Conveyance (WWC)	
Stream/WWC BEG/END Point	

ENGINEERING BY:
STEPHEN E. MAXFIELD
1745 ROMANS RIDGE ROAD
HONAKER, VA 24260

3 Tees, LLC
1300 Jan Way
Kingsport, TN 37660

HORSE CREEK QUARRY
STREAMS AND WETLANDS

SCALE: 1" = 200'