Warrenton United Methodist Church

Waters of the U.S. (WOTUS) and Wetland Delineation Report

April 29, 2024

Prepared By:

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LIST OF ACRONYMS

17B	Middleburg Loam
AOI	Area of Interest
APT	Antecedent Precipitation Tool
CWA	Clean Water Act
DEQ	Department of Environmental Quality
DPWES	Department of Public Works and Environmental Services
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FGDC	Federal Geographic Data Committee
GPS	Global Positioning System
IA	InterAgency, Inc.
NAIP	National Agriculture Imagery Program
NCDWQ	North Carolina Division of Water Quality
NRCS	National Resources Conservation Service
NWI	National Wetland Inventory
NWS	National Weather Service
OHWM	Ordinary High-Water Mark
PWD	Professional Wetland Delineator
PWS	Professional Wetland Scientist
R4	Intermittent Stream Channel
SSWD	State Surface Water Determination
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VSWD	Virginia State Waters Delineator
WetCAT	Wetland Condition Assessment Tool
WOTUS	Waters of the U.S.

1.0 Introduction

InterAgency, Inc. (IA) performed a wetland and waters of the U.S. (WOTUS) delineation within the Warrenton United Methodist Church (WUMC) study area to document current site conditions. As noted below, an unnamed intermittent tributary conveying stormwater within a manmade stormwater swale was documented within the study area.

The approximately 11-acre study area is located within the Town of Warrenton, Virginia and can be accessed from Church Street along the southern boundary. A vicinity map is included as Exhibit 1. The centroid of the study area is located at approximately 38.7201 N, -77.8038 W and is included within the Warrenton, Virginia U.S. Geological Survey (USGS) Quadrangle Map (Exhibit 2).

The study area comprises the WUMC church and parking lot surrounded by a maintained lawn and forested cover. The natural slight topography has been altered by development activities in the past. A summer natural color image from the National Agriculture Imagery Program (NAIP) is included within Exhibit 3.

2.0 Methodology

The wetland delineation field work was conducted by Lauren Conner, PWS, PWD, VSWD[1]. Methodology and data review notes are outlined below in support of this study.

2.1 Database Review

Prior to conducting field work, IA conducted database reviews to determine the existing documented resources within the study area. The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) database (Exhibit 4) was reviewed to determine if any wetland or stream features have been documented within the study area. As noted in this exhibit, no wetland or stream features have been documented on or within 100-feet of the study area.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (Exhibit 5) data was reviewed to determine the soil characteristics within the study area. The central portion of the Area of Interest (AOI) developed on the NRCS database is mapped as Middleburg loam (17B), a mapped hydric soil. The remaining soils mapped within the NRCS AOI are mapped as nonhydric.

The study area is located within the Great Run - Rappahannock River watershed. The Federal Emergency Management Association (FEMA) National Flood Hazard Layer FIRMette panel 51061C0306C (Effective 2/6/2008) (Exhibit 6) documents that the majority of the study area is located within Zone X: Area of Minimal Flood Hazard.

[1] Certified Professional Wetland Scientist (PWS #2766) through the Society of Wetland Scientists, licensed Professional Wetland Delineator (PWD #3402-000155) through the Virginia Department of Professional and Occupational Regulation and Virginia State Waters Delineator (VSWD #0045), Virginia Department of Environmental Quality (DEQ).

However, one swale within the central portion of the study area is documented as an area of 0.2% Annual Chance of Flood.

In preparation for field work, the Virginia Department of Environmental Quality (DEQ) Wetland Condition Assessment Tool (WetCAT) database (Exhibit 7) was reviewed for documented features and watershed data surrounding the study area. No stream or wetland features have been mapped within the study area by DEQ.

2.2 Field Methods

This delineation was performed in accordance with the U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetlands Delineation Manual – Technical Report 87-1 (USACE, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (USACE, 2012). In addition, this wetland delineation was performed in compliance with the Federal Geographic Data Committee (FGDC) Wetlands Classification Standard (FGDC, 2013) and the Virginia DEQ State Surface Waters Determination (SSWD) guidance. Wetlands are classified as features that meet the wetland hydrology, hydrophytic vegetation, and hydric soil parameters outlined by the USACE and DEQ in the above-mentioned guidance.

Field work was performed on April 20, 2024 to document current site conditions. As the study area is approximately eleven acres, transects were developed to verify that the site was thoroughly searched for wetlands and other WOTUS. Jurisdictional features were flagged with vinyl pink-glo flagging and were subsequently located via Global Positioning System (GPS) methods in the field on April 20, 2024.

IA reviewed observed weather data from the National Weather Service (NWS) prior to field work to review current hydrologic conditions. Precipitation and temperature data were reviewed for two weeks prior to field work, as noted in **Table 1** below.

Table 1. National Weather Service Observed Weather Data

Month	Day	Temperature (°F)			Precipitation (Inches)
		Maximum	Minimum	Average	
4	6	57	38	47.5	0.00
	7	65	34	49.5	0.00
	8	75	35	55.0	0.00
	9	80	49	64.5	0.00
	10	80	61	70.5	Trace
	11	71	64	67.5	0.05
	12	67	57	62.0	0.10
	13	67	46	56.5	Trace
	14	84	42	63.0	0.00
	15	85	25	71.5	Trace
	16	78	48	63.0	0.00
	17	74	59	66.5	Trace
	18	79	53	66.0	Trace
	19	57	53	55.0	0.01

Source: National Weather Service (https://www.weather.gov/wrh/Climate?wfo=lwx)

IA reviewed the Antecedent Precipitation Tool (APT) developed by the U.S. Environmental Protection Agency (EPA) and the USACE was utilized to determine whether field data was collected during normal climatic conditions (Exhibit 8). This tool calculates precipitation normalcy data and documents patterns from a 30-year record. The observed conditions and analysis of precipitation data documents that the delineation field work was conducted under a mild drought.

Study area photographs are included within Exhibit 9. Wetland delineation data points (Exhibit 10) were conducted utilizing the USACE Eastern Mountains and Piedmont Region Automated Wetland Determination Data Sheet (version 2.0) and reference the current 2020 National Wetland Plant List, version 3.5, to document the indicator status of individual plant species. In accordance with the USACE guidance, the vegetative sampling plot consists of a 30' radius for the tree and woody vine strata, a 15' radius for the sapling/shrub stratum and a 5' radius for the herbaceous stratum. Primary and secondary wetland hydrology indicators were accessed at the data point location. A soil profile was classified to a depth of 18" denoting the soil matrix and presence or absence of redoximorphic features.

Assessments of the delineated stream channel and swales were conducted in the field to determine the flow regime within each reach. Methodologies utilized for these assessments were the DEQ Stream Identification Field Data Form (Exhibit 11A), the Fairfax County Department of Public Works and Environmental Services (DPWES) Perennial Stream Field Identification Protocol (Exhibit 11B), and the North Carolina Division of Water Quality (NCDWQ) Methodology for Identification of Intermittent and

Perennial Streams and Their Origins (Exhibit 11C), Version 4.11, effective September 1, 2010.

These assessments are based on hydrological, physical and biological characteristics within a stream channel. The Fairfax County DPWES protocol is utilized to determine if a stream channel is perennial or intermittent based on the overall score along with supporting information. Per this protocol, a perennial stream channel is defined as a 'body of water flowing in a natural or man-made channel year-round, except during periods of drought.' In addition, an intermittent stream channel is defined as a 'body of water flowing in a natural or man-made channel that contains water for only part of the year.' Based on the Fairfax County DPWES protocol, a stream channel is perennial if the overall score is greater than or equal to 25 points (FC DPWES, 2003).

The NCDWQ methodology was developed to identify ephemeral, intermittent and perennial stream channel using geomorphic, hydrologic and biological characteristics. Based on this methodology, an ephemeral stream channel is 'a feature that carries only stormwater in direct response to precipitation with water flowing only during and shortly after large precipitation events.' This stream classification 'lacks the biological, hydrological, and physical characteristics commonly associated with the continuous or intermittent conveyance of water' (NCDWQ, 2010). Based on the NCDWQ methodology, a stream channel is at least intermittent if the overall score is greater than or equal to 19 points and perennial if the score is over 30 points.

3.0 RESULTS

One intermittent stream channel located within a manmade stormwater swale and retention feature was located within the study area. This feature, as well as study area photographs and data point locations, is depicted within the Wetlands and WOTUS Delineation Map (Exhibit 12). Feature-specific descriptions are included in **Table 2** and in the narrative below.

Table 2. Summary of Wetlands and WOTUS Within Study Area

WARRENTON UMC							
SUMMARY OF WETLANDS AND WOTUS WITHIN STUDY AREA							
Water ID	Latitude	Longitude	Cowardin Class	Stream (Linear Feet)	Area (Square Feet)	Area (Acres)	Class of Aquatic Resource (Tidal/Non-tidal, Section 10/404, etc.
S-1	38.71970	-77.80290	R4	272	973	0.02	Non-tidal, Section 401
S-2	38.71990	-77.80530	R4	120	202	<0.01	Non-tidal, Section 401
TOTAL				392	1,175	0.03	

- Feature S-1: This feature is located in the eastern portion of the study area and is located within a manmade stormwater swale constructed during the development of the property (Exhibit #9, Photos 5-8). This feature exhibits a discontinuous ordinary

high-water mark (OHWM) and was identified as a stream channel utilizing the DEQ Stream Identification Field Data Form. An assessment utilizing the Fairfax County DPWES and NCDWQ protocols identified the stream as intermittent, with scores of 9 and 16.5, respectively.

A wetland delineation data point (Exhibit #10, Data Point #1) was conducted to document the conditions at the downslope end of this feature where an OHWM is absent. As noted within this data point, hydric soil and wetland hydrology parameters were satisfied at this location. However, the feature lacks hydrophytic vegetation. Therefore, this feature was classified as an intermittent (R4) stream channel.

- Feature S-2: This feature, located within a stormwater retention basin, was determined to be an R4 stream channel. Due to obstruction by a security fence, the approximate limit of the stream channel within the retention basin is depicted on the Wetland and WOTUS Delineation Map (Exhibit #12).

Several upland swales are located within and immediately adjacent to the study area. These topographic features lack hydric soils and a continuous OHWM. These features are noted on the Wetland and WOTUS Delineation Map and shown in the Study Area Photographs (Exhibit 9).

As previously noted, these stormwater conveyance and retention features were constructed at the time of site development. The intermittent stream channel developed within these manmade features.

4.0 Conclusion

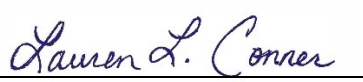
IA conducted a wetland delineation within the WUMC study area in the Town of Warrenton Virginia. Upon completion of the field work, an unnamed R4 stream channel located within manmade stormwater features was delineated within the study area. Offsite stormwater pipes and collected surface runoff provides the hydrologic input for this R4 stream channel. As described in detail above, a total of 392 linear feet (LF), 1,175 square feet (SF) and 0.03 acre (AC) of R4 stream channel is located within the study area.

This wetland delineation was completed pursuant to guidance issued by the USACE, FGDC, and DEQ. Per the United States Supreme Court *Sackett v. Environmental Protection Agency (Sackett)* decision in May 2023, the definition of WOTUS has been revised. The Supreme Court determined that federal jurisdiction of features under the Clean Water Act (CWA) "extends only to those wetlands with a continuous surface connection to bodies that are waters of the United States in their own right, such that they are indistinguishable from those waters."

Based on IA's best professional judgement and the guidance noted above, it is anticipated that the R4 stream channel within the WUMC study area is jurisdictional to DEQ only as it lacks a continuous surface connection to bodies of water that can be classified as WOTUS under the *Sackett* Decision. Coordination with the USACE and DEQ to confirm each agency's determination on the jurisdiction of these features is strongly advised.

This study documents current field conditions as of April 2024 and available agency database information at the time of the study. Such information and field conditions may be subject to change in the future. Pursuant to DEQ guidance, this study has been conducted by a certified PWD and VSWD.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Professional Name:	Lauren Conner
Certification No.:	VSWD No. 0045
Signature:	
Date:	April 29, 2024

5.0 REFERENCES

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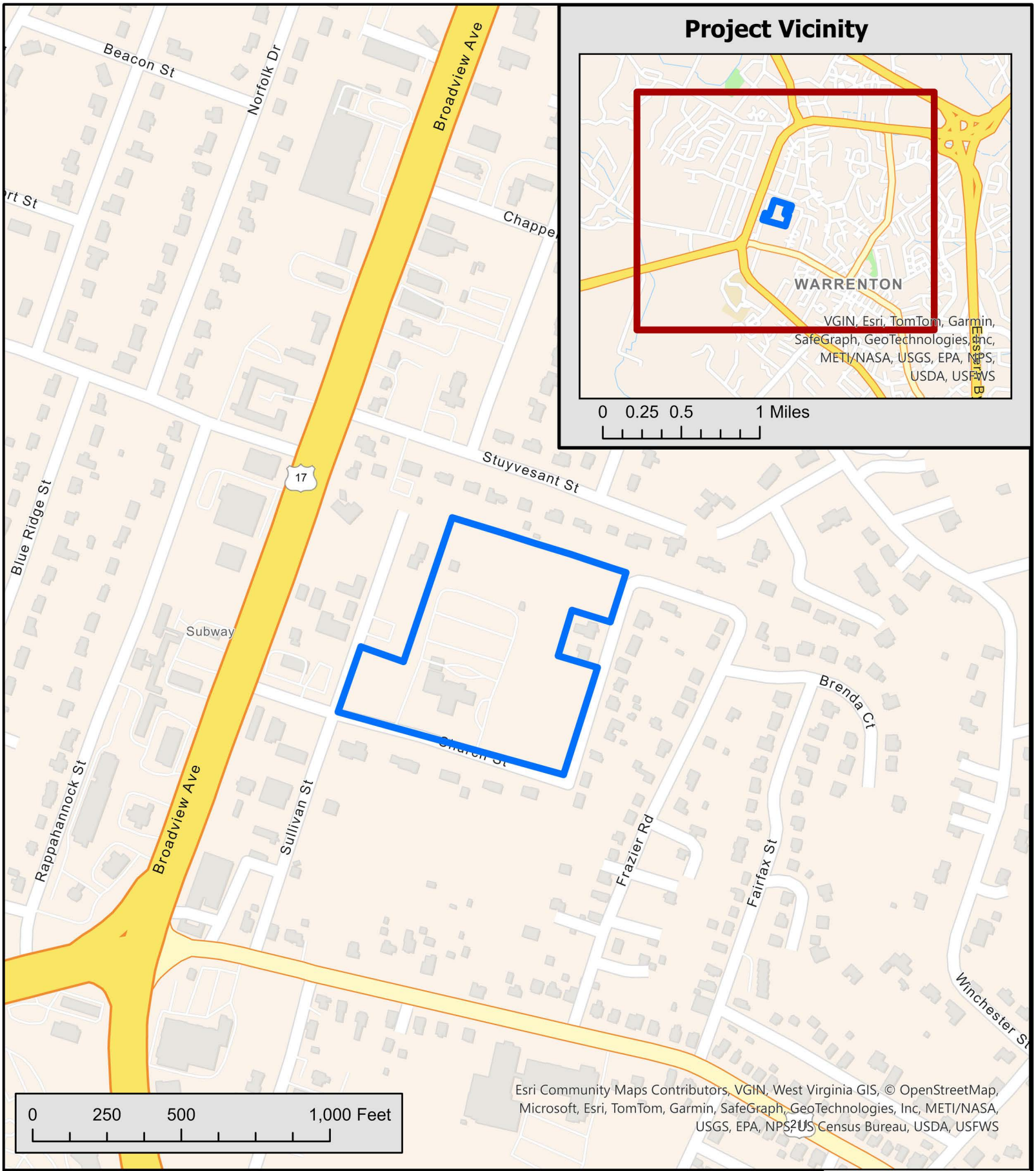


N

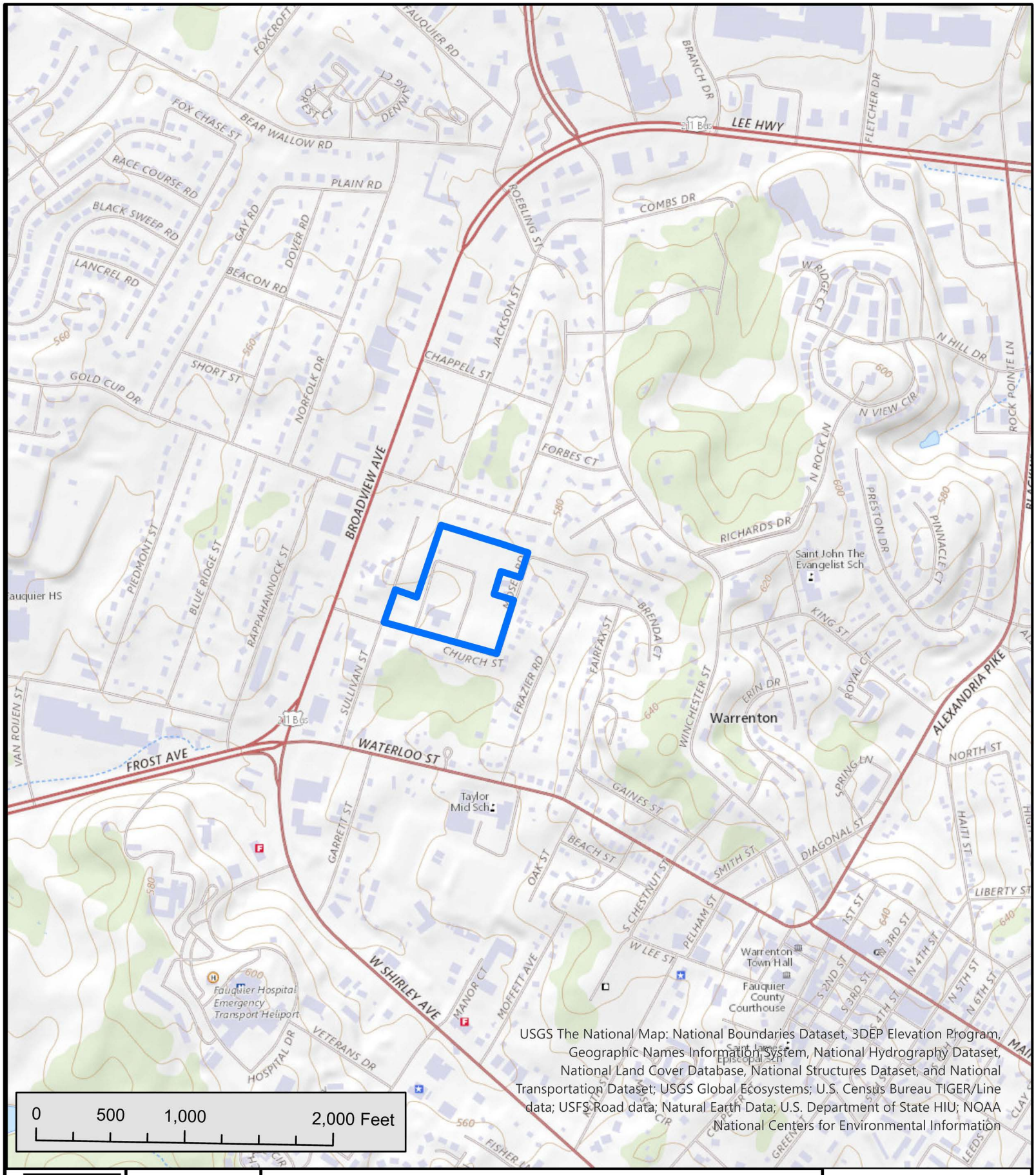
Warrenton UMC

Exhibit #1: Vicinity Map

Latitude: 38.7201
Longitude: -77.8038
LRR P; MLRA 138

Legend

- Vicinity
- Study Area



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

Warrenton UMC

Exhibit #2:
USGS Topographic Map
Warrenton, Virginia

Legend

Study Area

Warrenton UMC

Exhibit #3:
NAIP Aerial Imagery Map

Legend

Study Area

U.S. Fish and Wildlife Service

National Wetlands Inventory

Warrenton UMC

April 20, 2024

Wetlands

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

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

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 Fauquier County, Virginia

Study Area

April 19, 2024

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.

Map Scale: 1:2,240 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

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 1:12,000.

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: Fauquier County, Virginia
Survey Area Data: Version 19, Aug 25, 2023

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

Date(s) aerial images were photographed: Jul 13, 2022—Oct 6, 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
17B	Middleburg loam, 2 to 7 percent slopes, frequently flooded	4.3	40.6%
45B	Fauquier silt loam, 2 to 7 percent slopes	6.3	59.4%
Totals for Area of Interest		**10.7**	**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.

Fauquier County, Virginia

17B—Middleburg loam, 2 to 7 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 21m5c
Elevation: 160 to 1,510 feet
Mean annual precipitation: 34 to 46 inches
Mean annual air temperature: 43 to 66 degrees F
Frost-free period: 174 to 211 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Middleburg and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Middleburg

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from igneous and metamorphic rock and/or colluvium derived from igneous and metamorphic rock

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 48 inches: silty clay loam
H3 - 48 to 61 inches: silt loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F148XY027PA - Moist, Piedmont - felsic, Riparian Zone, Ecotonal Meadow-Shrub-Forest
Hydric soil rating: No

45B—Fauquier silt loam, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 21m76
Elevation: 310 to 1,200 feet
Mean annual precipitation: 34 to 46 inches
Mean annual air temperature: 43 to 66 degrees F
Frost-free period: 174 to 211 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Fauquier and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fauquier

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from greenstone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 36 inches: clay
H3 - 36 to 60 inches: silt loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F148XY026PA - Moist, High Base-Saturation, Upland, Mixed Oak - Hickory - Conifer Forest
Hydric soil rating: No

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National Flood Hazard Layer FIRMette

FEMA

77°48'33"W 38°43'25"N

77°47'56"W 38°42'57"N

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

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
- 513 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 4/23/2024 at 12:22 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.

WetCat Report

April 19, 2024 - Created from the Wetland Condition Assessment Tool Viewer (WetCAT)

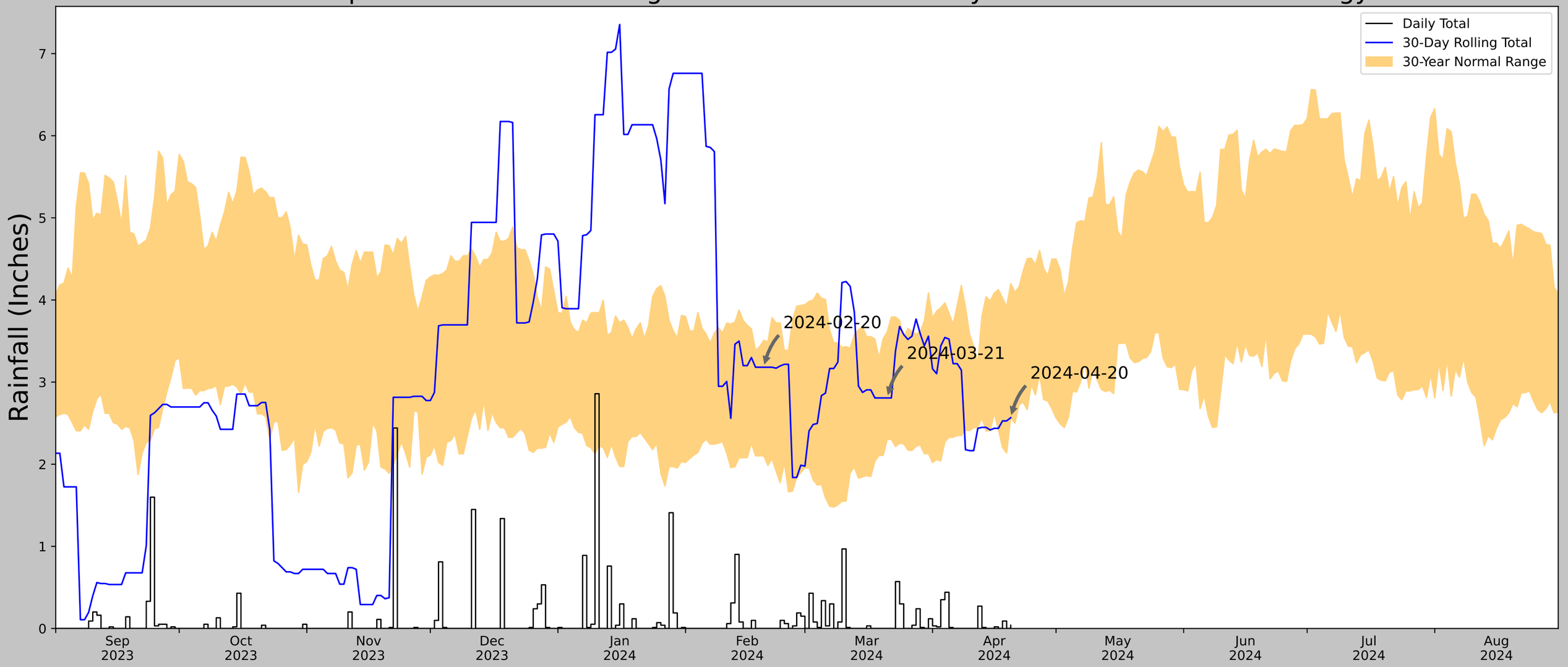
- Study Area
- Virginia-APNEP Boundary Combined
- Hydrologic Units (12-digit)

0 0.01 0.03 0.05 mi
0 0.02 0.04 0.09 km

Maxar, Microsoft
Esri Community Maps Contributors, VGIN, West Virginia GIS, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/ NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

VIMS | William & Mary
Virginia Institute of Marine Science
Center for Coastal Resources Management

DEQ
Virginia Department of Environmental Quality



Coordinates	38.721, -77.8038
Observation Date	2024-04-20
Elevation (ft)	546.853
Drought Index (PDSI)	Mild drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-20	2.56811	4.200394	2.566929	Dry	1	3	3
2024-03-21	2.301181	3.611811	2.807087	Normal	2	2	4
2024-02-20	2.101181	3.509055	3.181102	Normal	2	1	2
Result							Drier than Normal - 9

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
RIXEYVILLE 2.5 N	38.6169, -77.9696	492.126	11.478	54.727	5.793	6145	88
RIXEYVILLE 6.1 N	38.6639, -77.9756	532.152	3.263	40.026	1.599	270	0
RIXEYVILLE 6.3 NNE	38.6696, -77.9467	481.955	3.845	10.171	1.769	65	0
CULPEPER 2.6 NW	38.5015, -78.0302	518.045	8.619	25.919	4.102	2	2
WARRENTON 6.1 S	38.628, -77.808	445.866	8.757	46.26	4.346	89	0
BOSTON 4 SE	38.5458, -78.0981	589.895	8.503	97.769	4.658	2547	0
WARRENTON 3 SE	38.6811, -77.7678	500.0	11.758	7.874	5.384	2205	0
SPERRYVILLE	38.6553, -78.2272	750.0	14.154	257.874	10.019	27	0
THE PLAINS 2 NNE	38.8947, -77.7547	529.856	22.416	37.73	10.933	2	0

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

1. Looking southeast at the upland swale located in the northwestern corner of the study area. No state waters or Waters of the U.S. (WOTUS) are located in this portion of the study area.

2. Looking south at the maintained lawn located in the northern portion of the study area. No state waters or WOTUS are located in this portion of the study area.

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

3. Looking south at the swale located in the northeastern corner of the study area. No state waters or WOTUS are located in this portion of the study area.

4. Looking at the yard inlet located to the east, upslope, of the stormwater swale located in the eastern portion of the study area. This inlet conveys stormwater flow along Moser Road and connected to underground stormwater pipes and outfalls west of Moser Road.

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

5. Looking east (upslope) at the stormwater swale (Feature S-1) located along the eastern portion of the study area. Flow observed within this feature is conveyed under Moser Road onto the study area. This portion of the stormwater swale contains a contiguous ordinary high water mark (OHWM) and has been classified as an intermittent stream channel.

6. Looking west (downslope) at the stormwater swale (Feature S-1) located along the eastern portion of the study area. This portion of the stormwater swale exhibits a discontinuous OHWM; however, it has been classified as an intermittent stream channel.

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

7. Looking west (downslope) at Data Point #1 located within the stormwater swale (Feature S-1) located in the eastern portion of the study area. Wetland hydrology and hydric soil indicators are satisfied; however, hydrophytic vegetation is not present within this swale. A continuous OHWM is lacking in this portion of this feature. However, this feature has been classified as an intermittent stream channel due to the upslope characteristics.

8. Looking east (upslope) at Data Point #2 located adjacent to the stormwater swale located in the eastern portion of the study area. The hydric soil indicator is satisfied at this location; however, wetland hydrology and hydrophytic vegetation is not present within this swale.

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

9. Looking north at the upland swale located in the central portion of the study area. Hydric soils and an ordinary high water mark (OHWM) are absent. No state waters or other WOTUS are located in this portion of the study area.

10. Looking at a yard inlet located within the parking lot in the central portion of the study area.

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

11. Looking southwest at the swale located in the southwestern portion of the study area. No state waters or WOTUS are located in this portion of the study area.

12. Looking east at the stormwater swale (Feature S-2) located within a constructed stormwater retention feature located at the western portion of the study area. A continuous ordinary high water mark and hydrophytic vegetation are not present within this feature. No wetlands or WOTUS are located within this portion of the study area.

Warrenton United Methodist Church
Exhibit #9
Study Area Photographs

13. Looking south at the upland swale located along Sullivan Street. No OHWM or wetland indicators are present within this swale. No state waters or other WOTUS are located in this portion of the study area.

14. Looking northeast at the Church located within the southern portion of the study area. No state waters or other WOTUS are located in this portion of the study area.

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: Warrenton UMC City/County: Town of Warrenton Sampling Date: 4/20/24

Applicant/Owner: RDA Civil State: VA Sampling Point: 1

Investigator(s): LLC Section, Township, Range:

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 2-7

Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 38.7198 Long: -77.8034 Datum: NAD83

Soil Map Unit Name: 17B - Middleburg Loam NWI classification: None

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Remarks:
Two of the three wetland parameters (i.e., hydric soil and wetland hydrology) are satisfied at this data point, which characterizes the stormwater swale located in the esatern portion of the study area.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X 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 X	No ____	Depth (inches): 2
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Date of latest rainfall: 4/19/24 0.01".

Remarks:

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

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 5)			
1. *Eleocharis obtusa*	20	Yes	OBL
2. *Ludwigia alternifolia*	5	No	FACW
3. *Poa pratensis*	45	Yes	FACU
4. *Glechoma hederacea*	15	No	FACU
5. *Taraxacum officinale*	10	No	FACU
6. *Lamium purpureum*	15	No	UPL
7.			
8.			
9.			
10.			
11.			
	110	=Total Cover	
50% of total cover:	55	20% of total cover:	22
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	70	x 4 =	280
UPL species	15	x 5 =	75
Column Totals:	110 (A)		385 (B)

Prevalence Index = B/A = 3.50

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 supportin data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft 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** X

Remarks: (Include photo numbers here or on a separate sheet.)
No tree, sapling/shrub or woody vine strata present.

SOIL Sampling Point: 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
0-4	10YR 3/2	90	5YR 5/8	10	C	M	Loamy/Clayey	Prominent redox concentrations
								Many small rocks
4-18	5Y 4/2	95	10YR 4/3	5	C	M	Loamy/Clayey	Distinct redox concentrations
								Gravel present

[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)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

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

[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** X **No** ___

Remarks:

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: Warrenton UMC City/County: Town of Warrenton Sampling Date: 4/20/24

Applicant/Owner: RDA Civil State: VA Sampling Point: 2

Investigator(s): LLC Section, Township, Range:

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 2-7

Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 38.719826 Long: -77.803393 Datum: NAD83

Soil Map Unit Name: 17B - Middleburg Loam NWI classification: None

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Remarks:
Only one of the three wetland parameters (i.e., hydric soil) is satisfied at this location, which documents the constructed stormwater swale located in the eastern portion of the study area.

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 X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Date of latest rainfall: 4/19/24 0.01".

Remarks:

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

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
50% of total cover:		20% of total cover:	
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	=Total Cover		
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 5)			
1. *Oxalis sp.*	15	No	
2. *Rumex crispus*	5	No	FAC
3. *Poa pratensis*	95	Yes	FACU
4. *Glechoma hederacea*	10	No	FACU
5. *Taraxacum officinale*	10	No	FACU
6. *Lamium purpureum*	15	No	UPL
7. *Anthoxanthum odoratum*	10	No	FACU
8.			
9.			
10.			
11.			
	160 =Total Cover		
50% of total cover: 80		20% of total cover: 32	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	125	x 4 =	500
UPL species	15	x 5 =	75
Column Totals:	145 (A)		590 (B)

Prevalence Index = B/A = 4.07

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 or equal to 3.28 ft (1 m) tall.

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

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

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

Remarks: (Include photo numbers here or on a separate sheet.)
No tree, sapling/shrub or woody vine strata present.

SOIL

Sampling Point: 2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Loamy/Clayey	Many fine roots
2-8	10YR 4/2	75	7.5YR 4/4	15	C	PL/M	Loamy/Clayey	
			10YR 4/1	10	D	M		
8-18	10YR 4/4	85	5YR 4/6	5	C	M	Loamy/Clayey	
			10YR 4/1	10	D	M		

[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)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

Indicators for Problematic Hydric Soils[3]:

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

[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** X **No** ___

Remarks:

DEQ Stream Identification Field Data Form

Project/Site: WUMC City/County: Town of Warrenton Date: 4/20/2024 Applicant/Owner: RDA Civil Investigator(s): Lauren Conner Landform (hillslope, terrace, etc.): Stream Valley/Terrace Local relief (concave, convex, none): Concave Slope (%): 0-3
Lat: 38.7197 Long: -77.8028 Datum: NAD 83

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No** **Stream Reach 1-A (A/B Flagging Series in eastern portion of study area).**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** Per the National Weather Service, the last rainfall event was 0.01" on 4/19/2024.

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

☐ Natural line impressed on bank (above or below bankfull)

☐ Undercut bank

☐ Break in slope (on bank or at valley bottom)

☐ Continuous bed and bank

☒ Shelving (Top of bank, natural levee, or other)

☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

☐ Shelving (on bar)

☐ Unvegetated (on bar)

☐ Vegetation transition (on bar)

☐ Sediment transition or sorting (on bar)

☐ Upper limit of deposition (on bar)

☐ **Channel Bed / Bedload Transport Evidence**

☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)

☐ Bedform features (riffle, pool, steps, etc.)

☒ Erosional (scour, smoothing, etc.)

☐ Secondary channel (lateral or parallel along the same valley or floodplain)

☒ Evidence of thalweg

☐ Headcuts (with other evidence)

☐ Hydric soil development (changes in the character of soil)

☐ Mudcracks (found within an unvegetated flow path/channel)

☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☐ **Change in Vegetation Type / Density**

☐ Vegetation absent (channel bed)

☒ Vegetation matted down or bent (channel bed or bars)

☐ Exposed roots below intact soil layer (channel banks)

☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)

☐ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

☐ Wracking/presence of organic litter (along channel banks or floodplain)

☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)

☒ Leaf litter disturbed or absent

☐ Water staining

☐ Weathered clast or bedrock

☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Stormwater swale connecting a yard inlet across Moser Road and an inlet at the parking lot in the central portion of the study area. This stormwater feature is located within a manmade swale at this location. Feature lacks a continuous ordinary high water mark (OHWM). A data point conducted within this feature documents the presence of hydric soils and hydrology due to surface water after recent precipitation event.

Describe rational for location of stream and provide supporting evidence for stream identification:

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable): Site within CBPA locality? ☐ Yes ☒ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☒ Fairfax ☐ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

Fairfax County DPWES Perennial Stream Field Identification Protocol

Site ID:	1-A	**Flags:**	A-1 to A-12
Date:	4/20/2024	Recorder:	LLC
Time:	14:00	Evaluators:	LLC

Field Indicators:					**Parameter**
I.) Streamflow and Hydrology	Absent	Weak	Moderate	Strong	**Score:**
1.) Presence or absence of flowing water and >48 hrs since last rainfall	0	1	2	3	1
2.) Presence of high groundwater table or seeps and springs	0	1	2	3	1
3.) Leaflitter in streambed	1.5	1	0.5	0	1
4.) Drift Lines	0	0.5	1	1.5	0.5
5.) Sediment on debris or plants	0	0.5	1	1.5	0
				Total Streamflow and Hydrology Points:	3.5
II.) Geomorphology	Absent	Weak	Moderate	Strong	
1.) Riffle-pool sequence	0	1	2	3	0
2.) Sequence Sorting (USDA texture)	0	1	2	3	1
3.) Natural Levees	0	1	2	3	0
4.) Sinuosity	0	1	2	3	0
5.) Active or Relic Floodplain	0	1	2	3	1
6.) Braided Channel	0	1	2	3	0
7.) Recent Alluvial Deposits	0	1	2	3	1
8.) Bankfull Bench present	0	1	2	3	0
9.) Continuous Bed and Bank	0	1	2	3	1
10.) 2nd order or greater channel present	Yes = 3		No = 0		0
				Total Geomorphology Points:	4
III.) Streambed Soils					
1.) Redoximorphic features present in sides of channel or head cut.	Present = 0		Absent = 1.5		0
2.) Chroma	Gleyed = 3	1 = 2	2 = 1	>2 = 0	2
				Total Streambed Soils Points:	2
IV.) Vegetation	Absent	Weak	Moderate	Strong	
1.) Rooted Aquatic Plants in Streambed	0	1	2	3	0
2.) Presence of Periphyton/green algae	0	1	2	3	0
3.) Iron Oxidizing Bacteria/Fungus	0	0.5	1	1.5	0.5
4.) Wetland Plants in Streambed (Skip if no plants present in streambed)					
SAV = 3	Mostly OBL = 2	Mostly FACW = 1	Mostly FAC = 0.5	Mostly FACU, UPL, or None = 0	1
				Total Vegetation Points:	1.5

Comments:

Blunt spike rush (*Eleocharis obtusa* ; OBL) and marsh seedbox (*Ludwigia alternifolia* ; FACW) observed in channel. Note that most of the plants observed within the channel were FACW.

Front Page Total 9 **Points**

Fairfax County DPWES Perennial Stream Field Identification Protocol

Site ID: 1-A **Flags:** A-1 to A-12

V.) Benthic Macroinvertebrates	Absent	Weak	Moderate	Strong	**Parameter Score:**
1.) Benthic Macroinvertebrates	0	0.5	1	1.5	0
2.) Bivalves	0	1	2	3	0
3.) EPT Taxa	Present = 3		Absent = 0		0
			Total Benthic Macroinvertebrate Points:		0

VI.) Vertebrates	Absent	Weak	Moderate	Strong	
1.) Fish	0	0.5	1	1.5	0
2.) Amphibians	0	0.5	1	1.5	0
				Total Vertebrate Points:	0

Benthics/Amphibians Found:

Comments:
No fish, amphibians or other animals found.

Total Points: 9

Weather Observations

Date of Last Rainfall:	4/19/2024
Rainfall Amount:	0.01"
Weather Data Source:	National Weather Service

NC Division of Water Quality –Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11

NC DWQ Stream Identification Form Version 4.11

Date: 4/20/2024	**Project/Site**: Warrenton UMC **Stream Reach 1-A**	**Latitude:** 38.7196
Evaluator: Lauren Conner	**County:** Town of Warrenton	**Longitude:** -77.8027
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30** **16.5**	**Stream Determination (circle one) Ephemeral Intermittent Perennial**	**Other** *e.g. Quad Name*: Warrenton, Virginia

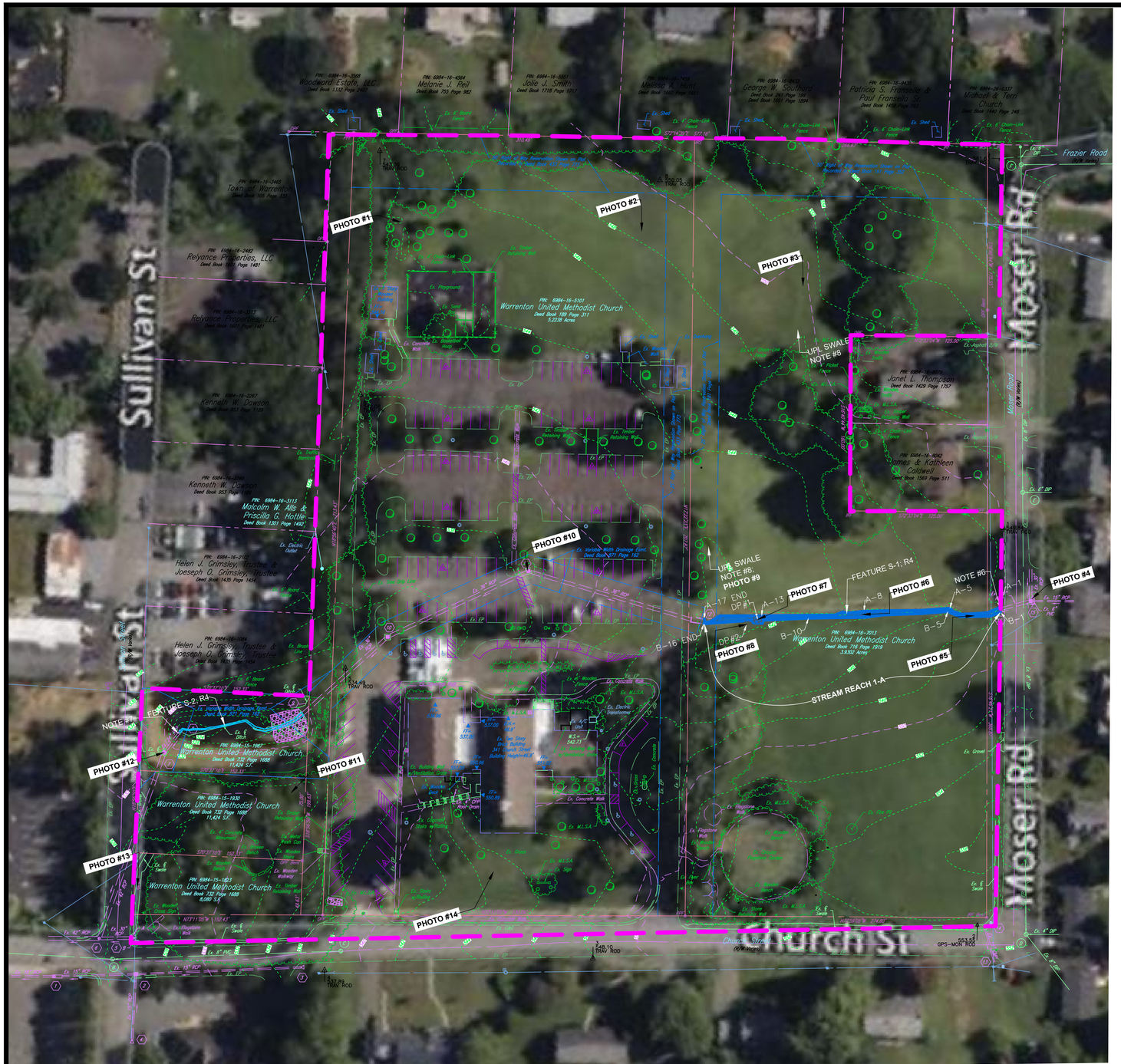
A. Geomorphology (Subtotal = 4.5)	Absent	Weak	Moderate	Strong	Parameter Score:
1[a]. Continuity of channel bed and bank	0	1	2	3	1
2. Sinuosity of channel along thalweg	0	1	2	3	0
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	0
4. Particle size of stream substrate	0	1	2	3	1
5. Active/relict floodplain	0	1	2	3	1
6. Depositional bars or benches	0	1	2	3	0
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	0
9. Grade control	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	0.5
11. Second or greater order channel	No = 0		Yes = 3		0

[a] artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6.5)					
12. Presence of Baseflow	0	1	2	3	1
13. Iron oxidizing bacteria	0	1	2	3	1
14. Leaf litter	1.5	1	0.5	0	1
15. Sediment on plants or debris	0	0.5	1	1.5	0
16. Organic debris lines or piles	0	0.5	1	1.5	0.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3		3

C. Biology (Subtotal = 5.5)					
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	2
20. Macrobenthos (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0
24. Amphibians	0	0.5	1	1.5	0
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other				1.5
*perennial streams may also be identified using other methods. See p. 35 of manual.					
				Total Reach Score:	16.5

Notes: Blunt spike rush (*Eleocharis obtusa*; OBL), marsh seedbox (*Ludwigia alternifolia*; FACW), Kentucky bluegrass (*Poa pratensis*; FACU), ground ivy (*Glechoma hederacea*; FACU), dandelion *(Taraxacum officinale; FACU)* and purple dead nettle (*Lamium purpureum*; UPL) observed in stream channel. No macrobenthos, fish or amphibians observed within the channel.



LEGEND

- STUDY AREA
- INTERMITTENT STREAM CHANNEL (R4)
- APPROXIMATE INTERMITTENT STREAM CHANNEL (R4)
- DATA POINT

WARRENTON UMC

SUMMARY OF WETLANDS AND WOTUS WITHIN STUDY AREA

Water ID	Latitude	Longitude	Cowardin Class	Stream (Linear Feet)	Area (Square Feet)	Area (Acres)	Class of Aquatic Resource (Tidal/Non-tidal, Section 10/404, etc.
S-1	38.71970	-77.80290	R4	272	973	0.02	Non-tidal, Section 401
S-2	38.71990	-77.80530	R4	120	202	<0.01	Non-tidal, Section 401
TOTAL				392	1,175	0.03	

Cowardin Classification
R4 = Intermittent Stream Channel

Notes:

1. Wetland and waters of the U.S. (WOTUS) delineation field work was completed on April 20, 2024 by Lauren Conner, PWS, PWD, VSWD. Wetland and stream delineation flagging was located by InterAgency, Inc. (IA) via GPS (with submeter accuracy) on April 20, 2024.
2. The horizontal datum is based on the Virginia South State Plane Coordinate System, North American Datum, 1983. The vertical datum was established using GPS methods and is based on the National Geodetic Vertical Datum NAVD 1988. Topographic and base information provided to InterAgency, Inc. by RDA Civil on March 19, 2024. Natural color aerial imagery from Microsoft Bing (copyright 2023) was utilized as a base for this exhibit.
3. The wetland delineation has been completed pursuant to Virginia Department of Environmental Quality (DEQ) and the U.S. Army Corps of Engineers (USACE) 1987 wetland delineation manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0), dated November 2010.
4. As the study area is ±11 acres, transects were established and the study area was systematically searched for wetlands and other WOTUS.
5. Jurisdictional features within the study area were flagged with pink-glo vinyl flagging. The data point location was denoted using pink-glo and orange-glo vinyl flagging.
6. This jurisdictional feature originates upslope, outside of the study area.
7. This jurisdictional feature continues downslope, outside of the study area.
8. Upland swale feature lacks hydric soil and a contiguous ordinary high water mark (OHWM); therefore, this is not a jurisdictional feature to DEQ or the USACE.

Exhibit #12: Wetlands and Waters of the U.S. (WOTUS) Delineation Map
Warrenton United Methodist Church (WUMC)

Prepared By: InterAgency, Inc. **Prepared For:** RDA Civil **Date:** April 2024 **Scale:** 1" = 50' **Draft:** LLC

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.