

Environmental Constraints Analysis



Toano, Virginia

September 10, 2018

SUP 18-0024

DJG# 2160330



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Environmental Constraints Analysis

Project Description:

Christ Community Church is located at 9001 Richmond Road, Toano, VA. The existing church building site is zoned A1 Agriculture. This zoning class requires a special use permit to be submitted for proposed assembly uses.

The proposed project includes the construction of an 11,079 square foot prefabricated metal frame multi-purpose building, regrading of an existing gravel parking lot with a conversion to asphalt pavement, and construction of an ancillary gravel parking lot. A septic drain field and water well will also be constructed.

Hydrologic Features:

This site contains Edward's Swamp which is the stream that comprises the east property line of the site's parcel. This same stream is the receiving stream for the site's drainage. Army Corp of Engineers wetland delineation and Resource Protection Area (RPA) determination have been performed for the site. See page Appendix for delineation and RPA.

Edward's Swamp and the site is located in the Diascund Creek Watershed. The Diascund Creek Watershed drains into the Chickahominy River then James River and ultimately into the Chesapeake Bay and Atlantic Ocean.

The entire property is located within the Zone X, which are areas of minimal flooding. See Appendix for FEMA flood insurance rate map (FIRM) 51095C 00380, Map revised December 16, 2015.

Physical Features:

The site topography within the proposed area of construction varies from approximately elevation 53 to 81 and has some areas of steep slopes of 25% or greater. Approximately 12,545 square feet of steep slopes are proposed to be disturbed. All steep slopes will be treated with blanket erosion and sediment control measures. They are located at the rear of the proposed building. Steep slopes were determined from a field topography survey performed on Feb 11, 2008 by His Land Surveying, Inc. of Providence Forge Virginia.

The soils within the site's limit of disturbance are craven-uchee complex (11C), emporia complex (15F) and udorthents, loamy (35). 11C soils are in the Hydrologic Soil Group (HSG) 'D'. The 15F soils are in HSG "B" and 35 soils are in HSG "C".

Soils information for this area was obtained from the USDA Natural Resource Conservation Service Soils maps:

Craven-uchee complex (6 to 10 percent slopes) - This complex consists of moderately well drained craven soils and well drained uchee soils. Areas of this

complex are on side slopes and narrow ridge tops. Slopes are uneven and complex and are 100 to 500 feet long. Permeability is moderately slow. The seasonal high water table ranges between 2 to 5 feet below the surface. The runoff class is medium.

Emporia complex (25 to 50 percent slopes) - This soil comprises most of the parcel. Emporia complex consists of areas of deep, very steep, well drained emporia soils and areas. This complex is on side slopes along creeks and drainage ways. Slopes are convex and irregularly shaped and range from 50 to 150 feet long. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. A perched high water table is at a depth of 3 to 4.5 feet in winter and spring. The runoff class is medium.

Udorthents, loamy (2 to 30 percent slopes) - This soil consists of deep, well drained and moderately well drained loamy soil material in areas where the soils have been disturbed during excavation and grading. Permeability ranges from moderately rapid to slow. The water table location is highly variable. The runoff class is high.

Prohibited or Restricted Development Areas:

All required setbacks shall be in accordance with the James City Zoning Ordinance.

Corp of Engineer wetland delineation and RPA boundary determination has been completed and is attached. No development is proposed within the properties RPA boundary.

Existing Conditions and Proposed Work:

The existing site parcel is 19.2 acres. 2.76 acres of the site is currently developed, including an existing church building, asphalt entrance road and gravel parking areas.

Site demolition will consist of clearing and grubbing of approximately 0.73 acres of a vegetated stand of mixed hardwoods and conifers, demolition of the existing gravel parking areas and assorted site structures. Total disturbed area shall be 2.94 acres.

Pervious and impervious area are as follows:

Existing Open Space – 18.26 acres

Existing Impervious – 0.94 acres

Proposed Open Space – 17.86 acres

Proposed Impervious – 1.34 acres

The proposed work includes construction of an 11,079 square foot prefabricated metal Multi-Purpose Building, regrading of an existing gravel parking lot with a conversion to asphalt pavement, and construction of an ancillary gravel parking lot. A septic drain field and water well will also be constructed.

Stormwater runoff from shall be directed to a proposed level one bioretention area and a level one extended detention pond. The Virginia Runoff Reduction Method (VRRM) spreadsheet was utilized for water quality calculations. Shallow grass swales direct runoff from the parking areas to one bioretention filter that will be installed on site. An underdrain is provided in a stone reservoir that discharges into the extended detention pond. A backwater valve is proposed on the underdrain to prohibit water from accumulating in the detention pond and backing up into the bioretention stone reservoir. Overflows from the filter will discharge over a riprap weir and into a new detention pond. The detention pond will serve as a sediment trap prior to site stabilization.

The site was designed to minimize adverse effects to the environment while providing the necessary improvements for church operations.

FEMA Floodplain Map:

ANEL 0036 11960000 FT



76°50'37.5"
37°24'22.5"



MAP NUMBER
51095C0038D


MAP REVISED

LEGEND


 SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD



The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

 FLOODWAY AREAS IN ZONE AE




The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

 **ZONE X** OTHER FLOOD AREAS
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

 **ZONE X** OTHER AREAS
Areas determined to be outside the 0.2% annual chance floodplain.
 **ZONE D** Areas in which flood hazards are undetermined, but possible.

 COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
 OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

-  1% annual chance floodplain boundary
-  0.2% annual chance floodplain boundary
-  Floodway boundary

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Soils Data:



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 James City and York Counties and the City of Williamsburg, Virginia



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 (<http://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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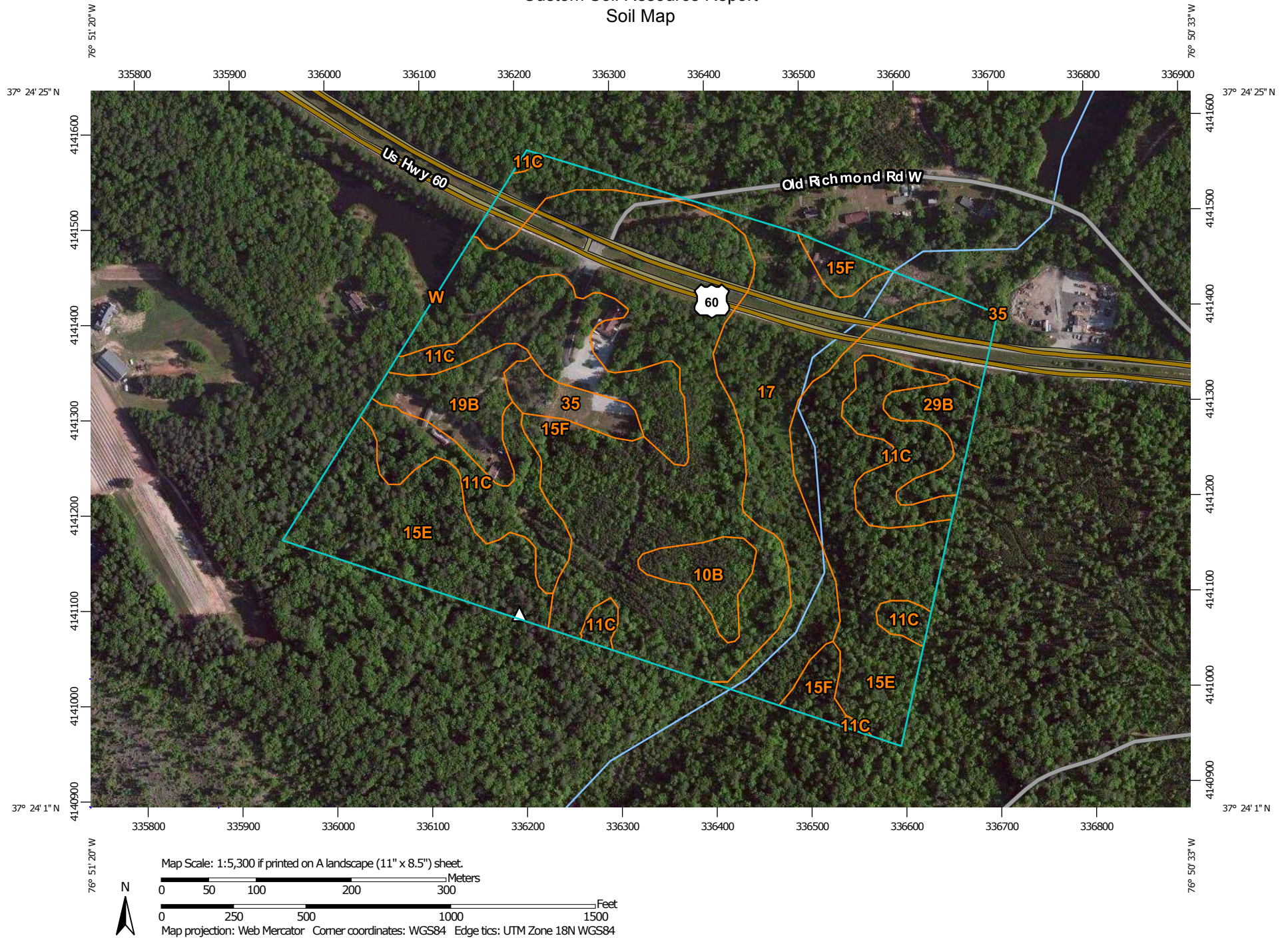
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Soil Map

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

Custom Soil Resource Report Soil Map





Custom Soil Resource Report

MAP LEGEND




















Area of Interest (AOI)


Area of Interest (AOI)

Soils


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

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

-  Streams and Canals

Transportation

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

Background

-  Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
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: James City and York Counties and the City of Williamsburg, Virginia
Survey Area Data: Version 14, Sep 24, 2014

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

Date(s) aerial images were photographed: Feb 15, 2011—Jun 4, 2011

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

James City and York Counties and the City of Williamsburg, Virginia (VA695)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10B	Craven fine sandy loam, 2 to 6 percent slopes	1.7	2.3%
11C	Craven-Uchee complex, 6 to 10 percent slopes	12.2	17.2%
15E	Emporia complex, 15 to 25 percent slopes	16.4	23.1%
15F	Emporia complex, 25 to 50 percent slopes	23.5	33.1%
17	Johnston complex	11.4	16.1%
19B	Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes	2.7	3.8%
29B	Slagle fine sandy loam, 2 to 6 percent slopes	1.6	2.2%
35	Udorthents, loamy	1.4	2.0%
W	Water	0.0	0.0%
Totals for Area of Interest		70.9	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.

James City and York Counties and the City of Williamsburg, Virginia

10B—Craven fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 41pm
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 165 to 193 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Craven and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Craven

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Marine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 53 inches: clay
H3 - 53 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

11C—Craven-Uchee complex, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 41pq
Elevation: 200 to 700 feet

Custom Soil Resource Report

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 165 to 193 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Uchee and similar soils: 35 percent

Craven and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Craven

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Marine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam

H2 - 9 to 53 inches: clay

H3 - 53 to 80 inches: sandy clay loam

Properties and qualities

Slope: 6 to 10 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 24 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Description of Uchee

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Marine deposits

Typical profile

H1 - 0 to 24 inches: loamy fine sand

H2 - 24 to 56 inches: sandy clay loam

H3 - 56 to 65 inches: sandy loam

Properties and qualities

Slope: 6 to 10 percent

Depth to restrictive feature: More than 80 inches

Custom Soil Resource Report

Natural drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

15E—Emporia complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 41px

Elevation: 20 to 150 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 165 to 193 days

Farmland classification: Not prime farmland

Map Unit Composition

Emporia and similar soils: 75 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emporia

Setting

Landform: Marine terraces

Landform position (three-dimensional): Riser

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Marine deposits

Typical profile

H1 - 0 to 13 inches: fine sandy loam

H2 - 13 to 58 inches: loam

H3 - 58 to 75 inches: sandy clay loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 1.98 in/hr)

Depth to water table: About 36 to 54 inches

Custom Soil Resource Report

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Minor Components

Johnston

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

15F—Emporia complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 41py

Elevation: 20 to 150 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 165 to 193 days

Farmland classification: Not prime farmland

Map Unit Composition

Emporia and similar soils: 75 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emporia

Setting

Landform: Marine terraces

Landform position (three-dimensional): Riser

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Marine deposits

Typical profile

H1 - 0 to 13 inches: fine sandy loam

H2 - 13 to 58 inches: loam

H3 - 58 to 75 inches: sandy clay loam

Properties and qualities

Slope: 25 to 50 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Custom Soil Resource Report

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 1.98 in/hr)

Depth to water table: About 36 to 54 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Minor Components

Johnston

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

17—Johnston complex

Map Unit Setting

National map unit symbol: 41q0

Elevation: 0 to 150 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 165 to 193 days

Farmland classification: Not prime farmland

Map Unit Composition

Johnston and similar soils: 75 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Johnston

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 34 inches: silt loam

H2 - 34 to 60 inches: fine sandy loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D

Minor Components

Bohicket

Percent of map unit: 5 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Axis

Percent of map unit: 5 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Levy

Percent of map unit: 5 percent
Landform: Salt marshes
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Nimmo

Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Tomotley

Percent of map unit: 5 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex

19B—Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 41q2
Elevation: 20 to 400 feet
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 165 to 193 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Kempsville and similar soils: 50 percent
Emporia and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kempsville

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Marine deposits

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 55 inches: sandy clay loam
H3 - 55 to 68 inches: fine sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very 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 storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A

Description of Emporia

Setting

Landform: Marine terraces

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Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Marine deposits

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 58 inches: loam
H3 - 58 to 75 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 1.98 in/hr)
Depth to water table: About 36 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

29B—Slagle fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2sgy1
Elevation: 70 to 330 feet
Mean annual precipitation: 32 to 51 inches
Mean annual air temperature: 47 to 70 degrees F
Frost-free period: 158 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 83 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slagle

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread, riser, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bt - 8 to 51 inches: sandy clay loam
C - 51 to 70 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Myatt

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear

35—Udorthents, loamy

Map Unit Setting

National map unit symbol: 41qq
Elevation: 30 to 120 feet
Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 165 to 193 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 75 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Properties and qualities

Slope: 0 to 70 percent

Depth to restrictive feature: More than 80 inches

Runoff class: High

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Minor Components

Bethera

Percent of map unit: 3 percent

Landform: Depressions

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

W—Water

Map Unit Setting

National map unit symbol: 41r1

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 57 to 61 degrees F

Frost-free period: 165 to 193 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Properties and qualities

Depth to restrictive feature: More than 80 inches

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

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National Wetland Inventory:

Christ Community Church



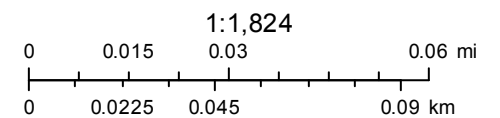
September 9, 2018

National Wetlands Inventory

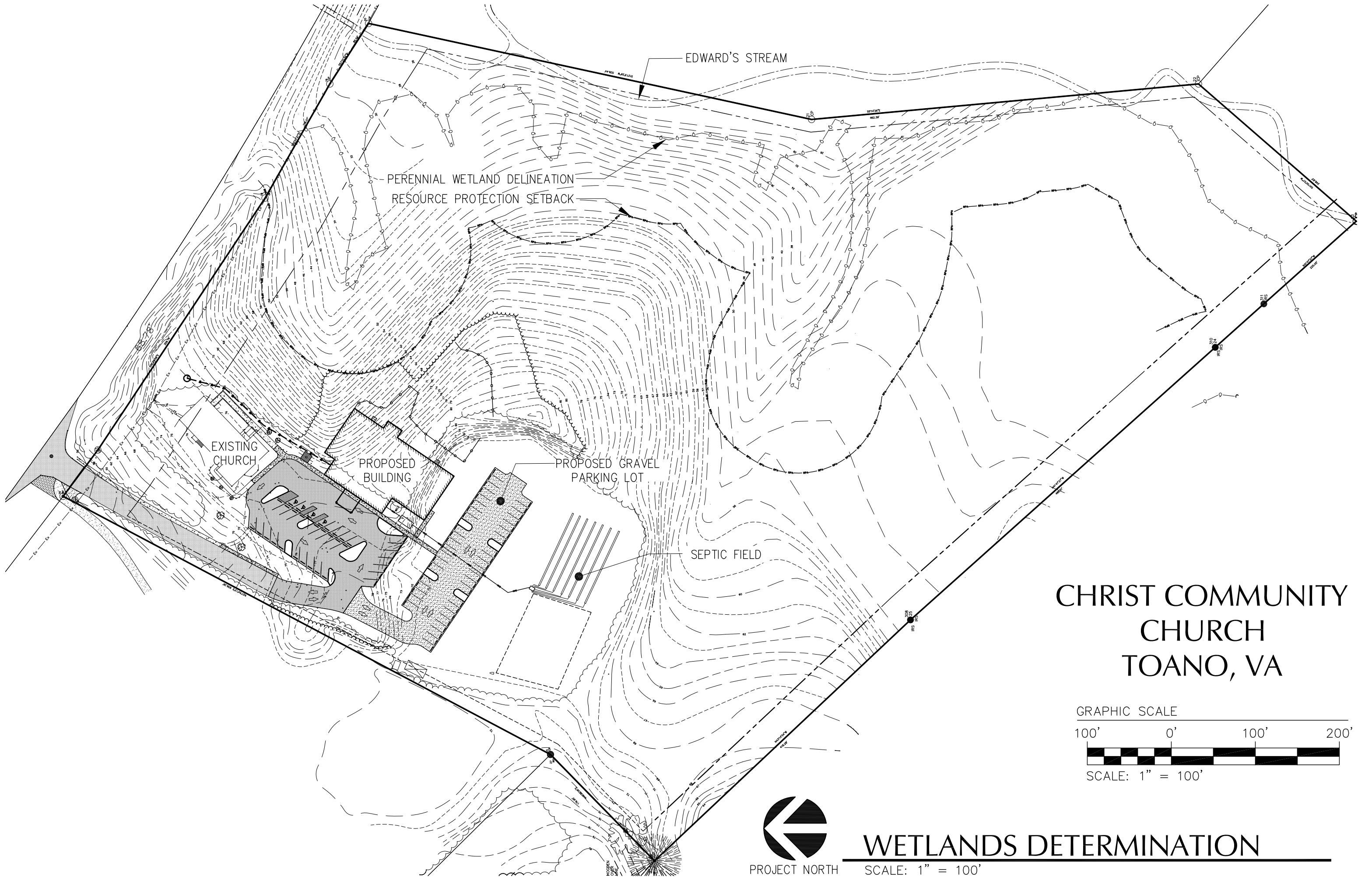
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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