

**CIRI PROPERTY
TAX MAP 11, PARCEL 609
INDIAN HEAD, MD
FOREST STAND DELINEATION REPORT
AUGUST 2019**

PREPARED FOR:
ELM STREET DEVELOPMENT
181 HARRY S. TRUMAN PKWY. SUITE 275
ANNAPOLIS, MD 21401

PREPARED BY:
SOLTESZ, INC.
401 POST OFFICE RD. SUITE 103
WALDORF, MD 20602

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SITE SUMMARY

General Location & Conditions:

The subject property is located on the north side of MD Route 210, off Dr. Andrew's Way, in Indian Head, MD. It is shown on Charles County Tax Map 11 as Parcel 609. The property consists of 19.61 acres, and it is zoned TCMX (Town Center – Mixed Use). It is bounded to the north by the residential housing area of the Naval Surface Warfare Center, and to the south by MD Route 210. The Riverwatch Commons neighborhood and a public utility site (water tower) serving the Town of Indian Head are adjacent to the east. The Villages of Potomac development is adjacent to the southwest. The property is proposed for the development of townhomes.

Site Topography

Topography shown on the plan is (2') contour interval based on aerial topography supplemented with field run topography and GIS data files from Charles County. From Dr. Andrew's Way, the site is entered on Diffenbach Road, an old road which runs across the entire property, from Dr. Andrew's Way to the Town's water tower site. A slopes analysis reveals that the site is generally flat along Diffenbach Rd. and through the central portion of the site. Steep slopes (>15%) occur in two areas of the site – on hillsides adjacent to the perennial stream channel that runs across the northern section of the property, and on hillsides adjacent to the smaller drainage channel running along the southern boundary and MD Route 210.

Environmental Features

This property is located within the Middle Potomac River watershed. There is no 100 Year Floodplain on the site, per FEMA FIRM Panel # 24017C0131D. The subject property contains four soil types as identified by the NRCS Web Soil Survey, and the layout and disposition of the soils are shown on the FSD plan. Three type "C" soils and one type "A" soil are found on the property, and a Table describing the hydric rating and 'k' factors (erodibility) for those soils has been provided on the FSD plan. A copy of the FEMA panel and the NRCS soils report may be found in the Appendices section of this report. Streams and non-tidal wetlands as shown on the FSD plan were field delineated by Bray Hill, LLC in March of 2019 and field located by Soltesz, Inc. in May 2019. Wetland and stream buffers have been shown in accordance with the requirements of the MD Dept. of the Environment and Section 2.51 of the Town of Indian Head Forest Conservation Ordinance.

General Forest Cover

The majority of the site (17.54 acres) is wooded, consisting of an open woodland mix of hardwood and softwood forest species growing in the higher, flatter areas of the site, and dense thickets of lowland canopy and understory species near the perennial stream and its adjacent wetlands. The woodland is generally in fair to good condition, with upland

and lowland species associations and stands as dictated by the topography and soils.

Structures

There are no existing structures on Parcel 609. Any remnants of pavement or curbing associated with Diffenbach Rd. will be removed during development.

Other

A letter of inquiry was sent to the Maryland Department of Natural Resources Wildlife and Heritage Service in October 2016, requesting any documented information pertaining to the presence of rare, threatened, or endangered (RTE) species on the site. A reply from DNR was received in November 2016, which verified that there is no documented presence of any RTE on the site. A copy of that correspondence may be found in the Appendices section of this report.

METHODOLOGY

This FSD was performed in accordance with the current Town of Indian Head Forest Conservation Ordinance (effective date 7/22/12) and the State Forest Conservation Technical Manual (Third Edition, 1997). On-site forest coverage was determined using aerial photographs and field investigation. Seven forest stand sampling points were prepared in a 1/10 sampling basis. Forest structure data was collected on a 1/100 sampling basis.

The base plan was created and overlaid with identified environmental and man-made features including existing forest cover, existing utility structures, topography, and soil types. Forest sample points were preliminarily located on the base plan and then adjusted based on the actual site sampling investigation. The sampling intensity was prepared to meet the required 67% confidence level, as defined by the State Forest Conservation Manual.

Forest site investigation and field sampling were performed in June of 2019. The centers of the 7 sampling points have been identified in the field by double strands of (36") long pink flagging, labeled with the sample point number in black marker. The sample point flags were generally hung at eye-level from small under-story trees.

FOREST STAND ANALYSIS

The subject site is characterized by 2 stands.

Stand A (12.16 acres)

Stand A is a mature upland forest, characterized by a mix of hardwood species located in the flatter central area of the site, and it includes most of the forest area on the property. The dominant tree species found were White Oak, Red Oak, and Sweet Gum. The average size class for the dominant species in Stand A is within the (12-19") dbh range. There has been a substantial amount of storm damage to the Stand, and many large trees (>30" dbh) have fallen. In these areas of disturbance, the canopy has been broken and opened up enough to allow the growth of invasive species. The average basal area for the 4 study points in Stand A is 70 sf/ac. Average canopy closure was 85%. The common understory species found were young Sweet Gums, Dogwood, and American Holly. Understory coverage averaged 65%. Herbaceous species present included Virginia Creeper, Blackberries, and Greenbrier. Herbaceous cover averaged 50%. Invasive exotic species identified in the Stand included Japanese Stilt Grass and Japanese Honeysuckle. One standing dead tree greater than 6" in diameter was counted within the Stand.

Stand A was given a "fair" overall quality rating, and was determined to have a low to moderate retention value, due to the damaged condition of many of the trees, and the lack of environmentally sensitive features within the Stand.

Stand B (5.38 acres)

Stand B is a mature lowland forest, located in areas of the site that are in proximity to perennial streams and non-tidal wetlands. The dominant species found were Red Maples, Sycamores, and Yellow Poplars. The average size class for the dominant species is within the (12"-19") dbh range. The average basal area for the 3 study points in Stand B is 67 sf/ac. Canopy closure averaged 87%. The common understory species found were Paw Paw, Ironwood, and young Red Maples. Understory coverage averaged 82%. Herbaceous cover included Virginia Creeper, assorted ferns, and Ground Ivy. Average herbaceous cover was 72%. Invasive exotic species identified within the Stand included Japanese Stilt Grass, Japanese Honeysuckle, Vinca minor (periwinkle) and Vinca major. No standing dead trees greater than 6" in diameter were noted within Stand B.

Stand B was given an overall quality rating of "good", with a moderate to high retention value, due to the presence of sensitive environmental features (wetlands, streams, and steep slopes) within the Stand.

Specimen Trees

Twelve Specimen trees having a diameter exceeding 30" dbh were located on the subject property. Eight were found within Stand A, and four were found in Stand B. These trees

have been individually flagged and numbered on the site as shown on the FSD plan sheet. They are described on the Forest Sampling Data Worksheets and in a Table provided on the plan.

The retention value of the Specimen Trees was assessed based on species, location relative to sensitive environmental features, and individual condition. More retention priority is placed on Specimen Trees #3, 5 6, and 7, due to their proximity to streams. This rating has been shown in the Table on the FSD Plan.

CERTIFICATION

This report and associated Forest Stand Delineation Plan are based on field inspections completed by Catherine Flerlage in June 2019. The provisions and standards of the Town of Indian Head Forest Conservation Ordinance and the State Forest Conservation Technical Manual (Third edition, 1997) were utilized in the preparation of this document and the Forest Stand Delineation Plan.



Catherine Flerlage, AICP
Qualified Professional
COMAR 08.19.06.01

BIBLIOGRAPHY

“State Forest Conservation Technical Manual”, Third Edition, 1997, Maryland Department of Natural Resources, Ginger Page Howell and Tod Ericson, editors.

Woody Plants of Maryland by R.G. Brown and M.L. Brown, the University of Maryland Book Center, College Park, MD 1992.

A Field Guide to Eastern Trees by George A. Petrides. Peterson Field Guide Series, Houghton Mifflin Company, Boston, MA 1988.

“Web Soil Survey”, United States Department of Agriculture, Natural Resources Conservation Service, 2008

“Town of Indian Head, Maryland Forest Conservation Ordinance”, Ordinance #05-02-12, effective date 7/22/12

APPENDICES

Figure B-2 Forest Stand Summary Worksheet

Property Name: CIRI - TAX MAP 11, P. 609
 Location: RT 210 @ DR. ANDREW'S WAY IN INDIAN HEAD, MD.
(Town, County, ADC Map #, and Grid Coordinates)
 Prepared By: CATHY FLERLAGE Date: 6/17/19

Stand Variable	Stand # <u>A</u> / <u>1</u> acres	Stand # <u>B</u> / <u>1</u> acres
1. Dominant species/Codominant species	WHITE OAK RED OAK SWEET GUM	RED MAPLE SYCAMORE
2. Successional stage	MATURE UPLAND	MATURE LOWLAND
3. Basal area in s.f. per acre	AVG. = 70 S.F.	AVG. = 67 S.F.
4. Size class of dominant species	12-19" dbh	12-19" dbh
5. Percent of canopy closure	AVG. = 85%	AVG. = 87%
6. Number of tree species per plot	3-5	3-5
7. Common understory species 3' to 20' tall	YOUNG SWEET GUM DOGWOOD AM. HOLLY	PAW PAW IRONWOOD YOUNG MAPLES
8. Percent of understory cover 3' to 20' tall	AVG. = 65%	AVG. = 82%
9. Number of woody plant species 3' to 20' tall	3-5	2-3
10. Common herbaceous species 0' to 3' tall	VA. CREEPER GREENERIER BLACKBERRIES STILT GRASS	VA. CREEPER FERNS STILT GRASS GROUND IVY
11. Percent of herbaceous & woody plant cover 0' to 3' tall	AVG. = 50%	AVG. = 72%
12. List of major invasive plant species & percent of cover	STILT GRASS HONEYSUCKLE (20%)	STILT GRASS PERIWINKLE (20%)
13. Number of standing dead trees 6" dbh or greater	1	0
14. Comments	STUDY POINTS 1, 4, 6, & 7	STUDY POINTS # 2, 3, & 5
Sheet ____ of ____		Source: DNR

Property: CP1 Plot # 4 Prepared By: CF Date: 6/17/19
 Stand #: 1 Plot Size: 1/10 ac
 Basal Area in s/acre: 100 Size class of trees: > 20' height within sample plot

Tree Species	# of Trees 2-5.9' dbh		# of Trees 6-11.9' dbh		# of Trees 12-19.9' dbh		# of Trees 20-29.9 dbh		# of Trees > 30' dbh		Total
	Dom	Over	Dom	Over	Dom	Over	Dom	Over	Dom	Over	
white oak	2		1		3		2		1	46"	9
wild cherry		2		1							3
sweet gum	4		2		2						8
Total Number of Trees per Size Class	8		4		5		2		1		20
Number & Size of Standing Dead Trees											0

List of Common Understory Species 3-20':
 red pine, white oak, yellow pine, holly, sourwood, Dogwood

List of Herbaceous Species 0-3':
 strict grass, blackberry, quackgrass

% of Canopy Closure						Percent of Invasive Cover per Plot (All Layers): 30% strict grass	Plot Successional Stage: mature upland
N		E		S			
C	N	E	S	W	Total		
50%							

Comments: Spec Tree # 4 is @ SP # 4 - 42' white oak
 canopy damage - fair cons.
 Two trees big, trees fallen canopy damage
 understory understory

Property: CP1 Plot # 1 Prepared By: CF Date: 6/17/19
 Stand #: 1 Plot Size: 1/10 ac
 Basal Area in s/acre: 80 Size class of trees: > 20' height within sample plot

Tree Species	# of Trees 2-5.9' dbh		# of Trees 6-11.9' dbh		# of Trees 12-19.9' dbh		# of Trees 20-29.9 dbh		# of Trees > 30' dbh		Total
	Dom	Over	Dom	Over	Dom	Over	Dom	Over	Dom	Over	
H. red oak	2		1		2						5
sweet gum		3		1							4
beech			3								3
white oak				2		1					3
Total Number of Trees per Size Class	10		6		4		1		1		20
Number & Size of Standing Dead Trees											1

List of Common Understory Species 3-20':
 young sweet gum, yellow beech, holly, Am holly

List of Herbaceous Species 0-3':
 Va. creeper, partridge berry

% of Canopy Closure						Percent of Invasive Cover per Plot (All Layers): 20% strict grass, quackgrass	Plot Successional Stage: mature upland
N		E		S			
C	N	E	S	W	Total		
50%							

Comments: Spec tree # 2 just up wood - 46" white oak

Property: C1E1 Prepared By: CAF
 Stand #: A Plot #: 10 Plot Size: 110 ac. Date: 10/17/19
 Basal Area in s/facre: 70 Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9' dbh			# of Trees 6-11.9' dbh			# of Trees 12-19.9' dbh			# of Trees 20-29.9 dbh			# of Trees > 30' dbh			Total
	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	
beech			2						1							4
sweet gum			2			3										9
Red Oak			2					3								5
White Oak																
Total Number of Trees per Size Class	4			4			4			2			1			18
Number & Size of Standing Dead Trees																0

List of Common Understory Species 3'-20':
Pinus

% of Canopy Closure					Percent of Invasive Cover per Plot (All Layers): <u>100%</u> <u>hemlock</u>	Plot Successional Stage: <u>mature upland</u>
% N	E	S	W	Total		
50%				50%		

List of Herbaceous Species 0-3':
Va. creeper
young sweet gum
ground ivy

% of Herbaceous Cover 0-3'					Percent of Invasive Cover per Plot (All Layers):	Plot Successional Stage:
% N	E	S	W	Total		
50%				50%		

Comments: top of bank above stream. Channel +/- 10 deep.
Near eastern R by Riverwatch

Property: C1E1 Prepared By: CAF
 Stand #: A Plot #: 7 Plot Size: 100 ac. Date: 10/17/19
 Basal Area in s/facre: 70 Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9' dbh			# of Trees 6-11.9' dbh			# of Trees 12-19.9' dbh			# of Trees 20-29.9 dbh			# of Trees > 30' dbh			Total
	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	
red maple			2			2			1							6
yellow cedar						3										3
5-Red Oak															1	1
beech			2			1										3
Total Number of Trees per Size Class	4			4			5			1			1			18
Number & Size of Standing Dead Trees																0

List of Common Understory Species 3'-20':
Am. holly
Pinus

% of Canopy Closure					Percent of Invasive Cover per Plot (All Layers): <u>100%</u> <u>privet</u>	Plot Successional Stage: <u>mature upland</u>
% N	E	S	W	Total		
50%				50%		

List of Herbaceous Species 0-3':
Va. creeper
green brier
chinese privet
ferns

% of Herbaceous Cover 0-3'					Percent of Invasive Cover per Plot (All Layers):	Plot Successional Stage:
% N	E	S	W	Total		
50%				50%		

Comments: uphill and east of SD outflow from
Navy housing

Property: C1E1 Plot #: 2 Prepared By: CAF
 Stand #: 10 Plot Size: 1/16 ac Date: 6/17/19

Basal Area in s/acre: 10 Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	
Crum Fraxin																
sweet more	2			3			3									8
red maple	2			3			3			1						9
sweet gum			6			2										8
Total Number of Trees per Size Class	10			8			6			1			-			25
Number & Size of Standing Dead Trees																

List of Common Understory Species 3'-20':
 young maples

List of Herbaceous Species 0-3':
 Va. creeper
 ground ivy
 green braker

% of Canopy Closure						Percent of Invasive Cover per Plot (All Layers): 5%	Plot Successional Stage: mature hardwood
% Understory Cover 3'-20'		% of Herbaceous Cover 0-3'		Total			
C	N	E	S	W	Total		
90%							
C	N	E	S	W	Total		
75%							
C	N	E	S	W	Total		
15%							

Comments: Near drainage channel by Pt. 210

Property: C1E1 Plot #: 3 Prepared By: CAF
 Stand #: 10 Plot Size: 1/16 ac Date: 6/17/19

Basal Area in s/acre: 10 Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	
Crum Fraxin																
sweet more	3			2			3									8
red maple	3			3			2									8
sweet gum			4			2										6
Total Number of Trees per Size Class	10			7			5			-			-			22
Number & Size of Standing Dead Trees																

List of Common Understory Species 3'-20':
 young maples

List of Herbaceous Species 0-3':
 stiff grass
 Va. creeper
 poison ivy
 ground ivy
 green braker
 hollyhock
 blackberry

% of Canopy Closure						Percent of Invasive Cover per Plot (All Layers): 25% stiff grass hollyhock	Plot Successional Stage: mature hardwood
% Understory Cover 3'-20'		% of Herbaceous Cover 0-3'		Total			
C	N	E	S	W	Total		
90%							
C	N	E	S	W	Total		
90%							

Comments: SP is by drainage channel near 210 end
 made from Villages of Potomac nearby

Property: CR1 Plot #: 5 Prepared By: CRF
 Stand #: B Plot Size: 1/10 ac Date: 6/17/19

Basal Area In s/facre: 70 Size class of trees > 20' height within sample plot

Tree Species	# of Trees 2-5.9" dbh			# of Trees 6-11.9" dbh			# of Trees 12-19.9" dbh			# of Trees 20-29.9 dbh			# of Trees > 30" dbh			Total
	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	Dom	CoD	Over	
Indigo																1
sweet gum		2			2			1								5
red maple	2			3			2		1							8
beech			2			1										4
poplar								1						30"	1	2
Total Number of Trees per Size Class		4		4		5		2					1			20

List of Common Understory Species 3'-20':
dogwood
Am holly
pear
prunelle (vine)
stee grass
va. creeper

% of Canopy Closure	% of Understory Cover 3'-20'			Percent of Invasive Cover per Plot (All Layers): <i>25% stee grass / vine</i>	Plot Successional Stage: <i>maturing lowland</i>
	N	E	S		
80%					
50%					

Comments: *lots of damage by stream. big trees down, canopy*
lots of stee grass & vine



United States
Department of
Agriculture

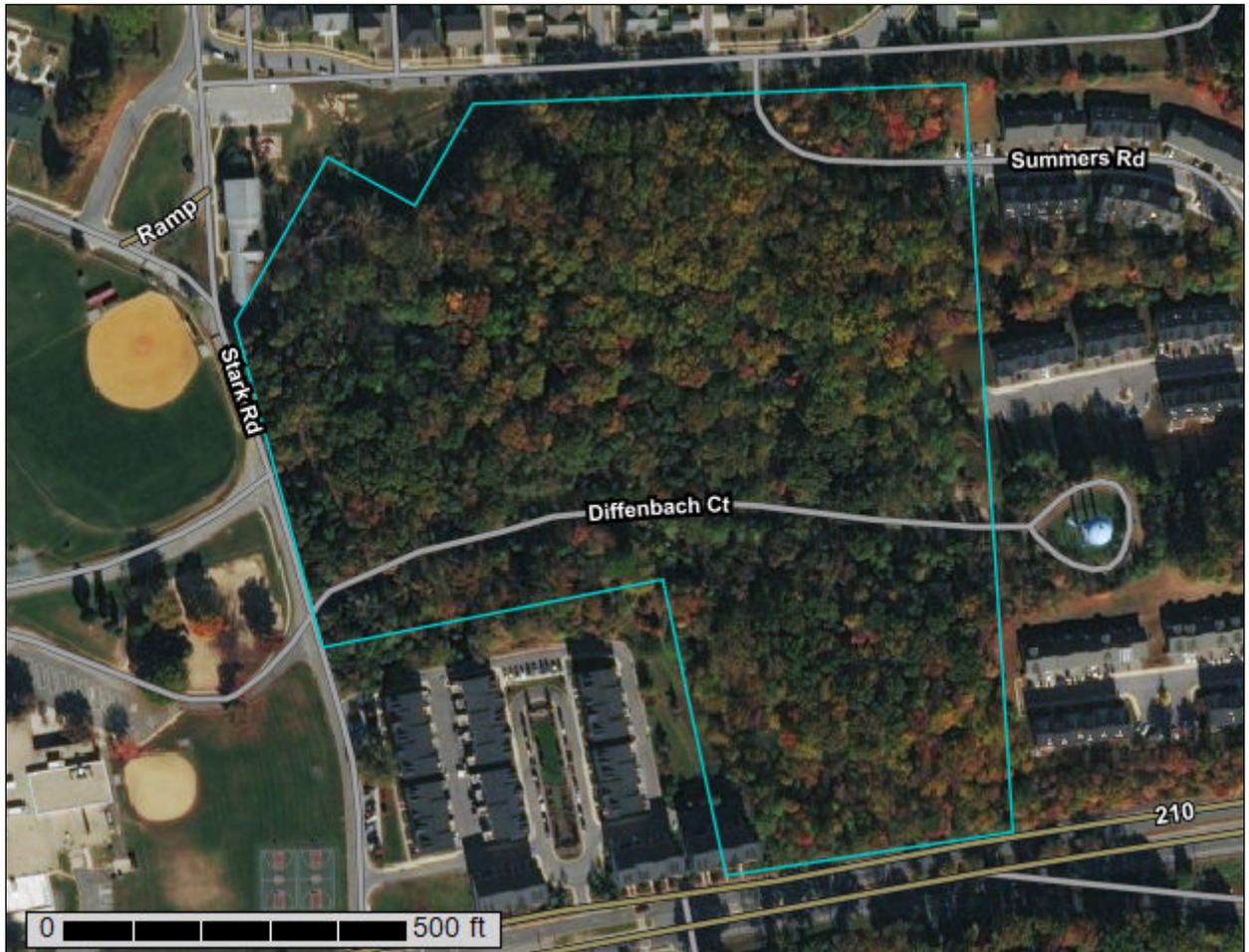
NRCS

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 **Charles County, Maryland**

TAX MAP 11, PARCEL 609



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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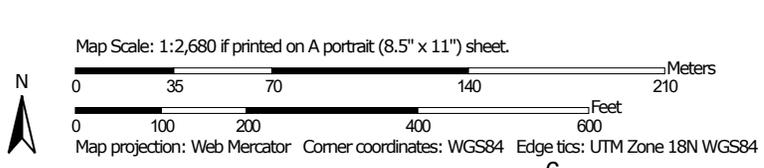
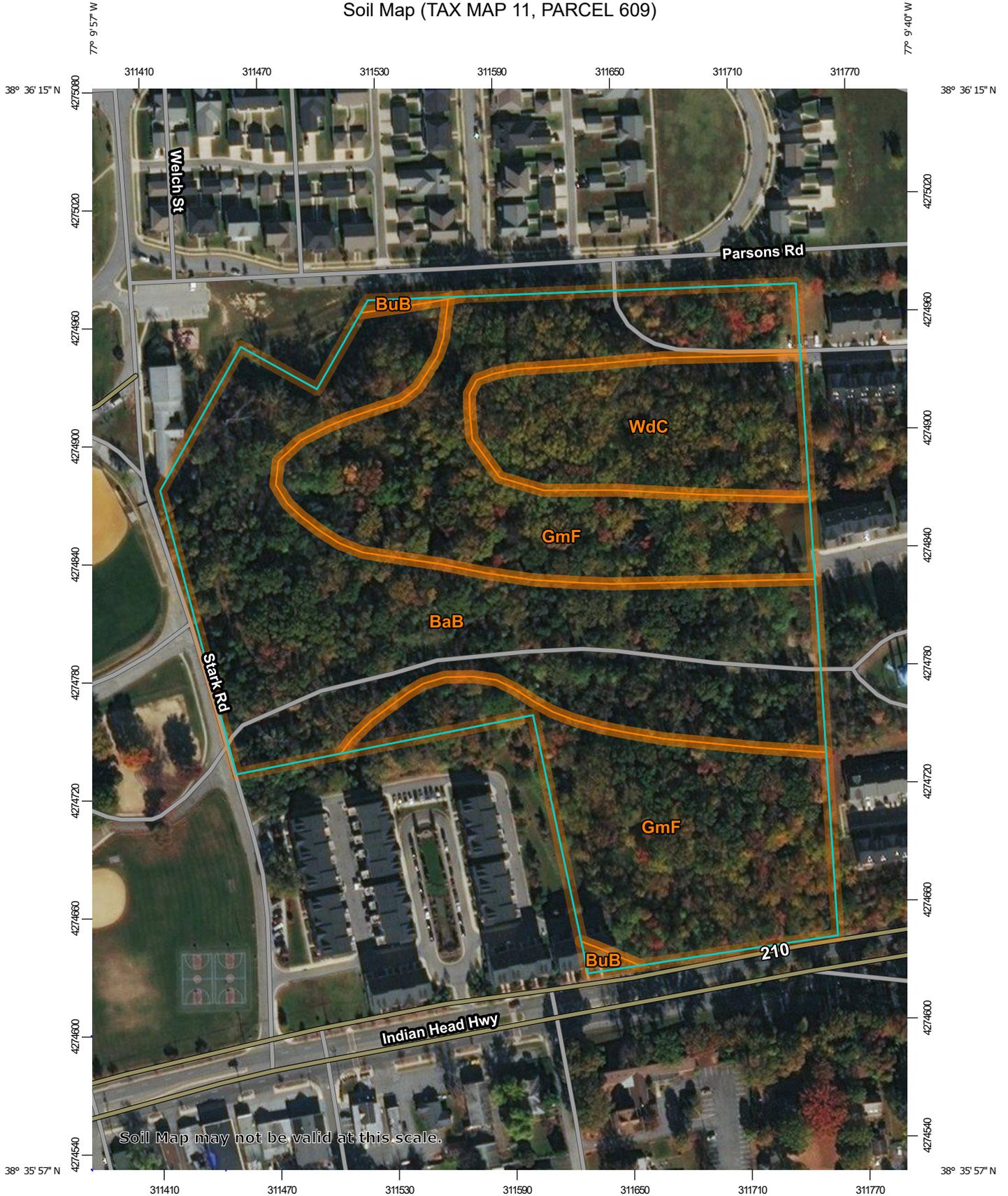
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Soil Map

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 (TAX MAP 11, PARCEL 609)



MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Area of Interest (AOI)		Stony Spot
	Soil Map Unit Polygons		Very Stony Spot
	Soil Map Unit Lines		Wet Spot
	Soil Map Unit Points		Other
	Special Point Features		Special Line Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

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: Charles County, Maryland
 Survey Area Data: Version 12, Sep 6, 2018

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

Date(s) aerial images were photographed: May 3, 2015—Feb 22, 2017

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 (TAX MAP 11, PARCEL 609)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BaB	Beltsville silt loam, 2 to 5 percent slopes	8.4	40.3%
BuB	Beltsville-Urban land complex, 0 to 5 percent slopes	0.1	0.5%
GmF	Grosstown-Marr-Hoghole complex, 15 to 40 percent slopes	9.6	46.2%
WdC	Woodstown sandy loam, 5 to 10 percent slopes	2.7	13.1%
Totals for Area of Interest		20.8	100.0%

Map Unit Descriptions (TAX MAP 11, PARCEL 609)

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

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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.

Charles County, Maryland

BaB—Beltsville silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qzx2
Elevation: 10 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 180 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Beltsville and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beltsville

Setting

Landform: Broad interstream divides
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty eolian deposits over loamy fluviomarine deposits

Typical profile

A - 0 to 3 inches: silt loam
E - 3 to 8 inches: silt loam
Bt - 8 to 20 inches: silt loam
Btx - 20 to 41 inches: loam
2B't - 41 to 65 inches: sandy clay loam
2BCg - 65 to 71 inches: very gravelly sandy clay loam
2CB - 71 to 76 inches: gravelly coarse sandy loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 40 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

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

Minor Components

Reybold

Percent of map unit: 10 percent
Landform: Broad interstream divides
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Aquasco

Percent of map unit: 10 percent
Landform: Broad interstream divides
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Grosstown

Percent of map unit: 5 percent
Landform: Broad interstream divides
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lenni, undrained

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

BuB—Beltsville-Urban land complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qzx4
Elevation: 10 to 360 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 180 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Beltsville and similar soils: 50 percent
Urban land: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beltsville

Setting

Landform: Broad interstream divides
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty eolian deposits over loamy fluviomarine deposits

Typical profile

A - 0 to 3 inches: silt loam
E - 3 to 8 inches: silt loam
Bt - 8 to 20 inches: silt loam
Btx - 20 to 41 inches: loam
2B't - 41 to 65 inches: sandy clay loam
2BCg - 65 to 71 inches: very gravelly sandy clay loam
2CB - 71 to 76 inches: gravelly coarse sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 20 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

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

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Aquasco

Percent of map unit: 5 percent
Landform: Broad interstream divides
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lenni, undrained

Percent of map unit: 5 percent
Landform: Depressions

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Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

GmF—Grosstown-Marr-Hoghole complex, 15 to 40 percent slopes

Map Unit Setting

National map unit symbol: 1qzxc
Elevation: 0 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 180 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Marr and similar soils: 30 percent
Grosstown and similar soils: 30 percent
Hoghole and similar soils: 15 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marr

Setting

Landform: Knolls
Landform position (three-dimensional): Side slope, head slope, nose slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bt1 - 4 to 25 inches: fine sandy loam
Bt2 - 25 to 57 inches: sandy clay loam
BC - 57 to 76 inches: loamy fine sand

Properties and qualities

Slope: 15 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.2 inches)

Interpretive groups

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

Description of Grosstown

Setting

Landform: Fluviomarine terraces, broad interstream divides, stream terraces
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy and gravelly fluviomarine deposits

Typical profile

Ap - 0 to 4 inches: gravelly silt loam
Bt1 - 4 to 20 inches: silt loam
Bt2 - 20 to 26 inches: gravelly loam
2Bt3 - 26 to 71 inches: extremely gravelly silt loam
3BC - 71 to 80 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 15 to 40 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): High (1.98 to 5.95 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 6.7 inches)

Interpretive groups

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

Description of Hoghole

Setting

Landform: Stream terraces, fluviomarine terraces, broad interstream divides
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly fluviomarine deposits

Typical profile

A - 0 to 4 inches: sand
Bw1 - 4 to 33 inches: very gravelly sand
Bw2 - 33 to 80 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 15 to 40 percent

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Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

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

Minor Components

Potobac

Percent of map unit: 10 percent
Landform: Flood plains, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Dodon

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Beltsville

Percent of map unit: 5 percent
Landform: Broad interstream divides
Landform position (three-dimensional): Side slope, interfluvial
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

WdC—Woodstown sandy loam, 5 to 10 percent slopes

Map Unit Setting

National map unit symbol: 2thwq
Elevation: 0 to 260 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 46 to 68 degrees F

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Frost-free period: 190 to 250 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Woodstown and similar soils: 88 percent

Minor components: 12 percent

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

Description of Woodstown

Setting

Landform: Fluviomarine terraces, depressions, broad interstream divides

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Riser, dip

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 7 inches: sandy loam

E - 7 to 11 inches: sandy loam

Bt - 11 to 29 inches: sandy loam

BCg - 29 to 45 inches: fine sandy loam

Cg - 45 to 80 inches: loamy sand

Properties and qualities

Slope: 5 to 10 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

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: About 20 to 40 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Hammonton

Percent of map unit: 7 percent

Landform: Fluviomarine terraces, broad interstream divides

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Riser, dip

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Hambrook

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Fluvio-marine terraces, broad interstream divides

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Riser, dip

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit (TAX MAP 11, PARCEL 609)

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

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Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

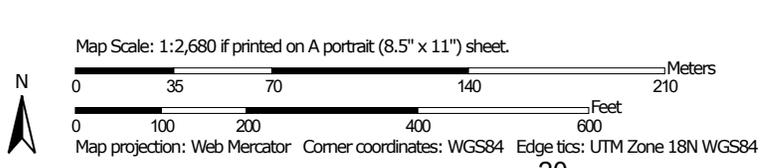
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

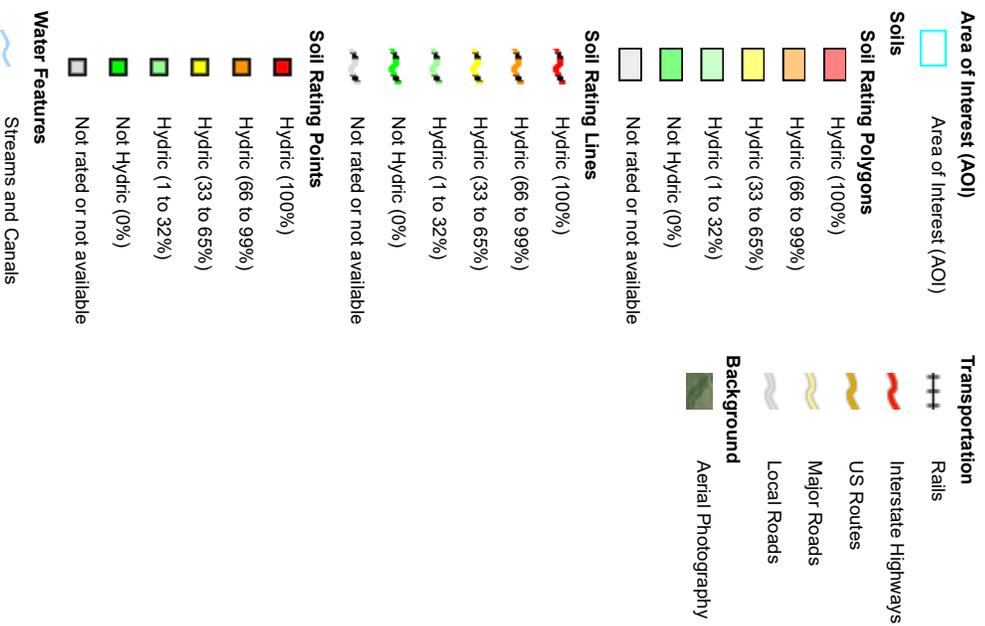
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
 Map—Hydric Rating by Map Unit (TAX MAP 11, PARCEL 609)



MAP LEGEND



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: Charles County, Maryland
 Survey Area Data: Version 12, Sep 6, 2018

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

Date(s) aerial images were photographed: May 3, 2015—Feb 22, 2017

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.

Table—Hydric Rating by Map Unit (TAX MAP 11, PARCEL 609)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BaB	Beltsville silt loam, 2 to 5 percent slopes	5	8.4	40.3%
BuB	Beltsville-Urban land complex, 0 to 5 percent slopes	5	0.1	0.5%
GmF	Grosstown-Marr-Hoghole complex, 15 to 40 percent slopes	10	9.6	46.2%
WdC	Woodstown sandy loam, 5 to 10 percent slopes	0	2.7	13.1%
Totals for Area of Interest			20.8	100.0%

Rating Options—Hydric Rating by Map Unit (TAX MAP 11, PARCEL 609)

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil (TAX MAP 11, PARCEL 609)

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Custom Soil Resource Report
 Map—K Factor, Whole Soil (TAX MAP 11, PARCEL 609)

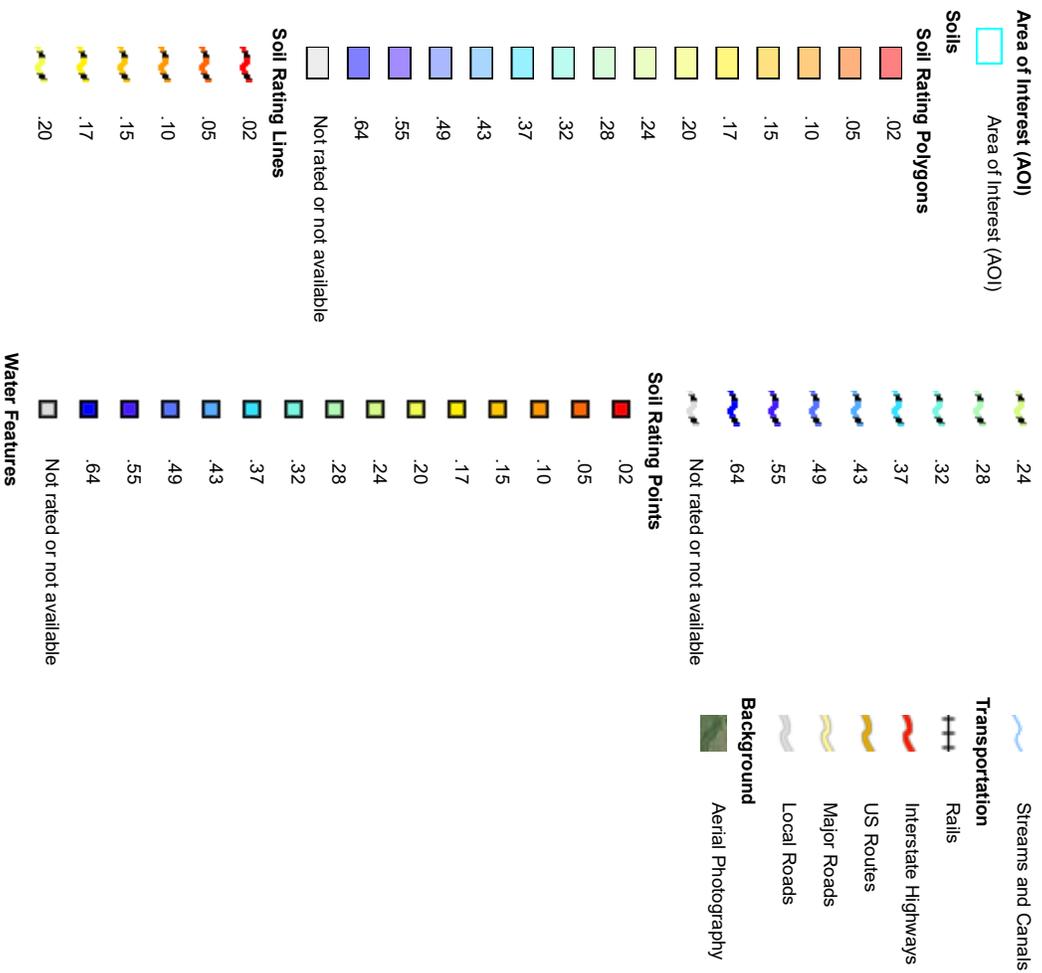


Map Scale: 1:2,680 if printed on A portrait (8.5" x 11") sheet.



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

MAP LEGEND



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: Charles County, Maryland
 Survey Area Data: Version 12, Sep 6, 2018

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

Date(s) aerial images were photographed: May 3, 2015—Feb 22, 2017

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.

Table—K Factor, Whole Soil (TAX MAP 11, PARCEL 609)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BaB	Beltsville silt loam, 2 to 5 percent slopes	.37	8.4	40.3%
BuB	Beltsville-Urban land complex, 0 to 5 percent slopes	.37	0.1	0.5%
GmF	Grosstown-Marr-Hoghole complex, 15 to 40 percent slopes	.24	9.6	46.2%
WdC	Woodstown sandy loam, 5 to 10 percent slopes	.15	2.7	13.1%
Totals for Area of Interest			20.8	100.0%

Rating Options—K Factor, Whole Soil (TAX MAP 11, PARCEL 609)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (TAX MAP 11, PARCEL 609)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

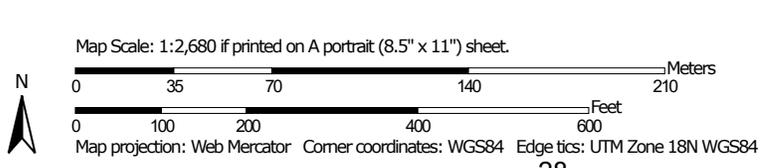
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
 Map—Hydrologic Soil Group (TAX MAP 11, PARCEL 609)



MAP LEGEND

	Area of Interest (AOI)		C
	Area of Interest (AOI)		C/D
	Soil Rating Polygons		D
	A		Not rated or not available
	A/D		Water Features
	B		Streams and Canals
	B/D		Transportation
	C		Rails
	C/D		Interstate Highways
	D		US Routes
	Not rated or not available		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: Charles County, Maryland
 Survey Area Data: Version 12, Sep 6, 2018

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

Date(s) aerial images were photographed: May 3, 2015—Feb 22, 2017

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.

Table—Hydrologic Soil Group (TAX MAP 11, PARCEL 609)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BaB	Beltsville silt loam, 2 to 5 percent slopes	C	8.4	40.3%
BuB	Beltsville-Urban land complex, 0 to 5 percent slopes	C	0.1	0.5%
GmF	Grosstown-Marr-Hoghole complex, 15 to 40 percent slopes	A	9.6	46.2%
WdC	Woodstown sandy loam, 5 to 10 percent slopes	C	2.7	13.1%
Totals for Area of Interest			20.8	100.0%

Rating Options—Hydrologic Soil Group (TAX MAP 11, PARCEL 609)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

National Flood Hazard Layer FIRMette



Legend

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

	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway

	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

	Area of Minimal Flood Hazard Zone X
	Effective LOMIRs
	Area of Undetermined Flood Hazard Zone D
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall

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

	Digital Data Available
	No Digital Data Available
	Unmapped
	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 **6/18/2019 at 3:44:12 PM** 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.



USGS The National Map, Orthoimagery, Data refreshed April, 2019.



TAX MAP 11, PARCEL 609 ENVIRONMENTAL RESOURCES



6/14/2019 9:31:46 AM

1:3,532

Preliminary FEMA Floodplain

- 100 Year Floodplain (1% Chance)
- 500 Year Floodplain (0.2% Chance)
- Floodway (1% Chance)
- Upland (Zone X)

Effective FEMA Floodplain

- 100 Year Floodplain (1% Chance)
- 500 Year Floodplain (0.2% Chance)
- Floodway (1% Chance)
- Upland (Zone X)

State Boundary Mask

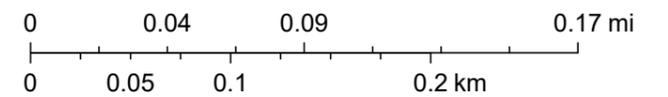
- Lakes - Detailed
- Rivers and Streams - Detailed
- National Wetlands Inventory (NWI)**
- Estuarine and Marine Deepwater

Estuarine and Marine Wetland

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

Other

- Other
- Riverine
- NAIP Imagery 2018**
- Red: Band_1
- Green: Band_2
- Blue: Band_3



U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov, MD iMAP, MDP, SDAT, Esri, HERE, Garmin, (c) OpenStreetMap contributors, MD iMAP, USDA, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Maryland Department of Natural Resources



October 17, 2016

Lori A. Byrne
Environmental Review Specialist
Wildlife and Heritage Service
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

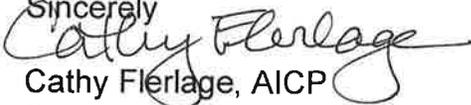
Re: Request for Information, Charles County
Tax Map 11, Parcel 609

Dear Ms. Byrne,

This letter is sent as a request for any available information pertaining to the documented presence of any Federal or State rare, threatened or endangered (RTE) species within the above-referenced Subject Parcel.

We are conducting a preliminary assessment of the property and are seeking any information pertaining to RTE species on the property that you may be able to provide. I have included a copy of Charles County Tax Map 11 showing the Subject Parcel outlined in red.

Thank you in advance for any assistance you can provide in response to this request. If you have any questions or desire further information, please contact me directly at (301) 870-2166.

Sincerely

Cathy Flerlage, AICP
Soltesz, Inc.

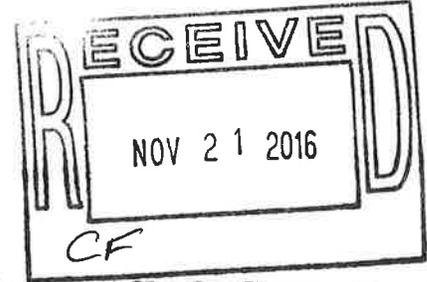
cc: File



Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Mark Belton, Secretary
Joanne Throwe, Deputy Secretary

November 9, 2016

Ms. Cathy Flerlage
Soltész, Inc.
401 Post Office Road
Suite 103
Waldorf, Maryland 20602



RE: Environmental Review for Tax Map 11, Parcel 609, Indian Head area, Charles County, Maryland.

Dear Ms. Flerlage:

The Wildlife and Heritage Service has determined that there are no official State or Federal records for listed plant or animal species within the delineated area shown on the map provided. As a result, we have no specific concerns regarding potential impacts or recommendations for protection measures at this time. We would like to point out, however, that our remote analysis suggests that the forested area on this property contains Forest Interior Dwelling Bird habitat. Populations of many bird species which depend on this type of forested habitat are declining in Maryland and throughout the eastern United States. Interested landowners can contact us for further voluntary guidelines to help conserve this important habitat.

Please be sure to let us know if the limits of proposed disturbance or overall site boundaries change and we will provide you with an updated evaluation. Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2016.1400.ch



SPECIMEN TREE #1
44" S. RED OAK



SPECIMEN TREE #10
30" S. RED OAK



AREA OF DISTURBANCE AROUND
SPEC. TREE #1



SPECIMEN TREE #2
46" WILLOW OAK



LARGE CRACK IN TRUNK OF
SPEC. TREE #1

SPEC. TREE #2



STUDY POINT #1



STUDY POINT #1



STUDY POINT # 2



DRAINAGE CHANNEL @
STUDY POINT # 2

NEAR STUDY POINT #3
OUTFALL STRUCTURE FROM VILLAGES OF POTOMAC



STUDY POINT #3



STUDY POINT #3





SPECIMEN TREE #3 - A6" PIN OAK



DAMAGE TO LARGE TREES



STUDY POINT #4
SPECIMEN TREE #4 - 42" WHITE OAK



SPECIMEN TREE #4



STUDY POINT #4



FALLEN TREES ON SLOPE / STILT GRASS
@ STUDY POINT #A

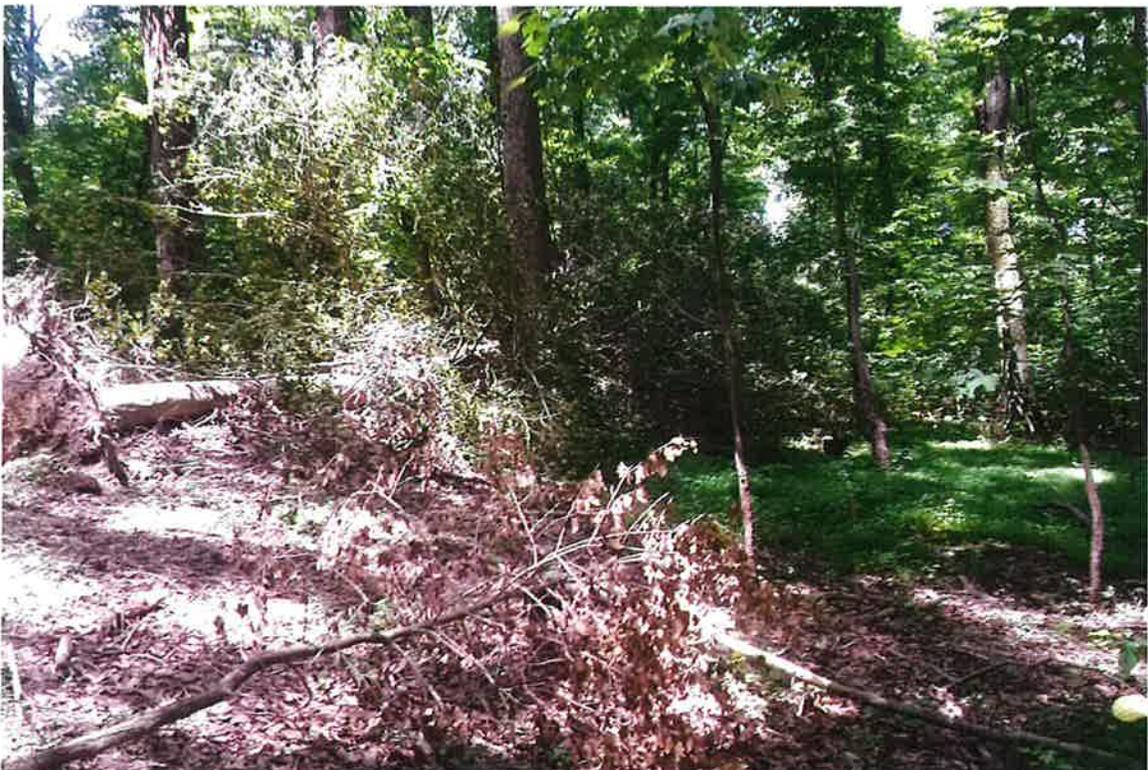
STUDY POINT #5



SPECIMEN TREE #5 - 36" YELLOW POKER



FALLEN TREES / STILT GRASS @ SP #5



STUDY POINT #6



STREAM CHANNEL @ SP #6



STREAM CHANNEL @ SP #10



SPECIMEN TREE #6
52" YELLOW POPLAR





FALLEN TREES & STREAM CHANNEL
NEAR SPEC. TREE #7



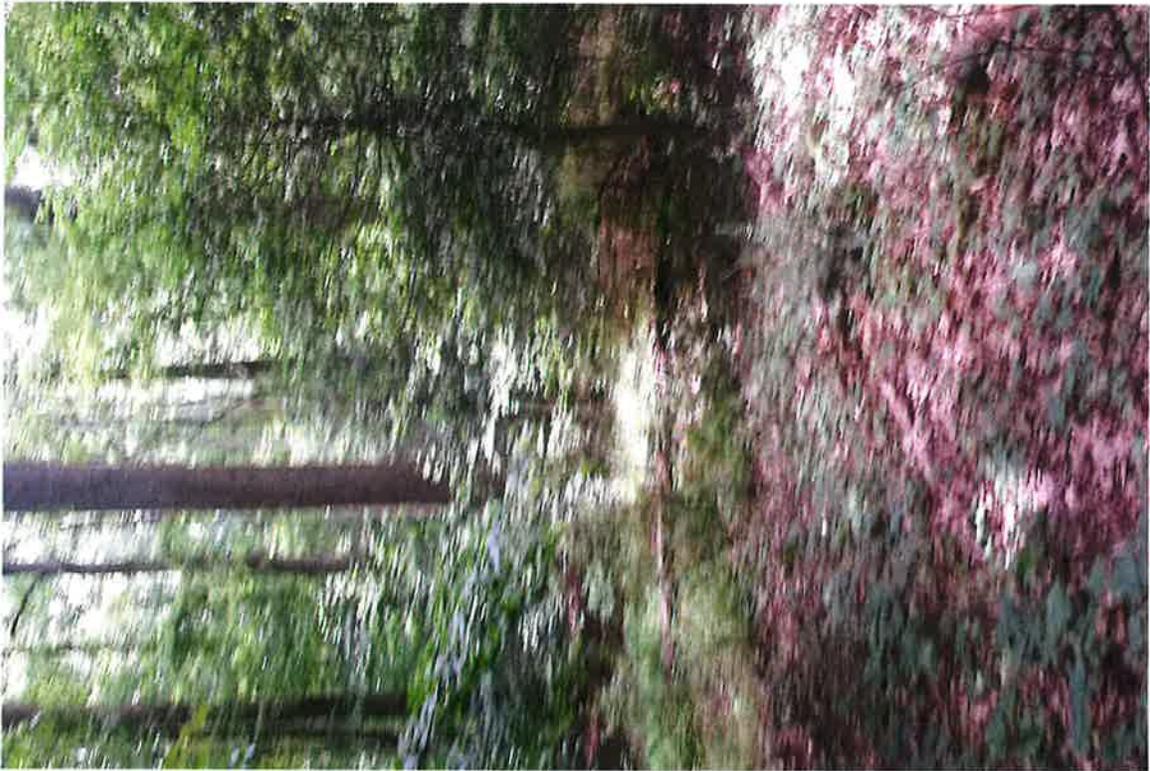
SPECIMEN TREE #7
38" SKAMORE



STUDY POINT #7



STREAM CHANNEL @
SPEC. TREE #7



STUDY POINT # 7



SPECIMEN TREE #8
37" WILLOW OAK



STUDY POINT #7

SPEC. TREE # 8 / DAMAGE



SPECIMEN TREE # 9
36" S. RED OAK

