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 60 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Description of Psamments

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 6 inches: fine sand H2 - 6 to 60 inches: sand

Properties and qualities

Slope: 0 to 60 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95

to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A Hydric soil rating: No

W-Water

Map Unit Composition

Water: 100 percent

Custom Soil Resource Report

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

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Project/Site: HRSD Middlesex TFM	City/County: Glouce	ester	Sampling Date: 01/12/2022			
Applicant/Owner: HRSD			Sampling Point: GSA1-1-UP			
The second secon	Section, Township, I					
Landform (hillslope, terrace, etc.): Slope			Slone (%): 0-5			
Subregion (LRR or MLRA):						
Soil Map Unit Name: Meggett sandy loam	22	NWI classific				
Are climatic / hydrologic conditions on the site typical for						
Are Vegetation, Soil, or Hydrology	_ significantly disturbed? Ar	re "Normal Circumstances"	present? Yes No			
Are Vegetation, Soil, or Hydrology	_ naturally problematic? (If	needed, explain any answe	ers in Remarks.)			
SUMMARY OF FINDINGS - Attach site ma	p showing sampling poin	t locations, transects	s, important features, etc.			
Hydrophytic Vegetation Present? Yes	No Is the Sample		,			
Hydric Soil Present? Yes Wetland Hydrology Present? Yes	No within a Wet	land? Yes	No			
Remarks:	Cowardin Code: Up	land HGM:	Water Type:			
	Cowardin Code. Op	and nom.	vvater Type.			
Forested uplands adjacent to GSA1-1-WET.						
HYDROLOGY						
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)			
Primary Indicators (minimum of one is required; check a	all that apply)		Cracks (B6)			
	tic Fauna (B13)		getated Concave Surface (B8)			
	Deposits (B15) (LRR U)	Drainage Pa				
	ogen Sulfide Odor (C1)	Moss Trim Lines (B16)				
	zed Rhizospheres along Living Ro					
	ence of Reduced Iron (C4)	Crayfish Bur				
Drift Deposits (B3) Recei	nt Iron Reduction in Tilled Soils (C	6) Saturation V	isible on Aerial Imagery (C9)			
Algal Mat or Crust (B4) Thin I	Muck Surface (C7)	Geomorphic	Position (D2)			
Iron Deposits (B5) Other	(Explain in Remarks)	Shallow Aqu	uitard (D3)			
Inundation Visible on Aerial Imagery (B7)		FAC-Neutral				
Water-Stained Leaves (B9)		Sphagnum r	moss (D8) (LRR T, U)			
Field Observations:						
	Depth (inches):					
	Depth (inches):		./			
Saturation Present? Yes No <u>✓</u> [(includes capillary fringe)	Depth (inches):	Wetland Hydrology Presei	nt? Yes No			
Describe Recorded Data (stream gauge, monitoring we	II, aerial photos, previous inspection	ons), if available:				
Remarks:						
" "						

50% of total cover: 35.0

30

Sapling/Shrub Stratum (Plot size: ______)

Herb Stratum (Plot size: ______5

2. Glechoma hederacea

Tree Stratum (Plot size:

1. Liquidambar styraciflua 2. Platanus occidentalis

4. Oxydendron arboreum

3. Acer negundo

1. Ligustrum sinense 2 Acer rubrum

1. Lonicera japonica

Absolute Dominant Indicator

% Cover Species? Status

70 = Total Cover

10 = Total Cover

15 = Total Cover

0 ___ = Total Cover

50% of total cover: ____7.5___ 20% of total cover: ___3.0___

50% of total cover: 0.0 20% of total cover: 0.0

50% of total cover: ____5.0 ___ 20% of total cover: ____2.0

20% of total cover: 14.0

FAC

FAC

FAC

FACU

FACU

FACU

FACW

40

20

5

5

	Sampling Point: GSA1-1-UP
1	Dominance Test worksheet:
	Number of Dominant Species That Are OBL, FACW, or FAC:4 (A)
	Total Number of Dominant Species Across All Strata: 6 (B)
	Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)
	Prevalence Index worksheet:
	Total % Cover of: Multiply by:
	OBL species x 1 =
	FACW species x 2 =
	· — — —
	FAC species x 3 =
	FACU species x 4 =
	UPL species x 5 =
	Column Totals: (A) (B)
	Prevalence Index = B/A =
	Hydrophytic Vegetation Indicators:
	1 - Rapid Test for Hydrophytic Vegetation
	✓ 2 - Dominance Test is >50%
	3 - Prevalence Index is ≤3.0 ¹
	Problematic Hydrophytic Vegetation ¹ (Explain)
	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	Definitions of Four Vegetation Strata:
	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
	Woody vine – All woody vines greater than 3.28 ft in height.
	Hydrophytic Vegetation Present? Yes _ ✓ _ No

Remarks:	(If observed,	list morphological	adaptations below).	
----------	---------------	--------------------	---------------------	--

Woody Vine Stratum (Plot size: ______15 ____)

SOIL Sampling Point: GSA1-1-UP

Profile Desc	ription: (Describe	e to the dep	th needed to docu	ment the	indicator	or confir	n the absence of	indicators.)
Depth	Matrix		Redo	x Feature	es			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 3/2	_ 100				-	LoCI	
6-12	10YR 4/1	98	10YR 3/3	2	С	M/PL	CI	
12-18	10YR 4/1	90	10YR 5/6	10	С	M/PL	CI	
							45 	
					-			
l ——						. ——		
¹Type: C=Co	oncentration D=De	nletion RM	=Reduced Matrix, M	S=Maske	d Sand G	rains	² Location: Pl	L=Pore Lining, M=Matrix.
			LRRs, unless othe			iumo.		or Problematic Hydric Soils ³ :
Histosol			Polyvalue Be			RRS.T.		ck (A9) (LRR O)
_	oipedon (A2)		Thin Dark So				. —	ck (A10) (LRR S)
ı — ·	stic (A3)		Loamy Muck	-		-		Vertic (F18) (outside MLRA 150A,B)
10 miles	en Sulfide (A4)		Loamy Gley			•		t Floodplain Soils (F19) (LRR P, S, T)
Stratified	d Layers (A5)		Depleted Ma	atrix (F3)			Anomalo	us Bright Loamy Soils (F20)
Organic	Bodies (A6) (LRR	P, T, U)	Redox Dark	Surface (F6)		(MLRA	-
_	ıcky Mineral (A7) (I							ent Material (TF2)
	esence (A8) (LRR		Redox Depr		- 8)			allow Dark Surface (TF12)
1	ick (A9) (LRR P, T)		Marl (F10) (I		(A) DA 4	(54)	Other (Ex	xplain in Remarks)
	d Below Dark Surfa ark Surface (A12)	ce (ATT)	Depleted Oc Iron-Mangar				T) ³ Indicate	ors of hydrophytic vegetation and
ı —	, ,	(MI RA 150	A) Umbric Surfa			•		nd hydrology must be present,
	fucky Mineral (S1)							s disturbed or problematic.
	Gleyed Matrix (S4)	(=:::: =, =,	Reduced Ve		for any later with the same			
	Redox (S5)		Piedmont Fl				Section 1991 CO	
Stripped	Matrix (S6)		Anomalous I	Bright Loa	my Soils	(F20) (MLF	RA 149A, 153C, 1	53D)
Dark Su	rface (S7) (LRR P,	S, T, U)			111			
Restrictive	Layer (if observed):						
Type:								
Depth (in	ches):						Hydric Soil Pr	resent? YesNo_▼
Remarks:								
Transitional	zone soils, techni	cally meets	F3 here, but no hy	/drology	indicators	s present.	Loses F3 indicat	tor immediately upslope.
		ou,oo				р. осо		apotopo.

Date: 1/12/22



Photograph Number ______
Photograph Direction North_____

Comments:



Photograph Number ______
Photograph Direction East____

Comments:



Photograph Number _____

Photograph Direction South

Comments:



Photograph Number _____

Photograph Direction West

Comments:

Project/Site: HRSD Middlesex TFM	City/County: Gloucester	Sampling Date: 01/12/2022				
Applicant/Owner: HRSD	11.6.4 (************************************	State: VA Sampling Point: GSA1-1-WET				
	Section, Township, Range: _	1 . 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
Landform (hillslope, terrace, etc.): Slope						
Subregion (LRR or MLRA):						
Subregion (LRR or MLRA):						
Soil Map Unit Name: Meggett sandy loam		NWI classification: UPL				
Are climatic / hydrologic conditions on the site typica						
Are Vegetation, Soil, or Hydrology	significantly disturbed? Are "Norm	al Circumstances" present? Yes No				
Are Vegetation, Soil, or Hydrology	naturally problematic? (If needed	, explain any answers in Remarks.)				
SUMMARY OF FINDINGS - Attach site	map showing sampling point locat	ions, transects, important features, etc.				
	No Is the Sampled Area					
	No within a Wetland?	Yes No				
	No Cowardin Code: PUB	LIOM. Water Tyres				
Remarks:						
Linear abandoned agricultural drainage ditch, a		rip up upland between the two features. No				
observable flow, ~6-12" of ponded water, approx	imately 6' wide.					
HYDROLOGY						
Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required; che	eck all that apply)	Surface Soil Cracks (B6)				
,	quatic Fauna (B13)	✓ Sparsely Vegetated Concave Surface (B8)				
1 -	Marl Deposits (B15) (LRR U)	Drainage Patterns (B10)				
	lydrogen Sulfide Odor (C1)	Moss Trim Lines (B16)				
1	Oxidized Rhizospheres along Living Roots (C3)					
	Presence of Reduced Iron (C4)	Crayfish Burrows (C8)				
	Recent Iron Reduction in Tilled Soils (C6)	Saturation Visible on Aerial Imagery (C9)				
	hin Muck Surface (C7)	✓ Geomorphic Position (D2)				
	Other (Explain in Remarks)	Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)	, ,	FAC-Neutral Test (D5)				
✓ Water-Stained Leaves (B9)		Sphagnum moss (D8) (LRR T, U)				
Field Observations:						
Surface Water Present? Yes <u>✓</u> No	Depth (inches):9					
Water Table Present? Yes <u>✓</u> No	Depth (inches):0					
	Depth (inches): 0 Wetland	Hydrology Present? Yes <u>√</u> No				
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring	well aerial photos, previous inspections), if a	vailable:				
	,,, , , , , , , , , , , , ,					
Remarks:						

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

		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC:1 (A)
2				Total Number of Dominant
3				Species Across All Strata:1 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC:100% (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species x 1 =
50% 51.1.		= Total Cov		FACW species x 2 =
50% of total cover: 0.0	20% of	total cover:		FAC species x 3 =
Sapling/Shrub Stratum (Plot size:) 1. Liquidambar styraciflua	10	1	FAC	FACU species x 4 =
				UPL species x 5 =
2				Column Totals: (A) (B)
3				554-035-0464 (T-0-0-0-0-18) 554-0-380 (S. Action 18)
4				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				✓ 2 - Dominance Test is >50%
8	40			3 - Prevalence Index is ≤3.0¹
50% - 54-4-1 5 0		= Total Cov		Problematic Hydrophytic Vegetation¹ (Explain)
50% of total cover: 5.0	20% 01	total cover.		
Herb Stratum (Plot size:5				¹Indicators of hydric soil and wetland hydrology must
1				be present, unless disturbed or problematic.
2				Definitions of Four Vegetation Strata:
3				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of height.
5				
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
7				
8				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
9				of size, and woody plants less than 5.26 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12	0	= Total Cov		
EOW of total agrees 0.0				
50% of total cover: 0.0	20% of	total cover:		
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4				
5		= Total Cov		Hydrophytic Vegetation
50% of total cover: 0.0				Present? Yes No
Moderatives shall estimate an experience of	- Committee and the committee of the com	total cover.		
Remarks: (If observed, list morphological adaptations below	20	911-24-24-24		-t d l
Very little vegetation rooted in the abandoned agriculture	re ditch. F	illed with s	tanding wa	ater and leaves.

Sampling Point: GSA1-1-WET

SOIL Sampling Point: GSA1-1-WET

Profile Desc	ription: (Describe	to the depth	needed to docur	nent the i	indicator	or confirn	n the absence	of indicators.)
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	<u>Texture</u>	Remarks
0-6	10YR 3/2	100					CILo	
6-12	10YR 2/1	100					CILo	
12-18	10YR 2/1	60					CILo	
12-18	10YR 4/1	40			D	<u>M</u>	Sa	Depleted sand inclusions
1 _{Tyme: C=C}			Paduaad Matrix MS		. ———		² l coation:	DI -Dovo Lining M-Metrix
	oncentration, D=De Indicators: (Appli					ams.		PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ :
Histosol		cable to all L	Polyvalue Be			DD S T I		Muck (A9) (LRR O)
_	oipedon (A2)		Thin Dark Su				- —	Muck (A10) (LRR S)
Black Hi			Loamy Muck			-		ed Vertic (F18) (outside MLRA 150A,B)
I —	n Sulfide (A4)		Loamy Gleye			,		ont Floodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		Depleted Mat		,			alous Bright Loamy Soils (F20)
_	Bodies (A6) (LRR	P, T, U)	Redox Dark	, ,	- 6)			RA 153B)
	ıcky Mineral (A7) (L		Depleted Dar	k Surface	(F7)			arent Material (TF2)
I —	esence (A8) (LRR		Redox Depre					Shallow Dark Surface (TF12)
1 cm Mu	ick (A9) (LRR P, T)		Marl (F10) (L	.RR U)			Other	(Explain in Remarks)
	d Below Dark Surfa		Depleted Oct	nric (F11)	(MLRA 1	51)		
Thick Da	ark Surface (A12)		Iron-Mangan	ese Mass	es (F12) (LRR O, P,	, T) ³ Indio	cators of hydrophytic vegetation and
Coast Pi	rairie Redox (A16)	(MLRA 150A)	Umbric Surfa	ce (F13)	(LRR P, T	', U)	wet	tland hydrology must be present,
	lucky Mineral (S1)	(LRR O, S)	Delta Ochric		the said to be a second			ess disturbed or problematic.
	Bleyed Matrix (S4)		Reduced Ver					
	Redox (S5)		Piedmont Flo	-			The first of the second second second second	NAME AND STREET
	Matrix (S6)		Anomalous B	Bright Loai	my Soils (F20) (MLF	RA 149A, 153C	i, 153D)
	rface (S7) (LRR P,							
Restrictive I	Layer (if observed):						
Type:			_					,
Depth (inc	ches):		_				Hydric Soil	Present? Yes No
Remarks:							<u>'</u>	
Slight hydro	gen sulfide odor. I	Depleted san	d inclusions start	ing at 12'	". Closes	t addition	al indicator ma	atches A11, assuming soil contains
	d sand below 18".	•		J				, ,

Date: 1/12/22



Photograph Number ______
Photograph Direction North_____

Comments:



Photograph Number _____ Photograph Direction East

Comments:



Photograph Number _____

Photograph Direction South

Comments:



Photograph Number _____

Photograph Direction West

Comments:

Project/Site: HRSD Middlesex TFM	City/County: Glouces	ster	Sampling Date:	01/12/2022
Applicant/Owner: HRSD			VA Sampling Point	
F. I. F. A.	_ Section, Township, R			3. 5.
Landform (hillslope, terrace, etc.): Slope			at Slo	ne (%)· 0-5
Subregion (LRR or MLRA): Lat: 37.4				
Soil Map Unit Name: Meggett sandy loam			classification: UPL	
Are climatic / hydrologic conditions on the site typical for this time of				
Are Vegetation, Soil, or Hydrology significan	tly disturbed? Are	"Normal Circumsta	ances" present? Yes	✓ No
Are Vegetation, Soil, or Hydrology naturally	problematic? (If r	needed, explain any	answers in Remarks.)	
SUMMARY OF FINDINGS - Attach site map showing	ng sampling point	locations, tran	sects, important f	eatures, etc.
Hydrophytic Vegetation Present? Yes _ ✔ No				
Hydrophytic Vegetation Present? Yes ✓ No Hydric Soil Present? Yes ✓ No No			,	
Wetland Hydrology Present? Yes ✓ No	within a vvetic	and? Ye	esNo	-
Remarks:	Cowardin Code: PSS	HGM: SI	ope Water T	ype: RPWWN
			•	
Abandoned agriculture field, potentially prior-converted-cropla	inds (PCC). Developing	g scrub shrub com	munity dominated by	sweetgum, box
elder, and silky dogwood saplings.				
HYDROLOGY				
Wetland Hydrology Indicators:		Secondar	y Indicators (minimum o	f two required)
Primary Indicators (minimum of one is required; check all that apply	u)	:\	ce Soil Cracks (B6)	r two required/
Surface Water (A1) Aquatic Fauna (I			sely Vegetated Concave	Surface (B8)
High Water Table (A2) Marl Deposits (B			age Patterns (B10)	Surface (BO)
✓ Saturation (A3) — Hydrogen Sulfide			Trim Lines (B16)	
	pheres along Living Roo		Season Water Table (C2	,
Sediment Deposits (B2) Presence of Red			ish Burrows (C8)	′
	uction in Tilled Soils (C6		ation Visible on Aerial In	nagery (C9)
Algal Mat or Crust (B4) Thin Muck Surfa			norphic Position (D2)	
Other (Explain in		_	ow Aquitard (D3)	
Inundation Visible on Aerial Imagery (B7)	,		Neutral Test (D5)	
Water-Stained Leaves (B9)		Spha	gnum moss (D8) (LRR	Γ, U)
Field Observations:				
Surface Water Present? Yes No ✓ Depth (inch	es):			
Water Table Present? Yes <u>✓</u> No Depth (inch				
Saturation Present? Yes <u>✓</u> No Depth (inches	es): W	Vetland Hydrology	Present? Yes <u>✓</u>	_ No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial ph	otos previous inspection	ne) if available:		
Describe Necorded Data (stream gauge, monitoring well, acrial pri	otos, previous irispection	13), ii avallable.		
Remarks:				

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

		Dominant		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size:	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:4 (A)
2 3				Total Number of Dominant Species Across All Strata: 4 (B)
4.				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8	0			OBL species x 1 =
50% affectal account 0.0		= Total Cov		FACW species x 2 =
50% of total cover: 0.0	20% of	total cover:		FAC species x 3 =
Sapling/Shrub Stratum (Plot size:	20	1	FACW	FACU species x 4 =
1. Comus amomum 2. Liquidambar styraciflua	10		FAC	UPL species x 5 =
2. Elquidambal styracinua 3. Acer negundo	10		FAC	Column Totals: (A) (B)
				(1)
4				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				✓ 2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0¹
		= Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover: 20.0	20% of	total cover:	8.0	
Herb Stratum (Plot size:5) 1. Carex lurida	50	1	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Scirpus cyperinus	15		OBL	Definitions of Four Vegetation Strata:
3. Juncus effuses	10		OBL	Deminions of Four Vegetation Strata.
4. Andropogon glomeratus	15		FACW	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
5				more in diameter at breast height (DBH), regardless of height.
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
		= Total Cov		
50% of total cover:45.0	20% of	total cover:	18.0	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4				
5				Hydrophytic
	0	= Total Cov	er	Vegetation
50% of total cover:0.0	20% of	total cover:	0.0	Present? Yes No
Remarks: (If observed, list morphological adaptations below	w).			
(,				

Sampling Point: GSA1-2-PSS

SOIL Sampling Point: GSA1-2-PSS

l	cription: (Describe	to the dep	oth needed to docu			or confirn	n the absence	of indicators.)
Depth	Matrix			ox Feature	es	1.5.2	Tavton	Domosto
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 4/2	100	S				LoCI	
6-18	10YR 4/2	80	7.5YR 4/6	_ 20	С	M/PL	CILo	
			7. 5.					·
	-							-
l ———								
1Tuno: C=C	oncontration D=Do	nlotion DM	=Reduced Matrix, M	- ———	d Sand C	rains	2l coation:	PL=Pore Lining, M=Matrix.
			LRRs, unless othe			iaiiis.	Indicators	for Problematic Hydric Soils ³ :
Histosol		cubic to un			-	I DD C T I		
_	pipedon (A2)		Polyvalue Be					Muck (A9) (LRR O) Muck (A10) (LRR S)
	istic (A3)		Loamy Muck	-		-		ed Vertic (F18) (outside MLRA 150A,B)
100 miles	en Sulfide (A4)		Loamy Gley	100	,	(0)		ont Floodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		✓ Depleted Ma		()		_	alous Bright Loamy Soils (F20)
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		F6)			RA 153B)
	ucky Mineral (A7) (L							arent Material (TF2)
_	resence (A8) (LRR I		Redox Depr					hallow Dark Surface (TF12)
1 cm Mu	uck (A9) (LRR P, T)		Marl (F10) (I	LRR U)			Other	(Explain in Remarks)
Deplete	d Below Dark Surfac	ce (A11)	Depleted Oc					
_	ark Surface (A12)		Iron-Mangar		. ,		•	ators of hydrophytic vegetation and
1			A) Umbric Surfa					land hydrology must be present,
	Mucky Mineral (S1) (LRR O, S)						ess disturbed or problematic.
	Gleyed Matrix (S4)		Reduced Ve					
	Redox (S5)		Piedmont Fl	-	Control of the last of the las		the state of the s	153D)
	l Matrix (S6) Irface (S7) (LRR P, I	S T III	Anomalous	Bright Loa	illy Solls	(F20) (WILF	RA 149A, 153C	, 1830)
	Layer (if observed)						1	
Type:		,-						
	ches):						Hydric Soil	Present? Yes No
	cries)						Hydric 30ii	rieseiit: ies_:_ No
Remarks:								

Date: 1/12/22



Photograph Number ______
Photograph Direction North_____

Comments:



Photograph Number ______
Photograph Direction East____

Comments:



Photograph Number _____

Photograph Direction South

Comments:



Photograph Number _____

Photograph Direction West

Comments:

Project/Site: HRSD Middlesex TFM	City/County: Glou	cester		Sampling Date:	01/12/2022		
Applicant/Owner: HRSD		State	: VA	Sampling Point:	GSA1-2-UP		
	Section, Township			,			
Landform (hillslope, terrace, etc.): Slope				Slon	e (%)· 0-5		
Subregion (LRR or MLRA): La	[; <u>01.44070</u>	Long:		Dai	tum: <u>147866</u>		
Soil Map Unit Name: Meggett sandy loam		100 T. 100.000					
Are climatic / hydrologic conditions on the site typical for this					,		
Are Vegetation, Soil, or Hydrology sig					No		
Are Vegetation, Soil, or Hydrology na	turally problematic?	(If needed, expla	in any answer	s in Remarks.)			
SUMMARY OF FINDINGS - Attach site map s	howing sampling poi	nt locations,	transects,	important fe	atures, etc.		
Hydrophytic Vegetation Present? Yes No	✓						
Hydric Soil Present? Yes No	J		200				
Wetland Hydrology Present? Yes No	within a W	etland?	Yes	No	-		
Remarks:	Cowardin Code: U	Jpland HC	GM:	Water Ty	pe:		
Mowed, unimproved access road. Evidence that this loc	ation is used for access :	and is closely ma	owed/maintai	ned			
wowed, diffinitioned access road. Evidence that this loc	ation is used for access, a	ind is closely in	oweu/mamtai	neu.			
HYDROLOGY							
Wetland Hydrology Indicators:		Sec	ondary Indicat	ors (minimum of	two required)		
Primary Indicators (minimum of one is required; check all th	at apply)		Surface Soil (Cracks (B6)			
Surface Water (A1) Aquatic F	auna (B13)	_	Sparsely Veg	etated Concave	Surface (B8)		
High Water Table (A2) Marl Depo	osits (B15) (LRR U)	_	Drainage Patterns (B10)				
Saturation (A3) Hydrogen	Sulfide Odor (C1)	_	Moss Trim Lines (B16)				
Water Marks (B1) Oxidized	Rhizospheres along Living F	Roots (C3)	(C3) Dry-Season Water Table (C2)				
	of Reduced Iron (C4)		Crayfish Burro				
	on Reduction in Tilled Soils		C6) Saturation Visible on Aerial Imagery (C9)				
	k Surface (C7)	Geomorphic Position (D2)					
	plain in Remarks)	Shallow Aquitard (D3)					
Inundation Visible on Aerial Imagery (B7)			FAC-Neutral	. ,			
Water-Stained Leaves (B9) Field Observations:			Spriagnum m	oss (D8) (LRR T ,	, 0)		
Surface Water Present? Yes No ✓ Dept	h (inches):						
Water Table Present? Yes No ✓ Dept							
Saturation Present? Yes No _✓ Dept		Wetland Hydro	ology Present	2 Vac	No_✓		
(includes capillary fringe)		_	•	Tes	NO		
Describe Recorded Data (stream gauge, monitoring well, as	rial photos, previous inspec	tions), if available	e:				
Remarks:							
Remarks.							

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

Sampling Point: GSA1-2-UP

	solute Dominant Ir		Dominance Test worksheet:
Tree Stratum (Plot size:30)% C	Cover Species?	Status	Number of Dominant Species
1			That Are OBL, FACW, or FAC:0 (A)
2			Total Number of Dominant
3			Species Across All Strata: 0 (B)
4			(=,
5			Percent of Dominant Species That Are OBL FACW or FAC: 0% (A/B)
			That Are OBL, FACW, or FAC: (A/B)
6			Prevalence Index worksheet:
7			Total % Cover of: Multiply by:
8	0 = Total Cover		OBL species x 1 =
	Total Cover		FACW species x 2 =
50% of total cover:0.0 2	20% of total cover: _	0.0	FAC species x 3 =
Sapling/Shrub Stratum (Plot size:)			
1			FACU species x 4 =
2			UPL species x 5 =
3			Column Totals: (A) (B)
4			Prevalence Index = B/A =
5			Hydrophytic Vegetation Indicators:
6			
7			1 - Rapid Test for Hydrophytic Vegetation
8		—— I	2 - Dominance Test is >50%
	0 = Total Cover		3 - Prevalence Index is ≤3.0¹
50% of total cover:0.02			Problematic Hydrophytic Vegetation¹ (Explain)
	20% of total cover: _		
Herb Stratum (Plot size: 5)	95 N	ND	¹ Indicators of hydric soil and wetland hydrology must
1,		L	be present, unless disturbed or problematic.
2		I	Definitions of Four Vegetation Strata:
3			Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4			more in diameter at breast height (DBH), regardless of
5			height.
6			Sapling/Shrub – Woody plants, excluding vines, less
7			than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8			Herb – All herbaceous (non-woody) plants, regardless
9			of size, and woody plants less than 3.28 ft tall.
10			
			Woody vine – All woody vines greater than 3.28 ft in
11			height.
12	95 - Tatal Carre		
	95 = Total Cover		
50% of total cover: <u>47.5</u> 2	20% of total cover: _	19.0	
Woody Vine Stratum (Plot size:)			
1			
2			
3			
4			
5			Hydrophytic
	0 = Total Cover	r	Vegetation
50% of total cover: 0.0 2	20% of total cover: _	0.0	Present? Yes No _ ✓
Remarks: (If observed, list morphological adaptations below).			
	d	ada Vana	tation commonition is annualizate as most
Vegetation is closely mowed, and consists of turf grasses at vegetation is unidentifiable due to season and mowing.	ind sparsefield we	eas. vege	etation composition is approximate, as most

SOIL Sampling Point: GSA1-2-UP

Profile Desc	ription: (Describe	e to the dep	th needed to docu	ment the	indicator	or confir	m the absence o	f indicators.)
Depth	Matrix		Redo	x Feature				
(inches)	Color (moist)		Color (moist)	%	Type ¹	Loc ²	<u>Texture</u> _	Remarks
0-6	10YR 3/2	_ 100					CILo	
6-12	10YR 3/2	90	10YR 3/6	10	<u>C</u>	PL	CILo	
12-20	10YR 4/2	95	10YR 5/6	5	С	PL	CILo	
						. ——	· 	
l ———								
l								
			=Reduced Matrix, M			rains.		L=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (Appli	cable to all	LRRs, unless othe	rwise no	ted.)		Indicators fo	or Problematic Hydric Soils ³ :
Histosol	. ,		Polyvalue Be				. —	ick (A9) (LRR O)
ı — ·	pipedon (A2)		Thin Dark So					ck (A10) (LRR S)
07 072	stic (A3)		Loamy Muck			R O)		Vertic (F18) (outside MLRA 150A,B
	n Sulfide (A4)		Loamy Gley		(F2)			nt Floodplain Soils (F19) (LRR P, S, T)
ı —	d Layers (A5) Bodies (A6) (LRR	D T II\	Depleted Ma Redox Dark	, ,	E6)			ous Bright Loamy Soils (F20) A 153B)
	icky Mineral (A7) (L							ent Material (TF2)
ı —	esence (A8) (LRR		Redox Depre					allow Dark Surface (TF12)
ı —	ick (A9) (LRR P, T)	•	Marl (F10) (I		٠,			xplain in Remarks)
	d Below Dark Surfa		Depleted Oc) (MLRA 1	51)	_ `	
Thick Da	ark Surface (A12)		Iron-Mangar	nese Mas	ses (F12)	(LRR O, P	, T) ³ Indicat	tors of hydrophytic vegetation and
1	rairie Redox (A16)							nd hydrology must be present,
	lucky Mineral (S1)	(LRR O, S)		. , .	December 1971 Total			s disturbed or problematic.
	Sleyed Matrix (S4)		Reduced Ve				The second secon	
	Redox (S5)		Piedmont Flo	-			A CONTRACTOR OF THE PARTY OF TH	1520)
	Matrix (S6)	S T II)	Anomaious i	Bright Loa	amy Solls	(F20) (ML)	RA 149A, 153C, 1	153D)
	rface (S7) (LRR P, Layer (if observed						1	
1	Layer (II observed	,.						
Type:	ah aa \						Hudria Cail D	resent? Yes No ✓
	ches):						Hydric Soil P	resent? Yes No
Remarks:								

Photograph Log

Date: ______

Photograph Number	Photograph Number
Photograph Direction East	Photograph Direction West
Comments:	Comments:
Photograph Number	Photograph Number
Photograph Direction	Photograph Direction
Comments:	Comments:

Project/Site: HRSD Middlesex TFM		City/C	ounty: Gloucester		Sampling Date: 01/12/2022	2
Applicant/Owner: HRSD					Sampling Point: GSA2-1-	
Investigator(s): Emily Foster			on, Township, Range: _			
Landform (hillslope, terrace, etc.): Othe						
Subregion (LRR or MLRA):				,		3
		Lat:				
Soil Map Unit Name: Lumbee sandy loa		MATERIA (2 92) (2)				
Are climatic / hydrologic conditions on the		10	AMARIA DA	the product of the second of t	A CONTRACTOR OF THE PARTY OF TH	
Are Vegetation, Soil, or I	Hydrology	_ significantly distur	bed? Are "Norma	al Circumstances" p	oresent? Yes No	
Are Vegetation, Soil, or I	Hydrology	_ naturally problema	atic? (If needed,	explain any answe	ers in Remarks.)	
SUMMARY OF FINDINGS - A	ttach site ma	p showing sam	pling point locati	ons, transects	, important features,	etc.
Livelyan hadia Magastation Drogont2	V /	Na				
Hydrophytic Vegetation Present? Hydric Soil Present?	Yes <u>√</u> Yes <u>√</u>	No	Is the Sampled Area		,	
Wetland Hydrology Present?	,	No	within a Wetland?	Yes	No	
Remarks:			ardin Code: PEM	HGM: Slope	Water Type: RPWW	N
	-titt				,,,	.
Unmaintained roadside drainage dito	ch with prevalen	ce of wetland vege	etation.			
HYDROLOGY						
Wetland Hydrology Indicators:				Secondary Indica	ators (minimum of two require	ed)
Primary Indicators (minimum of one is	required; check a	ıll that apply)		Surface Soil		
Surface Water (A1)	Aquat	tic Fauna (B13)			getated Concave Surface (B8	3)
High Water Table (A2)		Deposits (B15) (LRF	R U)	Drainage Pa		´
✓ Saturation (A3)		ogen Sulfide Odor (0		Moss Trim L		
Water Marks (B1)			long Living Roots (C3)		Water Table (C2)	
Sediment Deposits (B2)		ence of Reduced Iron		Crayfish Bur	rows (C8)	
Drift Deposits (B3)	Recer	nt Iron Reduction in	Tilled Soils (C6)	Saturation V	isible on Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Thin M	Muck Surface (C7)		Geomorphic	Position (D2)	
Iron Deposits (B5)	Other	(Explain in Remark	ss)	Shallow Aqu	itard (D3)	
Inundation Visible on Aerial Image	ery (B7)			FAC-Neutral		
Water-Stained Leaves (B9)				Sphagnum n	noss (D8) (LRR T, U)	
Field Observations:						
		Depth (inches):				
		Depth (inches):		_	<i>J</i>	
Saturation Present? Yes (includes capillary fringe)	✓ No □	Depth (inches):	0 Wetland	Hydrology Preser	nt? Yes <u></u> No	-
Describe Recorded Data (stream gaug	e, monitoring wel	ll, aerial photos, pre	vious inspections), if av	ailable:		
	-		•			
Remarks:						

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

/EGETATION (Four Strata) – Use scientific nai	mes of pl	ants.		Sampling Point: GSA2-1-PEM
		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:30) 1		Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:1 (A)
2				Total Number of Dominant
3 4				Species Across All Strata:1 (B)
5				Percent of Dominant Species That Are OBL, FACW, or FAC:100% (A/B)
6.				matric obe, thow, of tho.
7.				Prevalence Index worksheet:
8.				Total % Cover of: Multiply by:
3350	0	= Total Cov	/er	OBL species x 1 =
50% of total cover:0.0	20% of	total cover	:0.0	FACW species x 2 =
Sapling/Shrub Stratum (Plot size:)				FAC species x 3 =
1				FACU species x 4 =
2				UPL species x 5 =
3				Column Totals: (A) (B)
4				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				✓ 2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0 ¹
	^	= Total Cov	/er	Problematic Hydrophytic Vegetation¹ (Explain)
50% of total cover:0.0	20% of	total cover	:0.0	
Herb Stratum (Plot size:)				¹ Indicators of hydric soil and wetland hydrology must
1. Persicaria saggittata	75		OBL	be present, unless disturbed or problematic.
2. Vernonia novboraccensis	5		FACW	Definitions of Four Vegetation Strata:
3. Panicum virgatum	10		FAC	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of
5				height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9		3		of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	90	= Total Cov	/er	
50% of total cover: <u>45.0</u>	20% of	total cover	:18.0	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4		<u></u>		
5				Hydrophytic
	0	= Total Cov	/er	Vegetation Present? Yes _ V No
50% of total cover:0.0	20% of	total cover	:0.0	Present? Yes _ V No
Remarks: (If observed, list morphological adaptations belo	w).			

SOIL Sampling Point: GSA2-1-PEM

l	cription: (Describe	e to the dep	th needed to docu			or confir	n the absence of i	ndicators.)	
Depth (inches)	Matrix Color (moist)	0/		ox Feature	s Type ¹	_Loc ²	Toyture	Domorko	
(inches) 0-6	Color (moist) 10YR 4/2	<u>%</u> 98	Color (moist) 10YR 4/6	- <u>%</u> 2	C Type	PL	Texture SaCLo	Remarks	
10	20		1011470						
6-12	10YR 5/4	100					Sa		
33									
100	·	_	Ti and the second secon						
	-		<u> </u>						
¹Type: C=C	oncentration D=De	nletion RM:	=Reduced Matrix, M	– ——— IS=Maske	d Sand G	rains	² Location: PL:	=Pore Lining, M=Matri	
			LRRs, unless othe			unio.		Problematic Hydric S	
Histosol			Polyvalue B			PR S T		-	
_	pipedon (A2)		Thin Dark S					(A10) (LRR S)	
	istic (A3)		Loamy Muc	-		-		/ertic (F18) (outside N	/ILRA 150A.B)
10 mm	en Sulfide (A4)		Loamy Gley	100	7	,		Floodplain Soils (F19)	
	d Layers (A5)		✓ Depleted Ma		,			s Bright Loamy Soils (
	Bodies (A6) (LRR	P, T, U)	Redox Dark		F6)		(MLRA 1		ŕ
	ucky Mineral (A7) (L		Depleted Da	ark Surface	e (F7)			nt Material (TF2)	
Muck Pi	resence (A8) (LRR	U)	Redox Depr		8)		Very Shall	ow Dark Surface (TF1	2)
	uck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Exp	olain in Remarks)	
I — ·	d Below Dark Surfa	ce (A11)	Depleted Or			-	2		
_	ark Surface (A12)		Iron-Manga					rs of hydrophytic veget	
1			A) Umbric Surf			r, U)		hydrology must be pr	
	Mucky Mineral (S1)	(LRR O, S)	Delta Ochrid			TOA 450D		disturbed or problema	tic.
	Gleyed Matrix (S4)		Reduced Ve Piedmont Fl				Service Control of the Control of th		
	Redox (S5) I Matrix (S6)			-			RA 149A, 153C, 15	3D)	
	rface (S7) (LRR P,	S T III	Anomalous	bright Loa	illy Solis	(1 20) (WILI	(A 143A, 1330, 13	30)	
	Layer (if observed						1		
Type:		,-							
	ches):						Hydric Soil Pre	esent? Yes_	No
	cries)						Hydric 30ii Fre	sentr res	NO
Remarks:									

Photograph Log

Date: ______

Photograph Number	Photograph Number
Photograph Direction NE	Photograph Direction
Comments: Unmaintained roadside ditch with prevalence of wetland vegetation.	Comments:
Photograph Number	Photograph Number
Photograph Direction	Photograph Direction
Comments:	Comments:

Project/Site: HRSD Middlesex TFM	City/County: Gloucester Sampling Date: 01/12/2022
Applicant/Owner: HRSD	State: VA Sampling Point: GSA2-UP
44 BORES CONTROL CONTR	Section, Township, Range:
	Local relief (concave, convex, none): concave Slope (%): 3-5
Subregion (LRR or MLRA): Lat: 37.446	
Soil Map Unit Name: Rumford loamy fine sand, 2 to 6 percent slopes	
Are climatic / hydrologic conditions on the site typical for this time of ye	
Are Vegetation ✓, Soil, or Hydrology significantly	
Are Vegetation, Soil, or Hydrology naturally pro	
	g sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No ✓	
Hydric Soil Present? Yes No	Is the Sampled Area
Wetland Hydrology Present? Yes No	within a Wetland? Yes No
Remarks:	Cowardin Code: Upland HGM: Water Type:
HYDROLOGY	
	Considery Indicators (minimum of the required)
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
Surface Water (A1) Aquatic Fauna (B1 High Water Table (A2) Marl Deposits (B15	
Saturation (A3) Hydrogen Sulfide (Carlotte Carlotte Carlo	
	neres along Living Roots (C3) Dry-Season Water Table (C2)
Sediment Deposits (B2) Presence of Reduce	
	etion in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Thin Muck Surface	
Iron Deposits (B5) Other (Explain in F	Remarks) Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)
Field Observations:	
Surface Water Present? Yes No ✓ Depth (inches	I
Water Table Present? Yes No ✓ Depth (inches	s):
Saturation Present? Yes No _✓_ Depth (inches (includes capillary fringe)	S: Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial photo	os, previous inspections), if available:
Remarks:	
I	I

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

		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC:0 (A)
2				Total Number of Dominant
3				Species Across All Strata:1 (B)
4				Researt of Deminent Species
5				Percent of Dominant Species That Are OBL, FACW, or FAC:0%(A/B)
6				
7				Prevalence Index worksheet:
8.				Total % Cover of: Multiply by:
-	0	= Total Cov	er	OBL species x 1 =
50% of total cover:0.0				FACW species x 2 =
Sapling/Shrub Stratum (Plot size:15)	_ 20 /0 01	total oover		FAC species x 3 =
				FACU species x 4 =
1			-	UPL species x 5 =
2.				Column Totals: (A) (B)
3				
4				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0 ¹
		= Total Cov	er	Problematic Hydrophytic Vegetation¹ (Explain)
50% of total cover:0.0	20% of	total cover	0.0	
Herb Stratum (Plot size:5				¹ Indicators of hydric soil and wetland hydrology must
1. Turf grasses	85	✓	ND	be present, unless disturbed or problematic.
2 Trifolium repens	10		FACU	Definitions of Four Vegetation Strata:
3 Lamium amplexicaule	5		ND	
4				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
				height.
5				
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
7				than 5 m. BBT and greater than 5.25 k (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	100	= Total Cov	er	
50% of total cover:50.0	20% of	total cover	20.0	
Woody Vine Stratum (Plot size:)				
1				
2.				
3				
4				
5				Undrankutia
		= Total Cov	er	Hydrophytic Vegetation
50% of total cover: 0.0				Present? Yes No _▼
merithra del 1 etc e et 1 etc e et 1 etc e e e e e e e e e e e e e e e e e e	- Anna de Caración	total cover		
Remarks: (If observed, list morphological adaptations below	201			
Closely mowed vegetation. Species composition is app	roximate.			

Sampling Point: GSA2-UP

SOIL Sampling Point: GSA2-UP

Profile Descr	iption: (Describe	to the depti	n needed to docu	ment the i	indicator	or confirn	n the absence	of indicate	ors.)	
Depth .	Matrix		Redo	x Feature						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	
0-8	7.5YR 3/2	100					SaLo			
8-20	10YR 4/4	100					LoCI			
-										
				- —						
										_
1 _{Type:} C=Ce	acontration D=Da	olotion DM-I	Reduced Matrix, M	S=Mackad	Sand Cr		2l coation:	DI =Doro I	ining M=Matr	iv.
			RRs, unless othe			aii i5.			ining, M=Matr matic Hydric	
Histosol (subjects un E	Polyvalue Be		-	DD S T I		Muck (A9) (•	000
	pedon (A2)		Thin Dark St				. —	Muck (A3) (
Black His			Loamy Muck							MLRA 150A,B)
100 000	Sulfide (A4)		Loamy Gley			-,				(LRR P, S, T)
117 17 17 17 17 17 17 17 17 17 17 17 17	Layers (A5)		Depleted Ma		,				t Loamy Soils	
Organic E	Bodies (A6) (LRR I	P, T, U)	Redox Dark	Surface (F	- 6)		(ML	RA 153B)		
5 cm Mud	ky Mineral (A7) (L	RR P, T, U)	Depleted Da	rk Surface	e(F7)			arent Mate	. ,	
	sence (A8) (LRR I		Redox Depr		8)				k Surface (TF1	2)
	k (A9) (LRR P, T)		Marl (F10) (I				Other	(Explain in	Remarks)	
ı — ·	Below Dark Surface	ce (A11)	Depleted Oc			-	T) 31-4:-		-l	4-4:
ı —	k Surface (A12)	MI DA 150A	Iron-Mangar Umbric Surfa				•		drophytic vege logy must be p	
	ucky Mineral (S1) (Delta Ochric			, 0)			ed or problema	
	eyed Matrix (S4)	Little 0, 0,	Reduced Ve		process to the second second	0A. 150B)		coo diotarbi	ed or probleme	illo.
Sandy Re			Piedmont Flo							
	Matrix (S6)			-			RA 149A, 153C	, 153D)		
Dark Surf	ace (S7) (LRR P,	S, T, U)								
Restrictive La	ayer (if observed)	:								
Type:										,
Depth (incl	nes):						Hydric Soil	Present?	Yes	No_ √
Remarks:										

Date: _____



Photograph Number ______
Photograph Direction North_____

Comments:



Photograph Number _____ Photograph Direction East

Comments:



Photograph Number _____

Photograph Direction NNW

Comments:



Photograph Number _____

Photograph Direction West

Comments:

Project/Site: HRSD Middlesex TFM	City/County: Gloud	cester		Sampling Date:	01/12/2022
Applicant/Owner: HRSD				Sampling Point:	
F-9-F-4-	Section, Township				
Landform (hillslope, terrace, etc.): Hillslope				Slon	oe (%). 5-10
Subregion (LRR or MLRA): Lat: 3					
					tum: TVADOO
Soil Map Unit Name: Johns variant loamy sand	22	7 F. SALES			
Are climatic / hydrologic conditions on the site typical for this time	- Control - Cont				,
Are Vegetation, Soil, or Hydrology significant	cantly disturbed?	Are "Normal Circu	ımstances" pı	resent? Yes	✓ No
Are Vegetation, Soil, or Hydrology natura	illy problematic? (If needed, explain	n any answer	s in Remarks.)	
SUMMARY OF FINDINGS - Attach site map sho	wing sampling poi	nt locations,	transects,	important fe	eatures, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No	/		Vas	No_ √ _	
Wetland Hydrology Present? Yes No	within a We	euanur	res	NO_ _	-
Remarks:	Cowardin Code: U	pland HG	M:	Water Ty	/pe:
Upland forest adjacent to John Clayton Memorial Highway					
HYDROLOGY					
Wetland Hydrology Indicators:		:		tors (minimum of	two required)
Primary Indicators (minimum of one is required; check all that a			Surface Soil (
Surface Water (A1) Aquatic Faun				etated Concave	Surface (B8)
High Water Table (A2) Marl Deposits Address of A2			Drainage Pat		
Saturation (A3) Hydrogen Su Water Marks (B1) Oxidized Rhi:	imae Odor (C1) zospheres along Living R		Moss Trim Lir	าes (ชาช) Vater Table (C2)	
	Reduced Iron (C4)		Crayfish Burr		
	Reduction in Tilled Soils (sible on Aerial Im	agery (C9)
Algal Mat or Crust (B4) Thin Muck St			Geomorphic I		(30)
Iron Deposits (B5) Other (Explain	, ,		Shallow Aquit		
Inundation Visible on Aerial Imagery (B7)	,		FAC-Neutral		
Water-Stained Leaves (B9)		:	Sphagnum m	oss (D8) (LRR T	, U)
Field Observations:					
Surface Water Present? Yes No <u>✓</u> Depth (ii					
Water Table Present? Yes No _✓ Depth (ii					,
Saturation Present? Yes No ✓ _ Depth (in	nches):	Wetland Hydro	logy Present	t? Yes	No_✓
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial	photos, previous inspect	ions), if available	:		
		,			
Remarks:					

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

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?	Status	Number of Dominant Species
1. Liriodendron tulipifera	60		FACU	That Are OBL, FACW, or FAC:2 (A)
2. Acer rubrum	20		FAC	Total Number of Dominant
3				Species Across All Strata: 5 (B)
4		<u> </u>		
5.				Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)
6.				That Ale OBE, I ACW, OF I AC.
7				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
8	80			OBL species x 1 =
70.0		= Total Cov		FACW species x 2 =
50% of total cover: 40.0	20% of	total cover:	10.0	FAC species x 3 =
Sapling/Shrub Stratum (Plot size:)	25	,	5 40	FACU species x 4 =
1. Ligustrum sinense	35		FAC	
2				UPL species x 5 =
3				Column Totals: (A) (B)
4				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
6.				1
				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8	35			3 - Prevalence Index is ≤3.0¹
47.5		= Total Cov		Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:17.5	20% of	total cover:	7.0	
Herb Stratum (Plot size:5				¹ Indicators of hydric soil and wetland hydrology must
1. Polystichum acrostichoides	15		FACU	be present, unless disturbed or problematic.
2. Lonicera japonica	10	_	FACU	Definitions of Four Vegetation Strata:
3. Ilex opaca	5			Tree Meady plants evaluating vines 2 in (7.6 cm) or
4				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
5				height.
6.		2		Sanling/Shrub Wasdy plants systeding vines less
				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
7				, ,
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	30	= Total Cov	er	
50% of total cover:15.0	20% of	total cover:	6.0	
Woody Vine Stratum (Plot size:)				
1				
2.				
3				
4				
5				Hydrophytic
		= Total Cov		Vegetation Present? Yes No _✓
50% of total cover:0.0	20% of	total cover:	0.0	resent: res No
Remarks: (If observed, list morphological adaptations belo	w).			

Sampling Point: GSA3-UP

SOIL Sampling Point: GSA3-UP

Profile Desc	cription: (Describe	to the depth	needed to docur	nent the i	ndicator	or confirn	n the absence of	indicators.)	
Depth	Matrix		Redo	x Features	s				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	<u> </u>
0-10	10YR 3/2	100					SaLo		
10-16	10YR 3/3	100					SaLo		
18-20	10YR 5/3	100					Sa		
-									
	-								
l									
l									
									_
1Type: C=C	oncentration, D=De	nletion DM-E	Peduced Matrix M	S-Macked	Sand Gr	aine	² Location: DI	L=Pore Lining, M=Ma	triv
	Indicators: (Appli					airis.		r Problematic Hydri	
Histosol			Polyvalue Be			PRS T I		ck (A9) (LRR O)	
_	pipedon (A2)		Thin Dark Su					ck (A10) (LRR S)	
ı —	istic (A3)		Loamy Muck		-	-		Vertic (F18) (outside	e MLRA 150A,B)
No. of the second	en Sulfide (A4)		Loamy Gleye	-1		,		t Floodplain Soils (F1	
	d Layers (A5)		Depleted Ma		,			us Bright Loamy Soils	
Organic	Bodies (A6) (LRR	P, T, U)	Redox Dark	Surface (F	6)		(MLRA	153B)	
_	ıcky Mineral (A7) (L		Depleted Da				_	ent Material (TF2)	
	resence (A8) (LRR		Redox Depre		8)			illow Dark Surface (T	F12)
1	uck (A9) (LRR P, T)		Marl (F10) (L			-4\	Other (Ex	xplain in Remarks)	
	d Below Dark Surfa	ce (A11)	Depleted Oc	. ,	•	•	T) 3Indicate	ara of budranbutia vac	rotation and
ı —	ark Surface (A12) rairie Redox (A16)	(MI DA 150A)	Iron-Mangan				•	ors of hydrophytic veg nd hydrology must be	·
1	/lucky Mineral (S1)		Delta Ochric			, 0)		s disturbed or problen	
	Bleyed Matrix (S4)	(Little 0, 0)	Reduced Ve			OA. 150B)		s distarbed of problem	idio.
	Redox (S5)		Piedmont Flo						
	l Matrix (S6)						RA 149A, 153C, 1	53D)	
Dark Su	rface (S7) (LRR P,	S, T, U)							
Restrictive	Layer (if observed):							
Type:			_						,
Depth (in	ches):						Hydric Soil Pr	resent? Yes	_ No_ √ _
Remarks:									
I									

Date: 1/12/22



Photograph Number _______
Photograph Direction North

Comments:



Photograph Number _____ Photograph Direction East___

Comments:



Photograph Number _____

Photograph Direction South

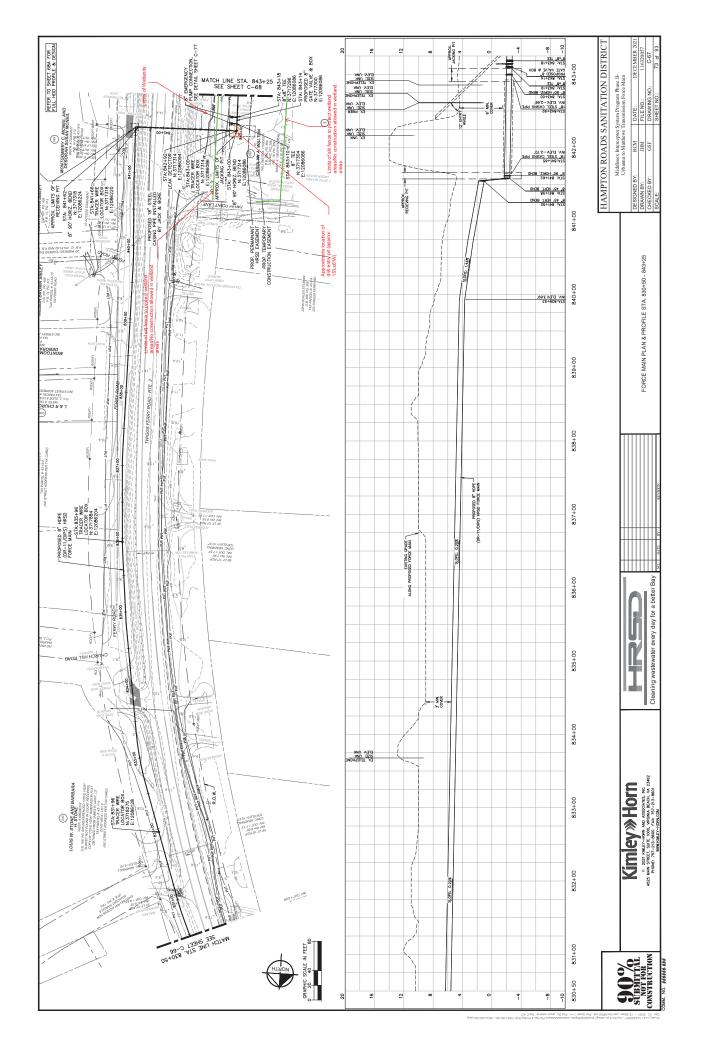
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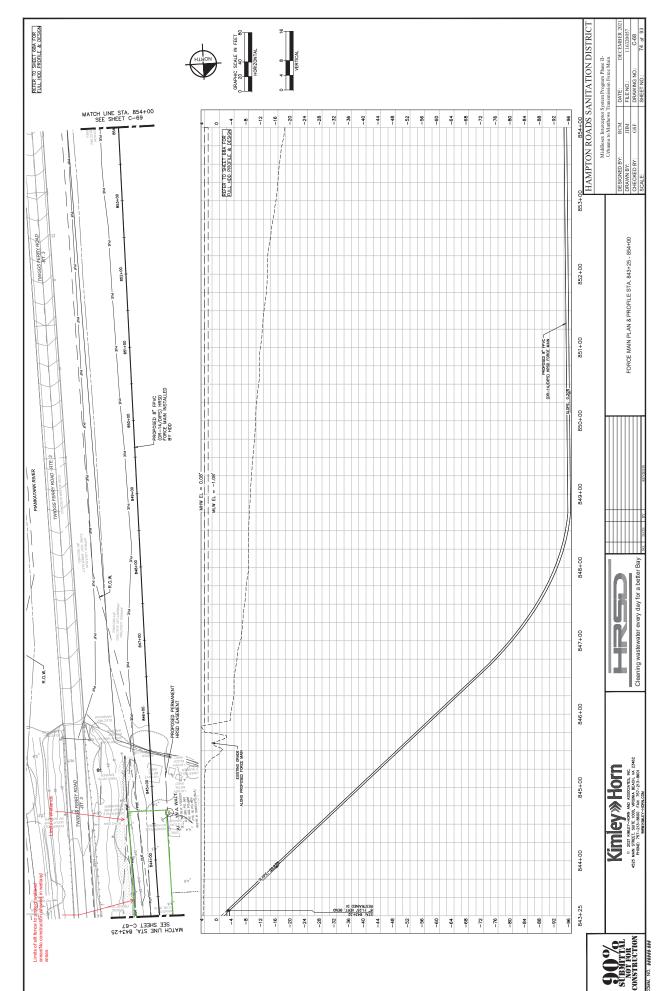


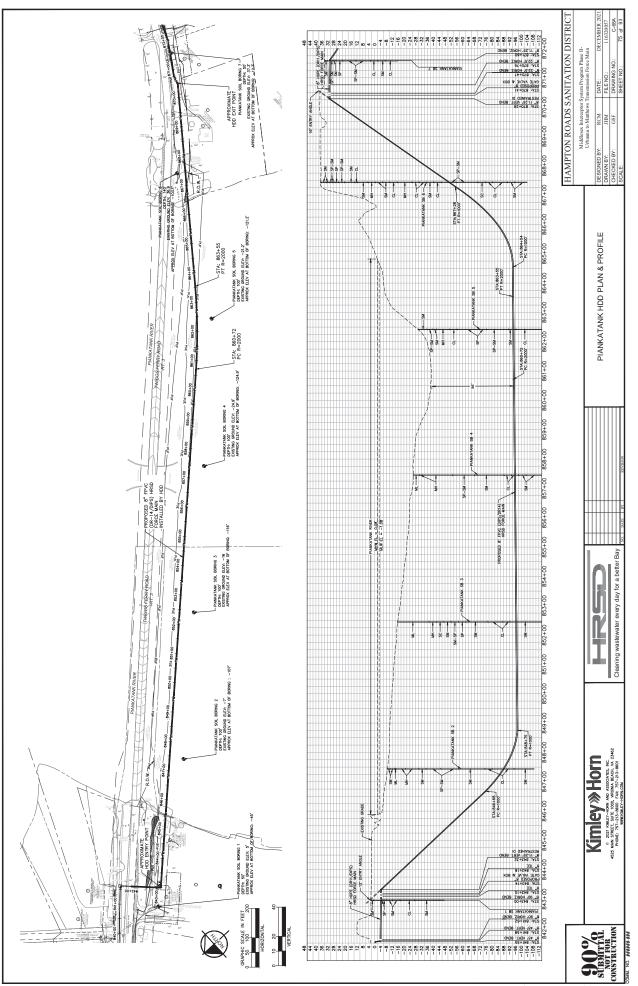
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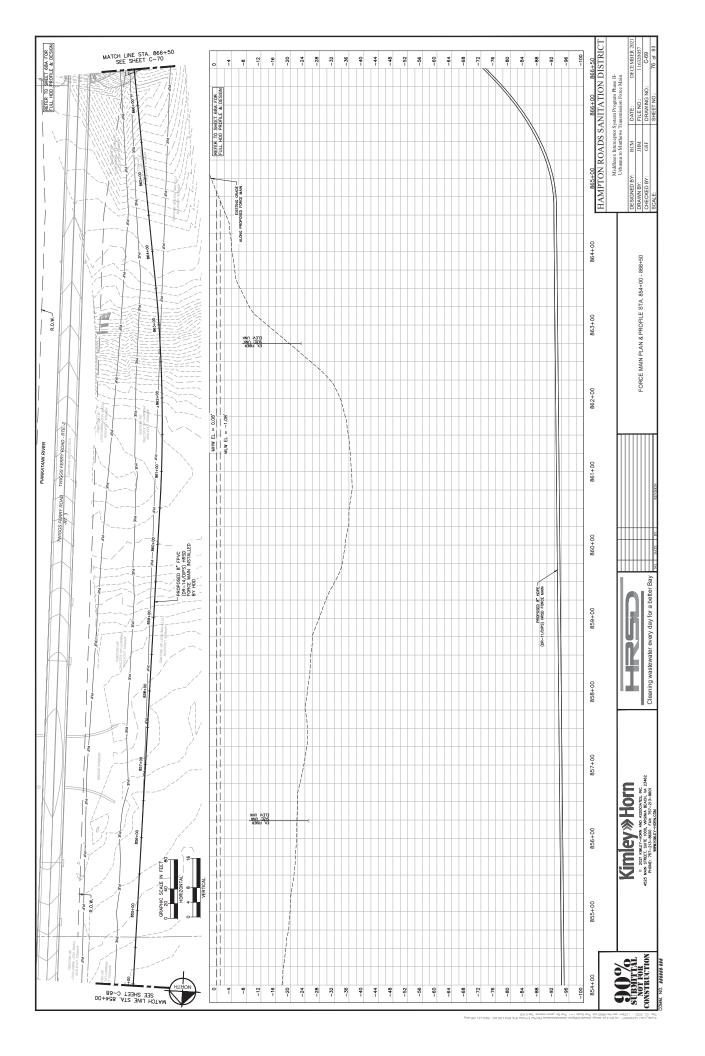
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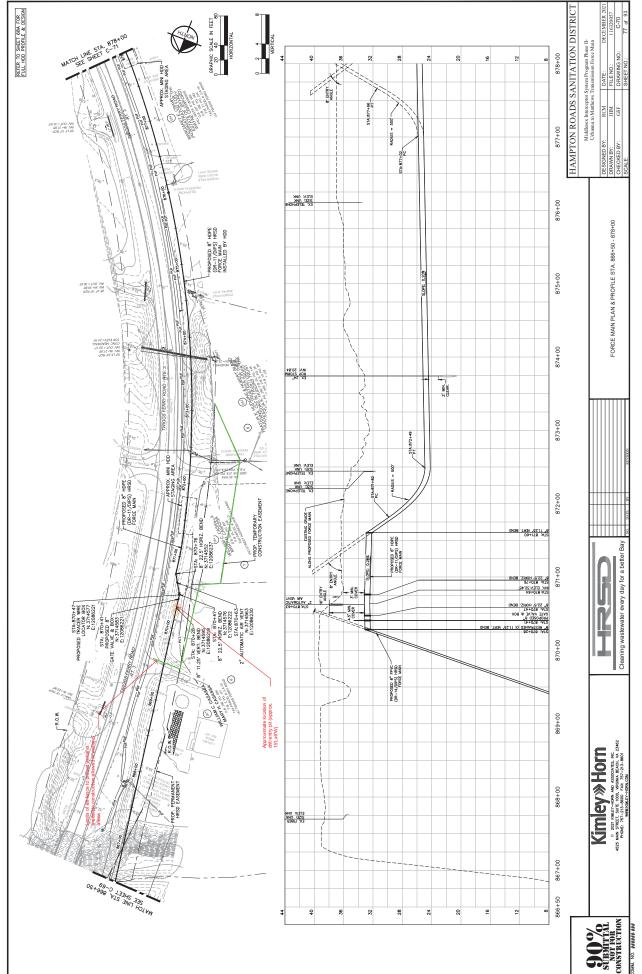
Comments:













26 October 2020

USACE Norfolk District Regulator of the Day

Applicant: Hampton Roads Sanitation District

Agent: Ms. Emily Foster Tetra Tech

5700 Lake Wright Drive Norfolk, VA, 23502

Subject: HRSD - Middlesex Interceptor System Program Phase II - Urbanna, Virginia to Mathews,

Virginia Transmission Force Main

Pre-Application Consultation Request for Section 106 of the National Historic

Preservation Act

To Whom It May Concern,

On behalf of HRSD, Tetra Tech, Inc. is submitting this Pre-Application Consultation Request regarding a planned project to design and construct a sewage conveyance system to serve Middlesex County, Virginia (the Project).

The Project will consist of a new force main to convey wastewater from Middlesex County to HRSD's York River Treatment Plant and enable decommissioning of both the HRSD Urbanna and Central Middlesex Treatment Plants. The Project also includes installation of pump stations and equalizer tanks.

Because the Project includes crossings under the Piankatank River and Urbanna Creek via Horizontal Direction Drill (HDD) and wetland impacts may be possible along the transmission route, it is anticipated that a Jurisdictional Determination and submittal of a Joint Permit Application (JPA) will be required.

While the Project is still in the preliminary design phase, the Project may require consultation under section 106 of the National Historic Preservation Act and coordination with the Virginia Department of Historic Resources (VDHR) and State Historic Preservation Officer (SHPO). By submitting this Pre-Application Consultation Request, it is HRSD's intent to initiate consultation with the USACE and VDHR as early as possible in the design process in order to identify any potential adverse effects to archaeological or architectural resources prior to submittal of a JPA. If section 106 consultation is likely to be required for the activities described within the attached documents, HRSD would like to initiate consultation as early as possible in order to avoid unanticipated delays to the Project schedule.

HRSD respectfully requests that the USACE Norfolk District Regulator of the Day review the attached Preliminary Design Plans and Preliminary Cultural Resources Assessment to provide guidance pertaining to future Section 106 review and consultation for the Project. Upon receipt and review of this request, please feel free to contact me by phone or e-mail at (540) 841-4752 or <a href="mailto:email

Respectfully submitted,

Emily Foster, PWS #2718 Environmental Scientist

EminyJohn

Tetra Tech, Inc.

Enclosures

CC Scott Funke, P.E., Kimley-Horn Project Manager

Tim Moore, P.E., Tetra Tech, Inc.

Brad Sweeney, P.E., Tetra Tech, Inc.

Attachments:

- 1. Norfolk District Regulatory Office Pre-Application Consultation Request Form
- 2. Preliminary Design Plans
- 3. Preliminary Cultural Resources Assessment for the HRSD Middlesex Interceptor System Program Phase II Urbanna to Mathew Transmission TFM, Middlesex and Mathews Counties, Virginia
- 4. National Wetland Inventory Figure



NORFOLK DISTRICT REGULATORY OFFICE PRE-APPLICATION AND/OR JURISDICTIONAL WATERS DETERMINATION REQUEST FORM

This form is used when you want to determine if areas on your property fall under regulatory requirements of the U.S. Army Corps of Engineers (USACE). Please supply the following information and supporting documents described below. This form can be filled out online and/or printed and then mailed, faxed, or e-mailed to the Norfolk District. Submitting this request authorizes the US Army Corps of Engineers to field inspect the property site, if necessary, to help in the determination process. THIS FORM MUST BE SIGNED BY THE PROPERTY OWNER TO BE CONSIDERED A FORMAL REQUEST.

The printed form and supporting documents should be mailed to:

U.S. Army Corps of Engineers, Norfolk District Regulatory Branch 803 Front Street Norfolk, Virginia 23510-1096

Or faxed to (757) 201-7678

Or sent via e-mail to: CENAO.REG_ROD@usace.army.mil

Additional information on the Regulatory Program is available on our website at:

http://www.nao.usace.army.mil/

Please contact us at 757-201-7652 if you need any assistance with filling out this form.

Location and Information about Property to be subject to a Jurisdictional Determination:

- 1. Date of Request: October 19, 2020
- 2. Project Name: HRSD Middlesex Interceptor System Program Phase II Urbanna, Virginia to Mathews, Virginia Transmission Force Main
- 3. City or County where property located: Middlesex, Virginia and Mathews, Virginia
- 4. Address of property and directions (attach a map of the property location and a copy of the property plat): See attached Preliminary Design Plans.
- 5. Coordinates of property (if known): N/A
- 6. Size of property in acres: N/A
- 7. Tax Parcel Number / GPIN (if available): N/A

Revised: November 2013

- 8. Name of Nearest Waterway: Piankatank River, Urbanna Creek
- 9. Brief Description of Proposed Activity, Reason for Preapplication Request, and/or Reason for Jurisdictional Waters Determination Request:

The Project will consist of a new force main to convey wastewater from Middlesex County to HRSD's York River Treatment Plant and enable decommissioning of both the HRSD Urbanna and Central Middlesex Treatment Plants. The Project also includes installation of pump stations and equalizer tanks.

Because the Project includes crossings under the Piankatank River and Urbanna Creek via Horizontal Direction Drill (HDD) and wetland impacts may be possible along the transmission route, it is anticipated that a Jurisdictional Determination and submittal of a Joint Permit Application (JPA) will be required. It is anticipated that a subaqueous permit will be required from VMRC for the HDD crossings, and authorization under an applicable USACE Nationwide Permit may be required for authorization of any potential wetland impacts (impacts are to be determined via a wetland delineation in 2021).

While the Project is still in the preliminary design phase, the Project may require consultation under section 106 of the National Historic Preservation Act and coordination with the Virginia Department of Historic Resources (VDHR) and State Historic Preservation Officer (SHPO). By submitting this Pre-Application Consultation Request, it is HRSD's intent to initiate consultation with the USACE and VDHR as early as possible in the design process in order to identify any potential adverse effects to archaeological or architectural resources prior to submittal of a JPA. If section 106 consultation is likely to be required for the activities described within the attached documents, HRSD would like to initiate consultation as early as possible in order to avoid unanticipated delays to the Project schedule.

10. Has a wetland delinea				a consultant or t	he Corps on the
property previously?	YES YES	\boxtimes NO	UNKNOWN		

If yes, please provide the name of the consultant and/or Corps staff and Corps permit number, if available:

Property Owner Contact Information:

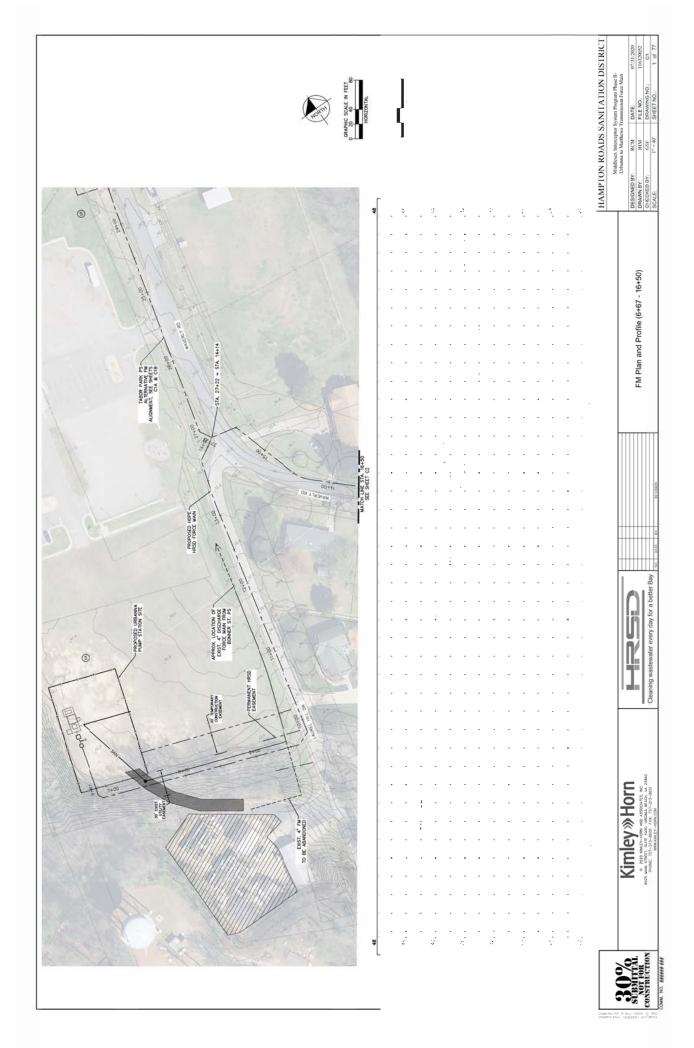
Property Owner Name: See attached preliminary design plans

Mailing Address: City: State: Zip: Daytime Telephone: E-mail Address:

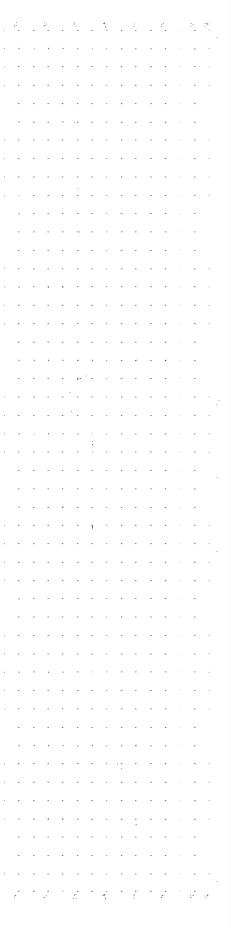
If the person requesting the Jurisdictional Determination is **NOT** the Property Owner, please also supply the Requestor's contact information here:

Requestor Name: HRSD; Mailing Address: City: State: Zip:	
Daytime Telephone:	
E-mail Address:	
Additionally, if you have any of the following informatio delineation map, other relevant maps, drain tile survey, to	- · · · · · · · · · · · · · · · · · · ·
CERTIFICATION: I am hereby requesting a preapplication consultate determination from the U.S. Army Corps of Engineers, for the proper authorized representatives of the Norfolk District Corps of Engineers the premises of the project site at reasonable times to evaluate inspect the property is superior to, takes precedence over, and waives any coproperty is posted as "no trespassing" this consent specifically supered to enter the property despite such posting. I hereby certify that the induction is accurate and complete:	rty(ies) I have described herein. I agree to allow the duly and other regulatory or advisory agencies to enter upon t and photograph site conditions. This consent to enter mmunication to the contrary. For example, if the sedes and waives that prohibition and grants permission
Property Owner's Signature Date	

Revised: November 2013







	Beery Intercentor	Middlesex Interceptor System Program Phase II- Irbanna to Matthews Transmission Force Main	
Midd	nma to Matthews	I dissiliation a very reason	≐.∈
DESIGNED BY:	RCM	DATE:	07/31/2020
DRAWN BY:	JHM	FILE NO.:	116320052
CHECKED BY:	GSF	DRAWING NO.:	C1A
SCALE	1+40	SHEET NO.	2 of 77

Tabor Park PS Alternative FM Alignment Plan and Profile (7+27 - 19+00)



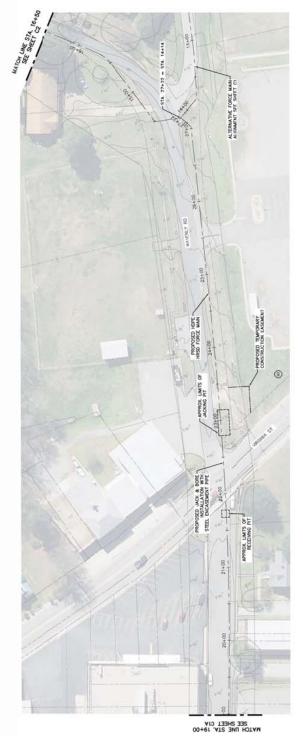
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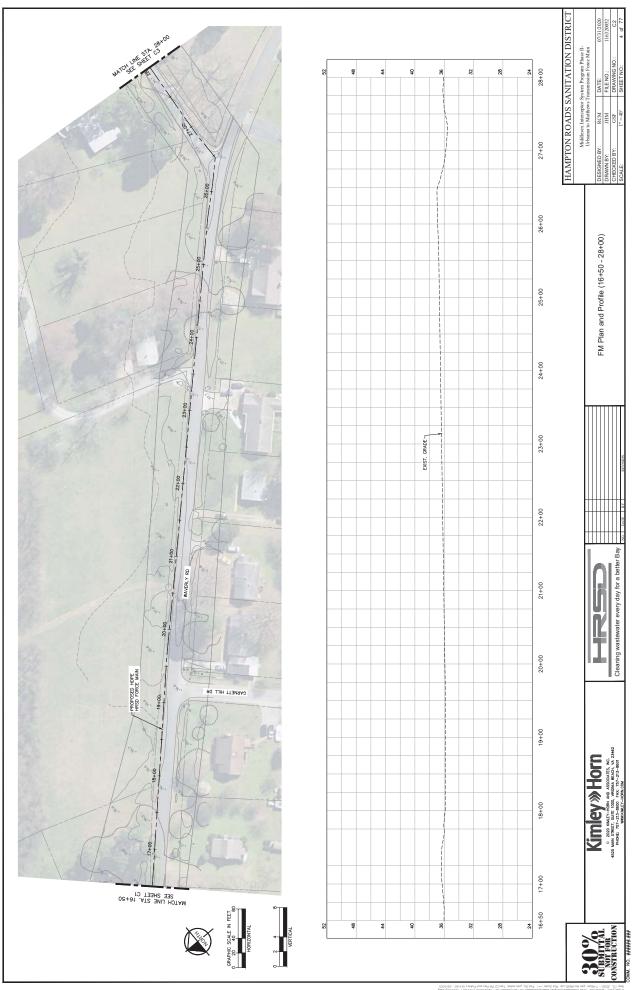


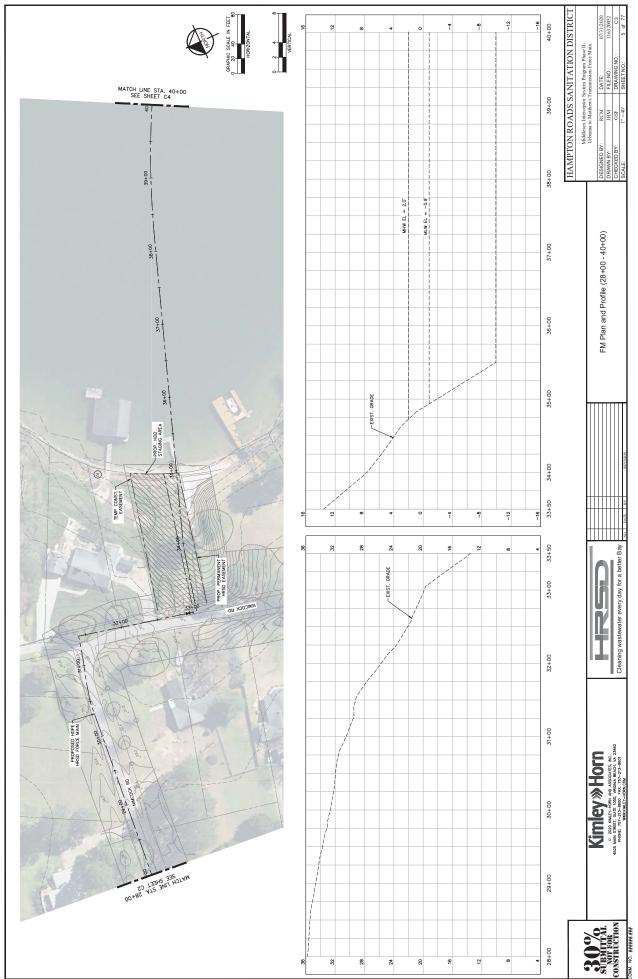
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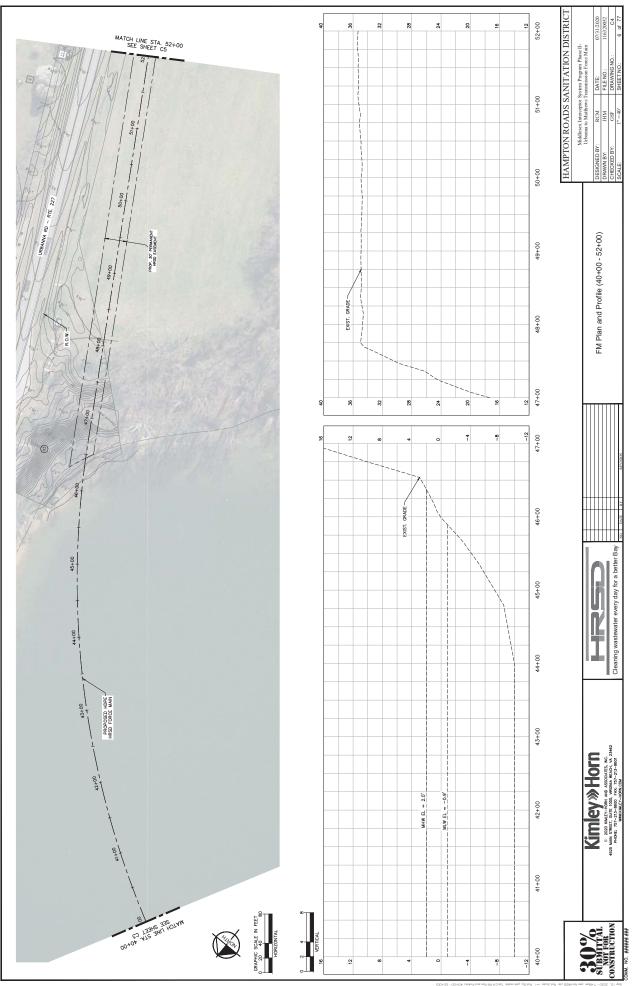
HAMPTON ROADS SANITATION DISTRICT	Middlesex Interceptor System Program Phase II- Urbanna to Matthews Transmission Force Main

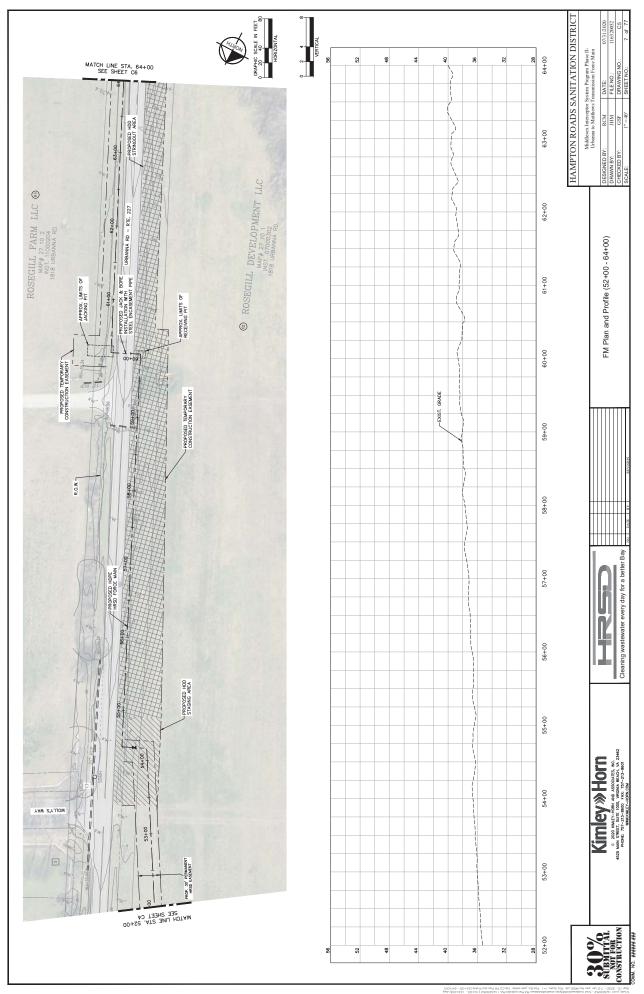
Midd	lesex Interceptor nna to Matthews	Middlesex Interceptor System Program Phase II- Urbanna to Matthews Transmission Force Main	
DESIGNED BY:	RCM	DATE:	07/31/2020
DRAWN BY:		FILE NO.:	116320052
CHECKED BY:	CSF	DRAWING NO.:	C1B
	I.	41.4	

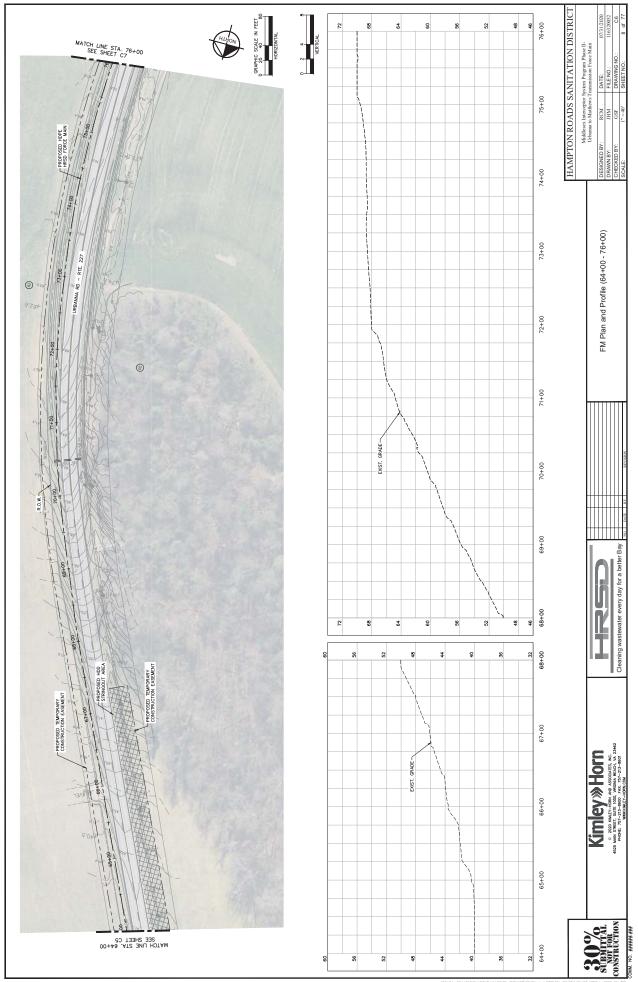
Tabor Park PS
Alternative FM Alignment
Plan and Profile (19+00 - 27+22)

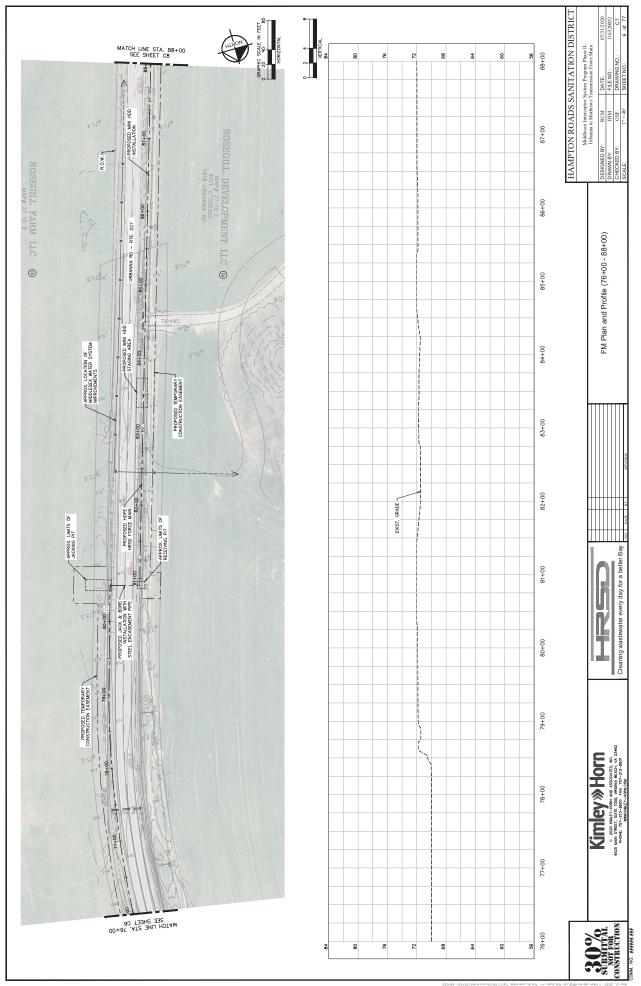


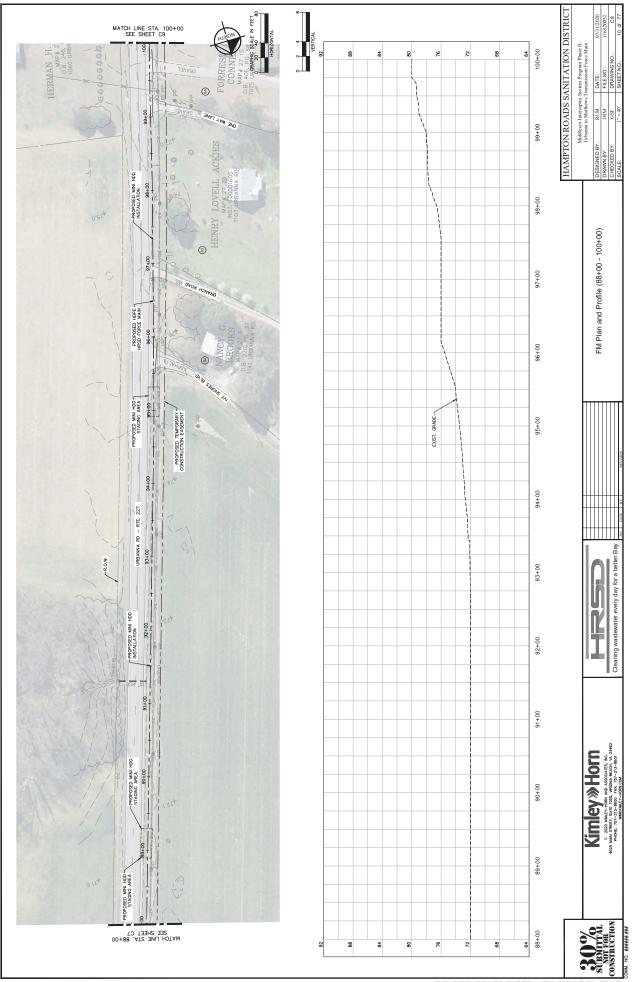


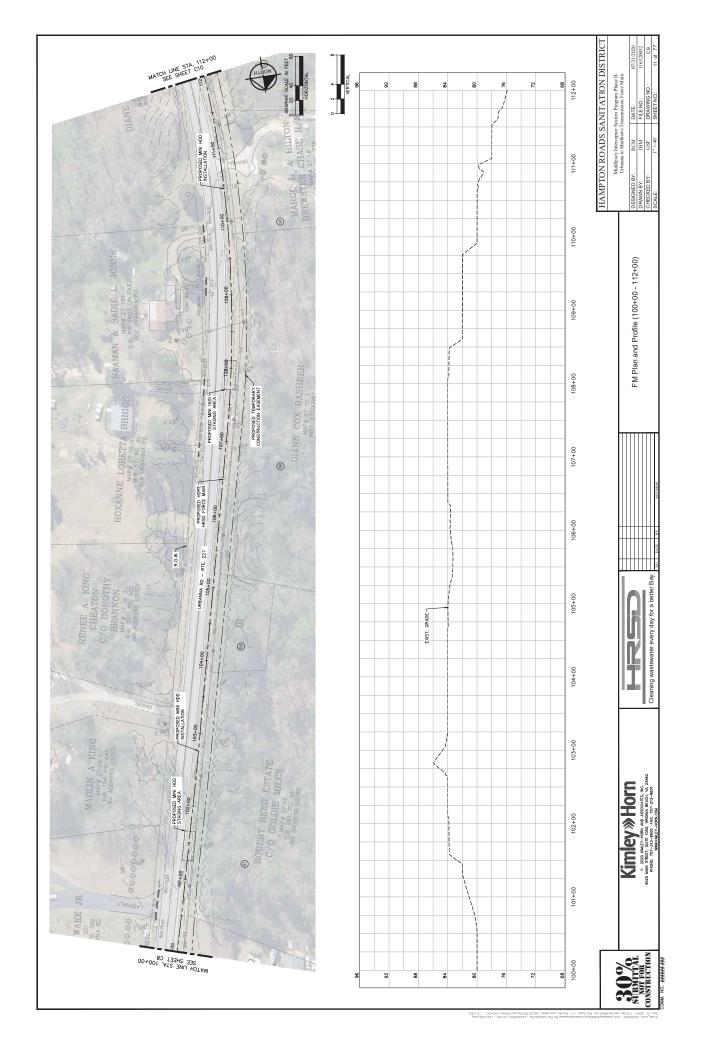


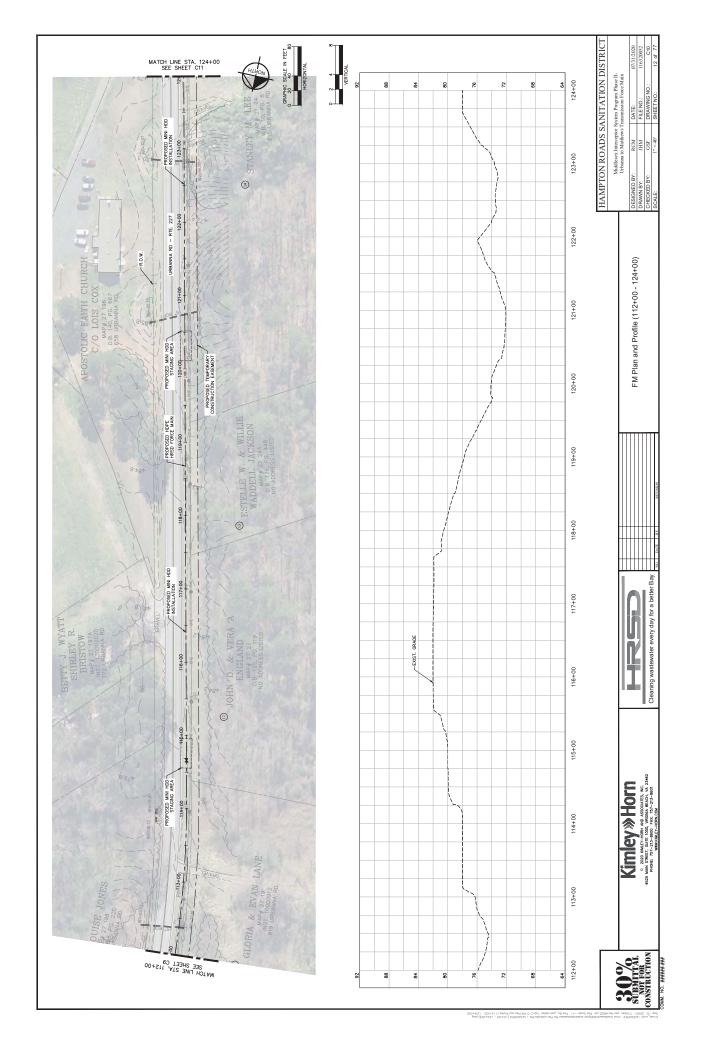


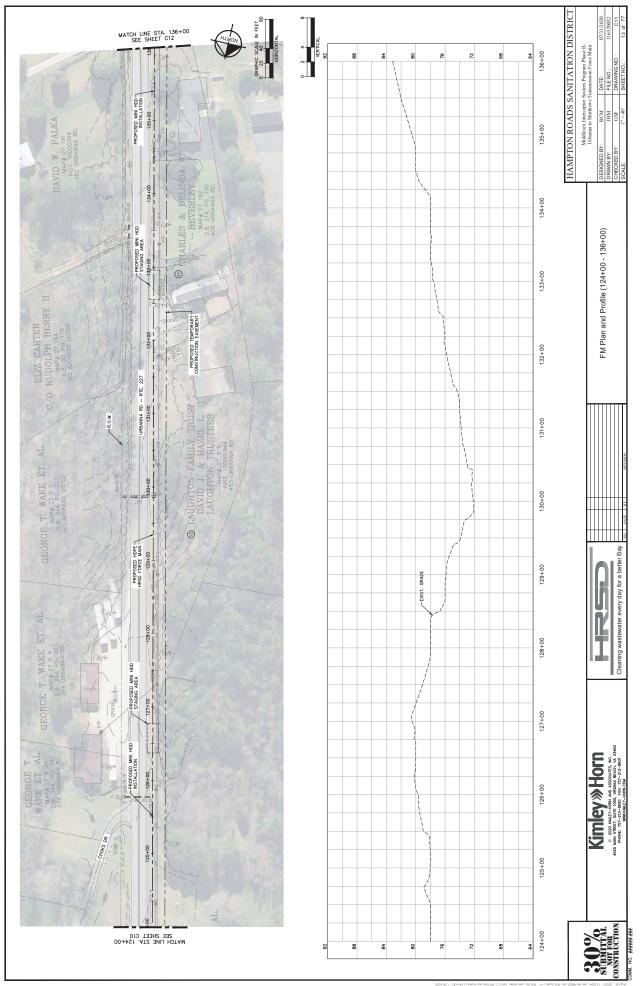


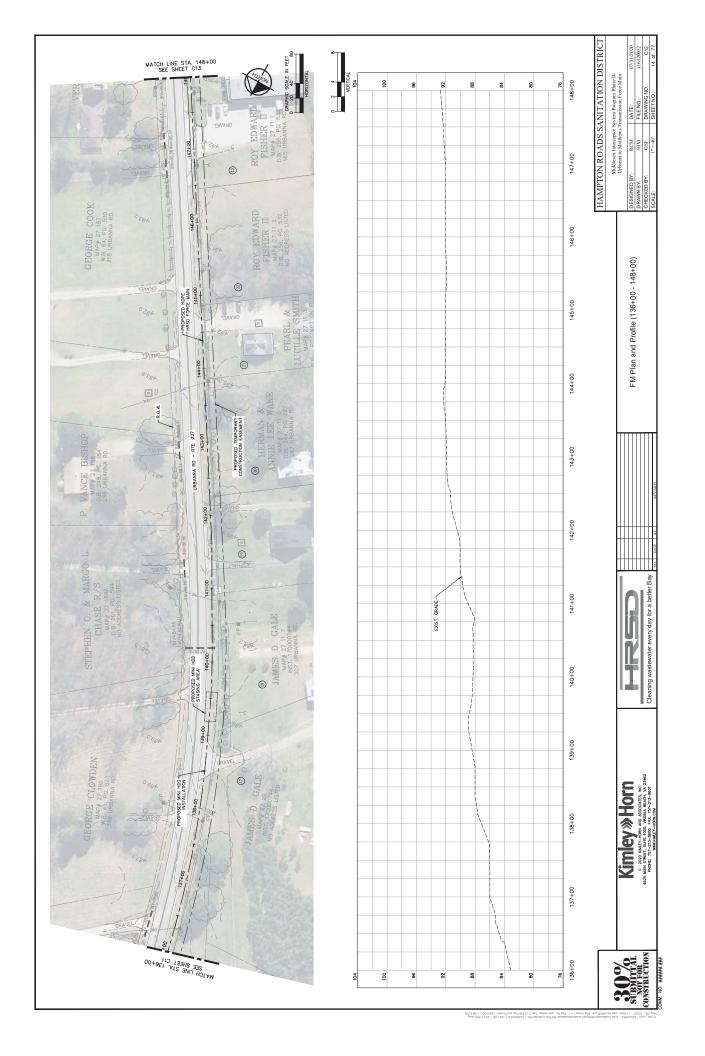


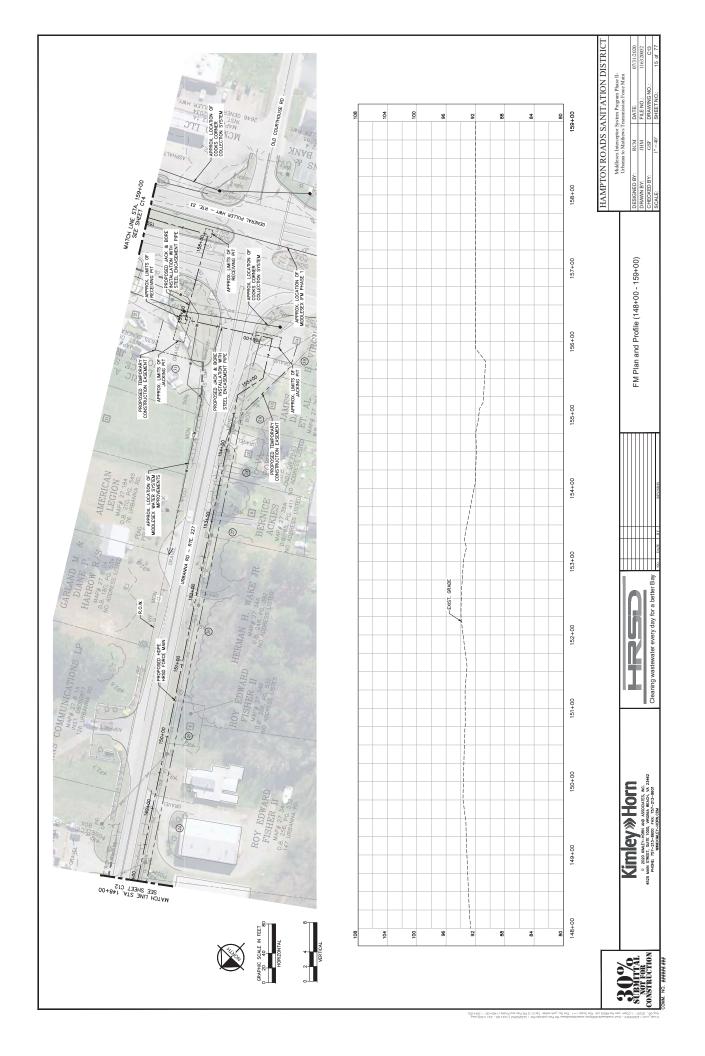


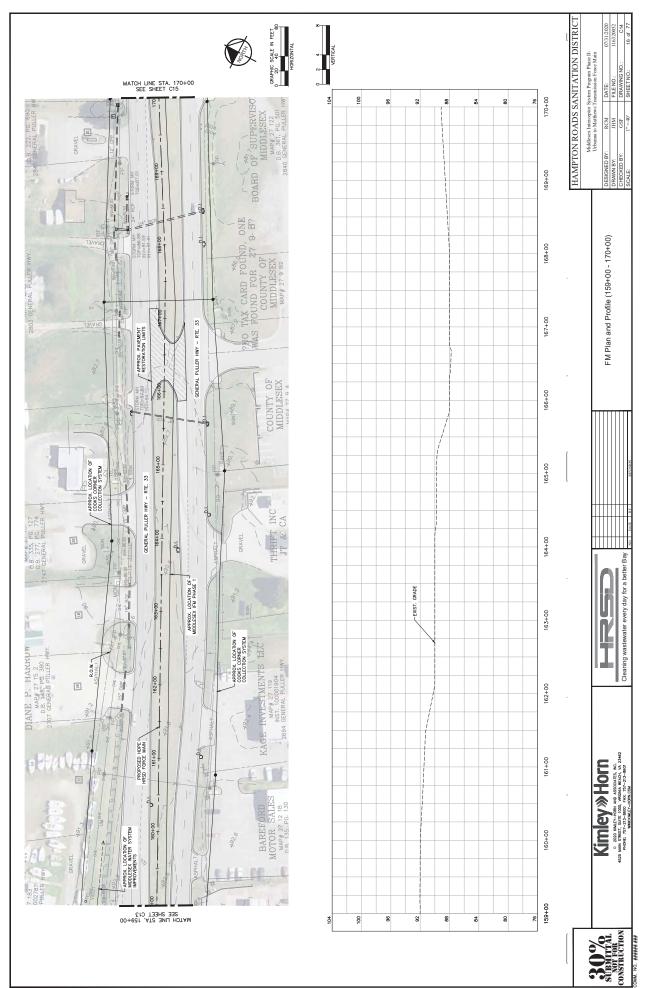


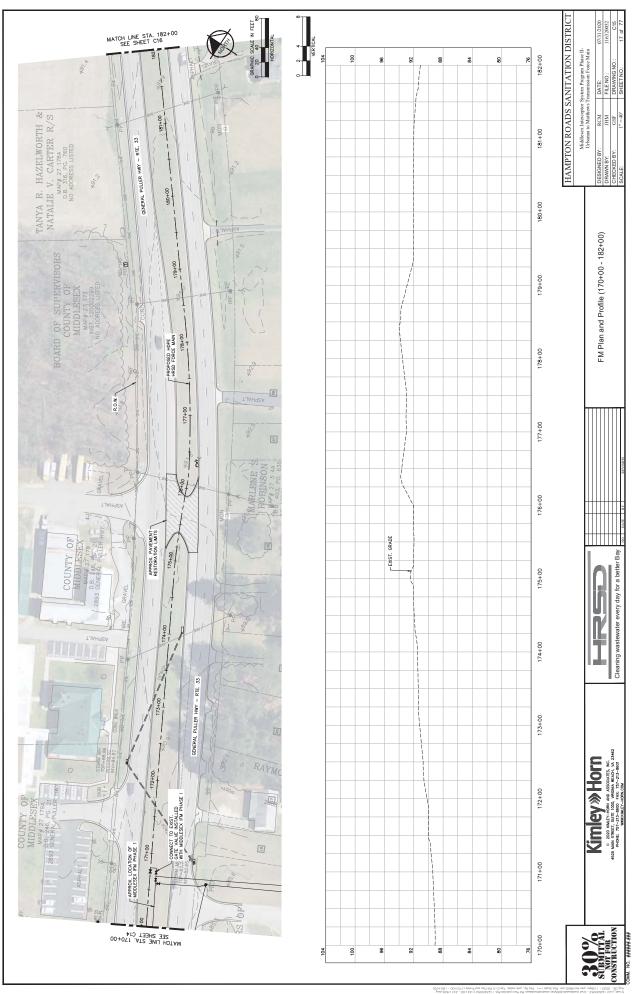


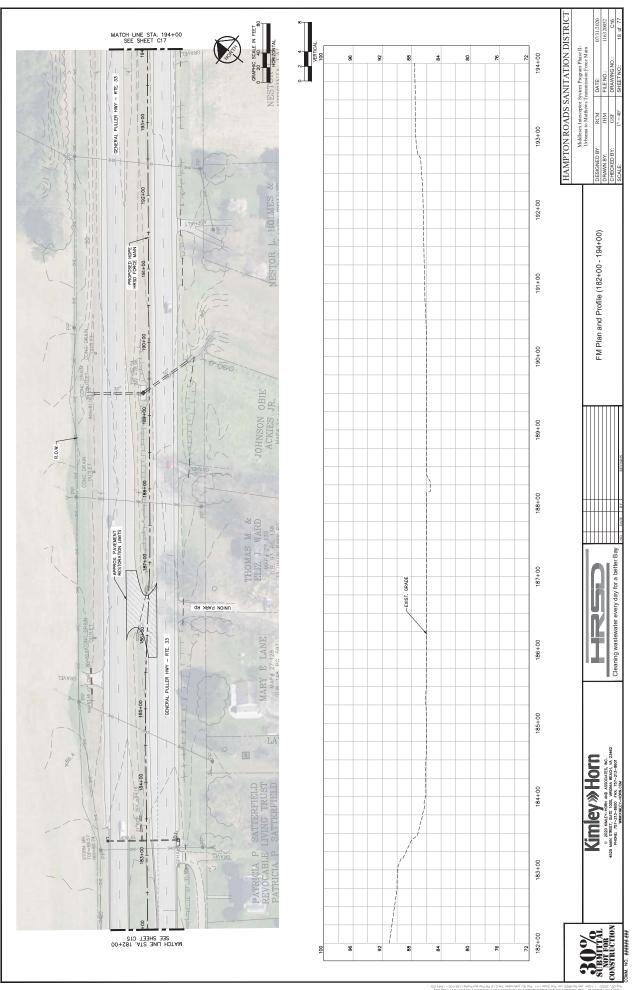


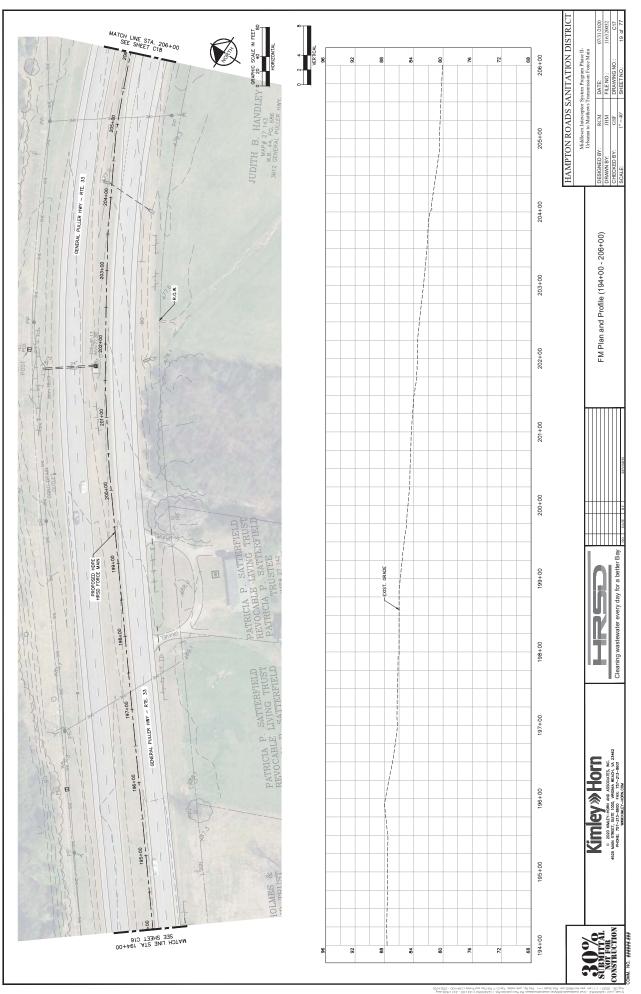


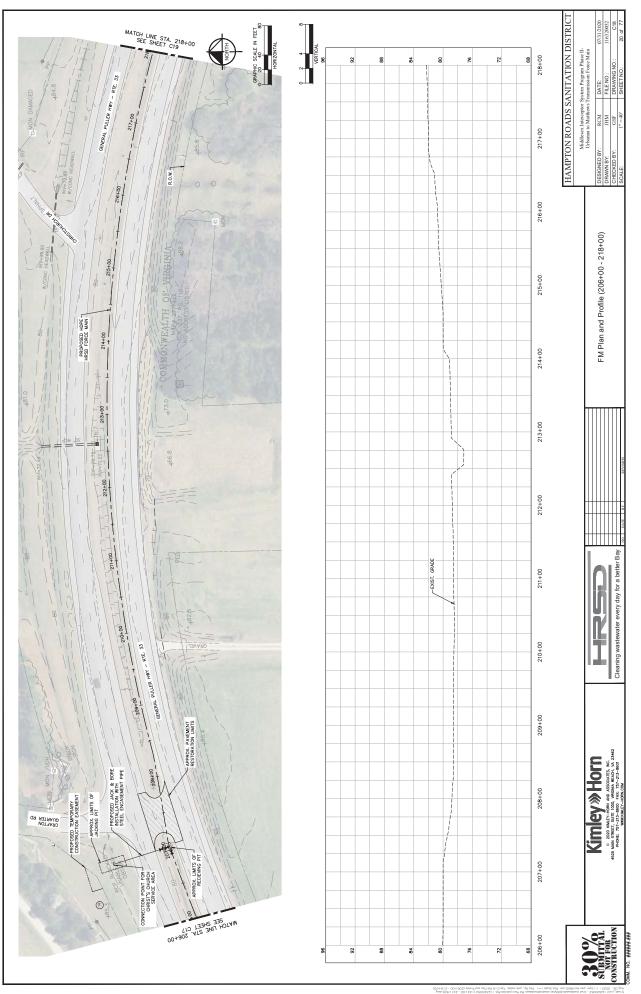


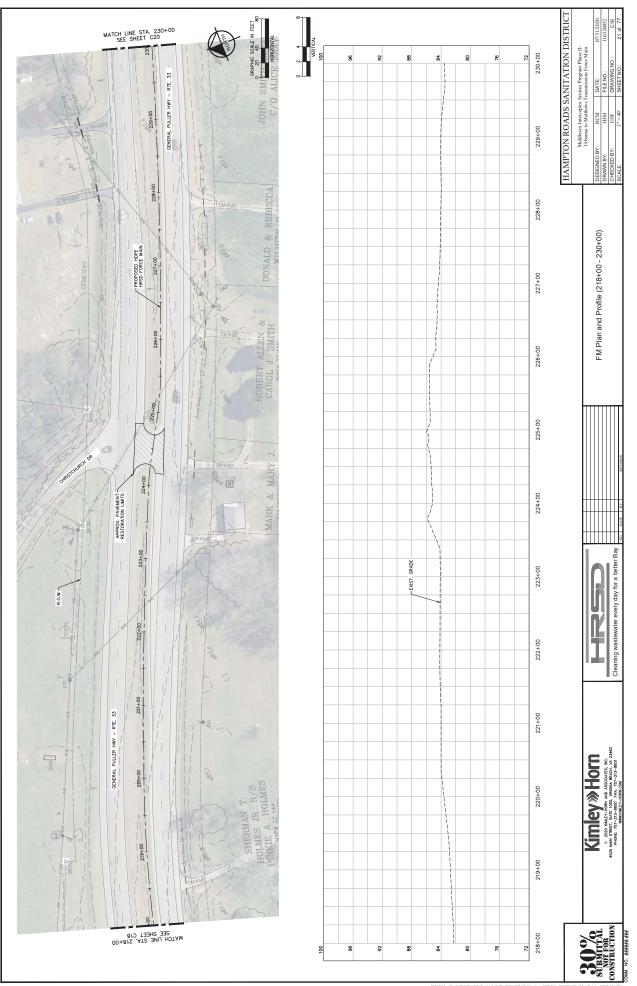


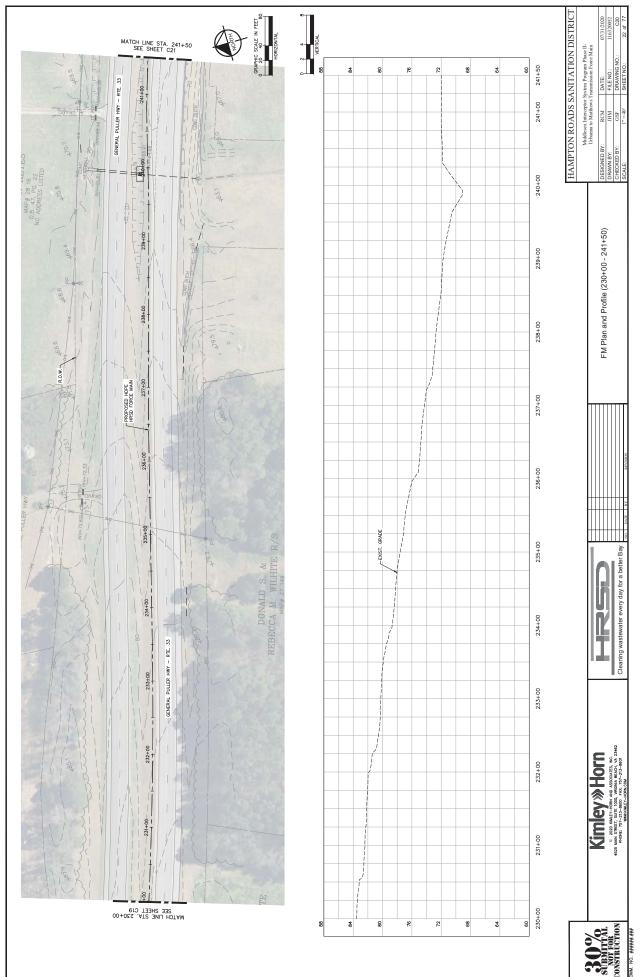


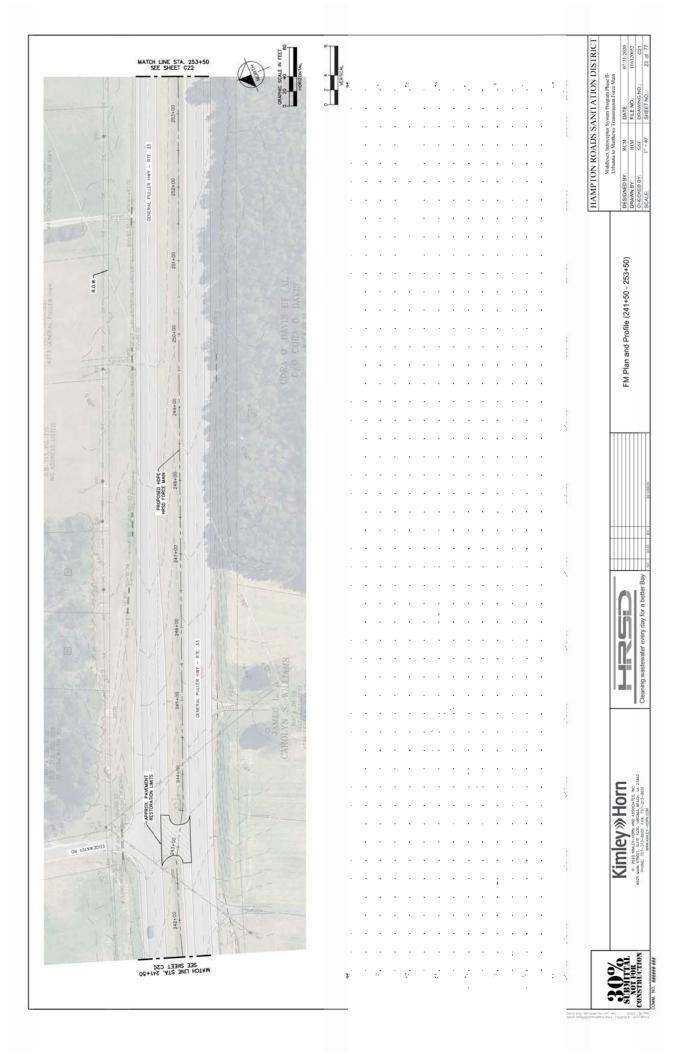


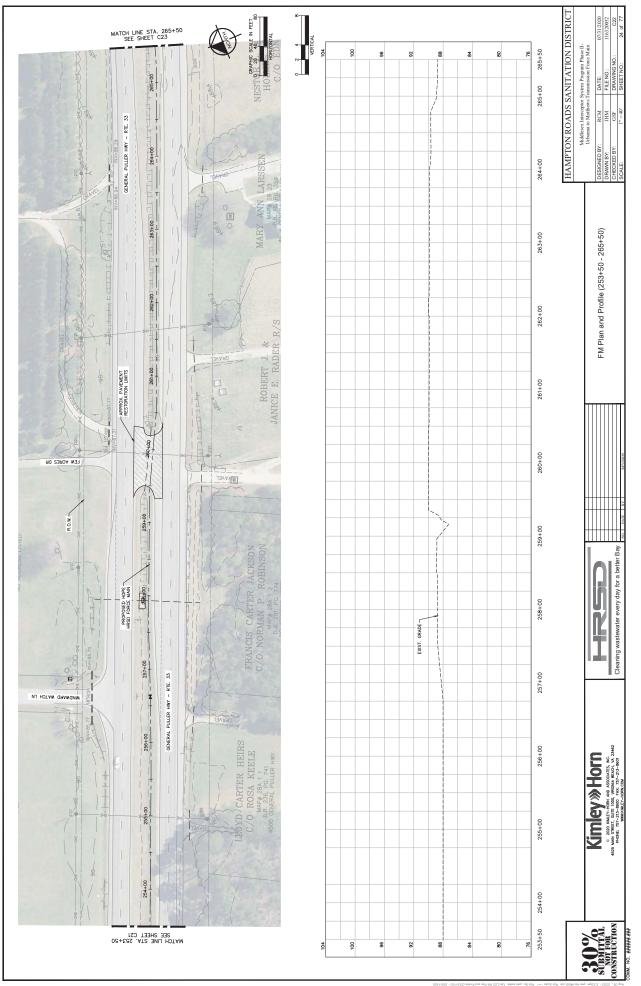


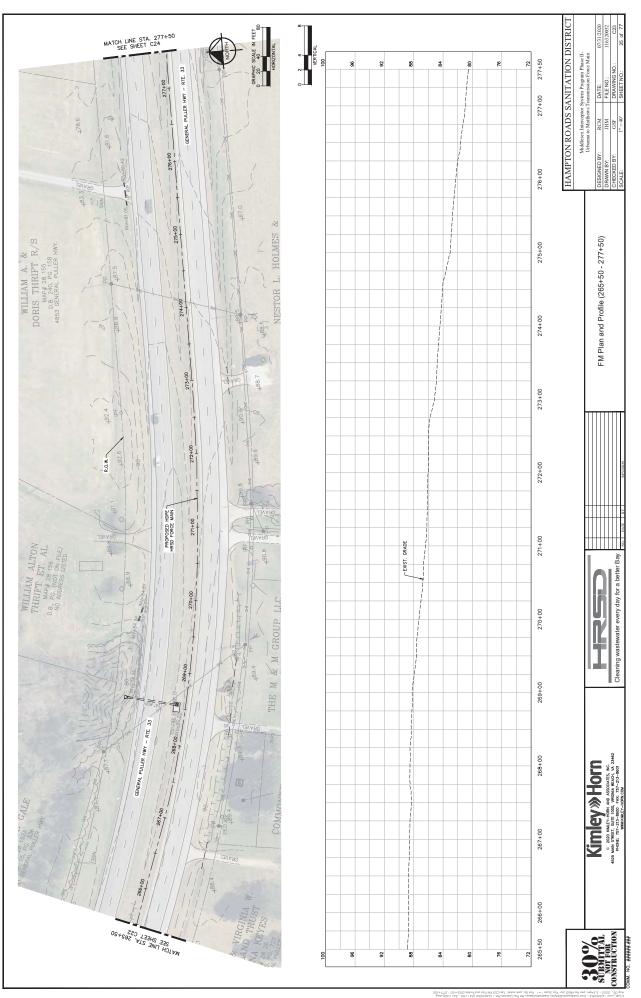












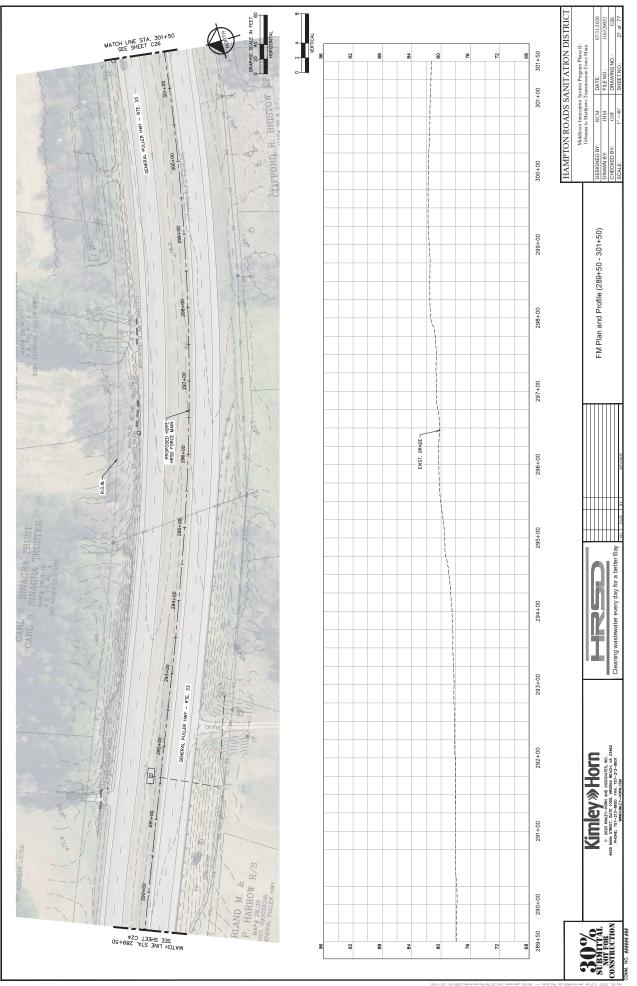


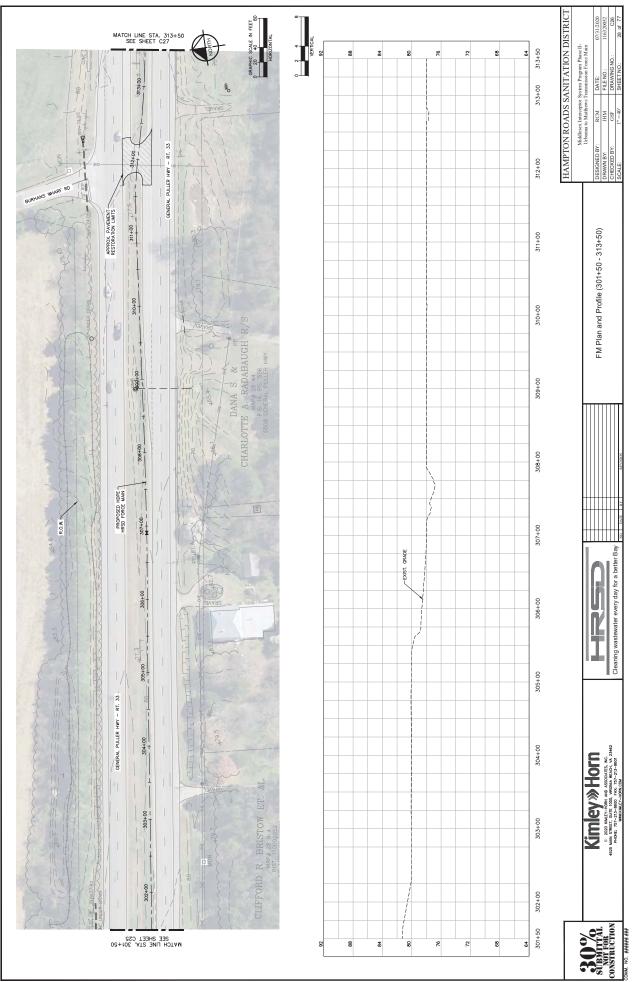
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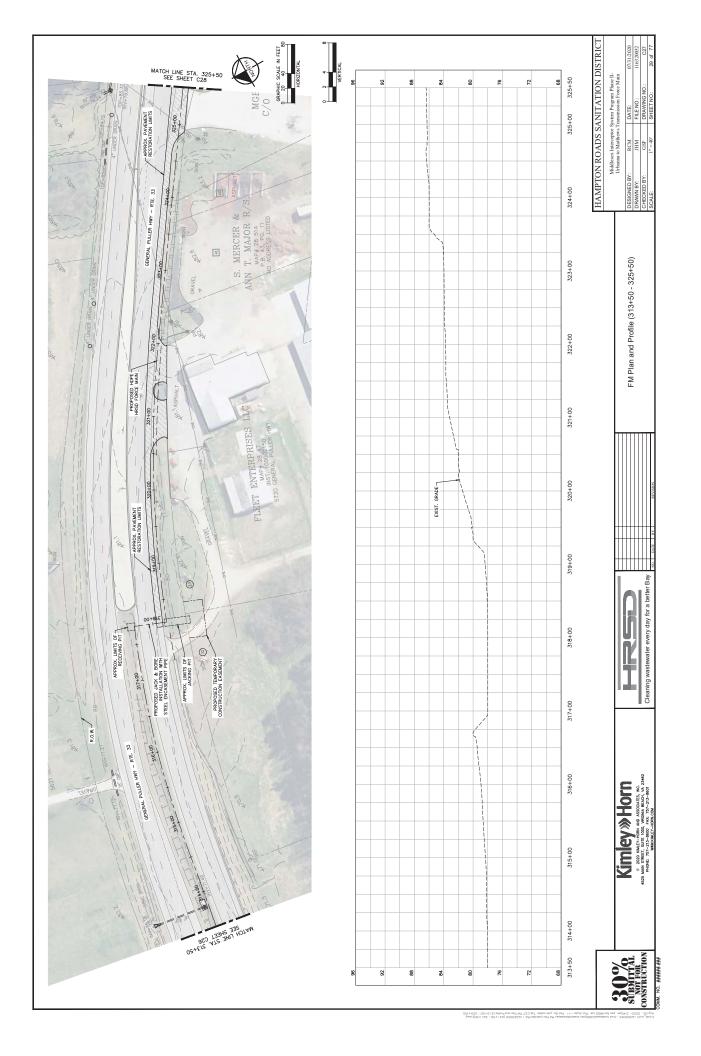
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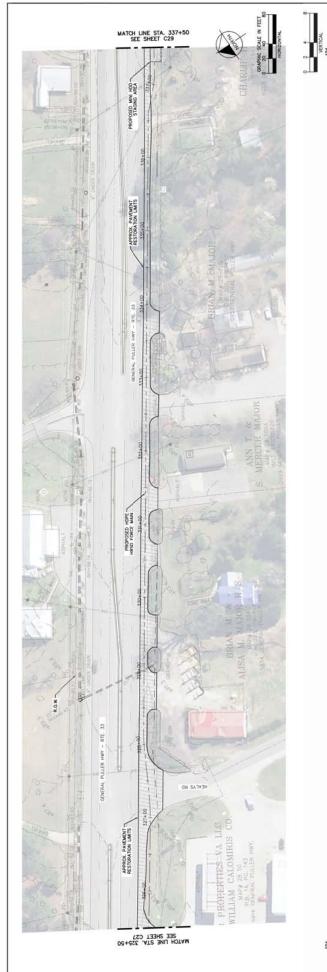
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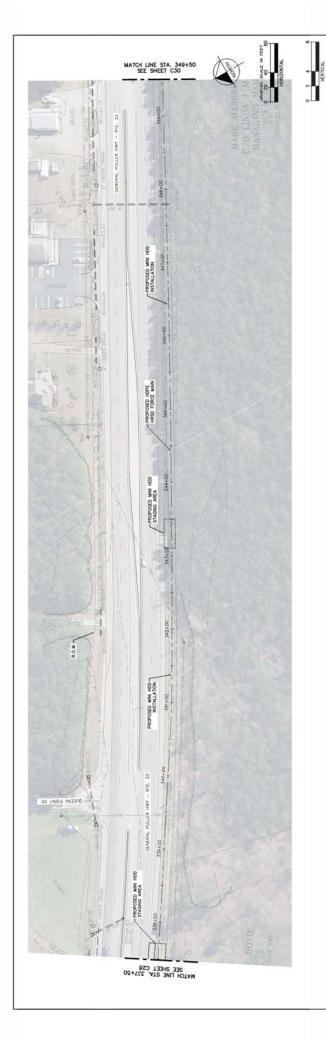
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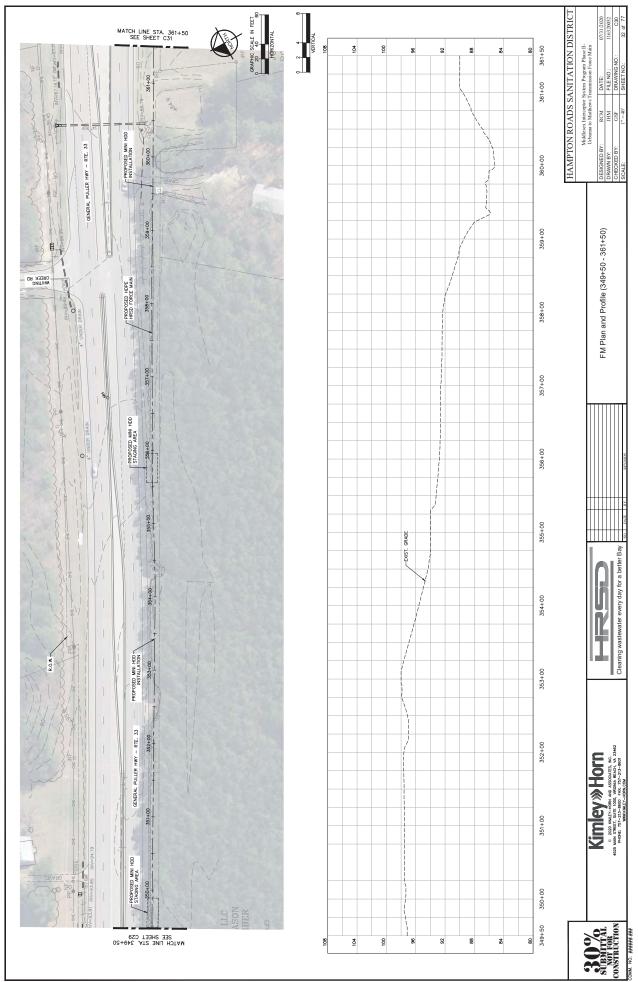
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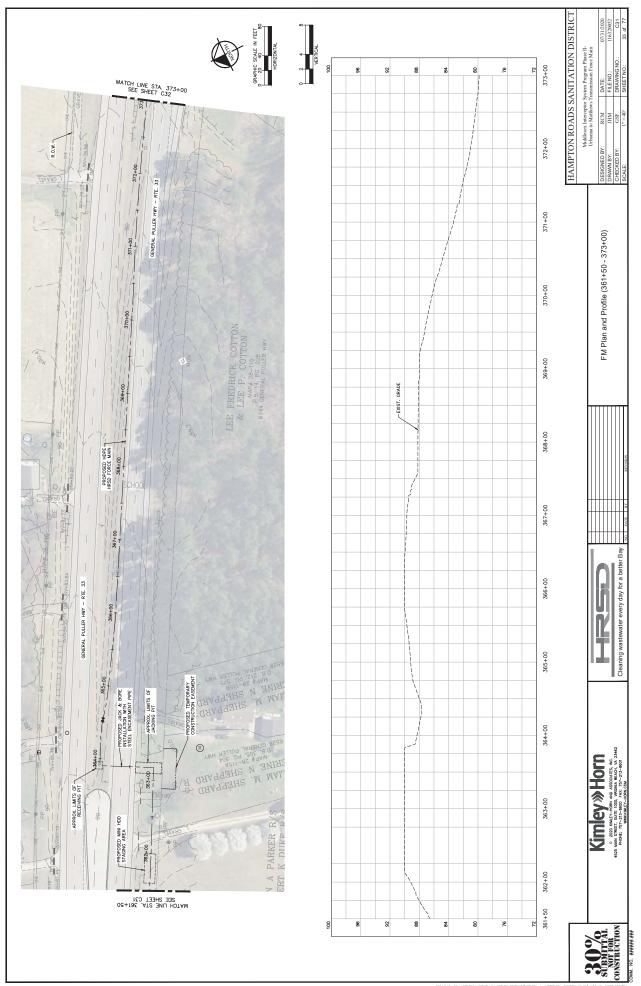
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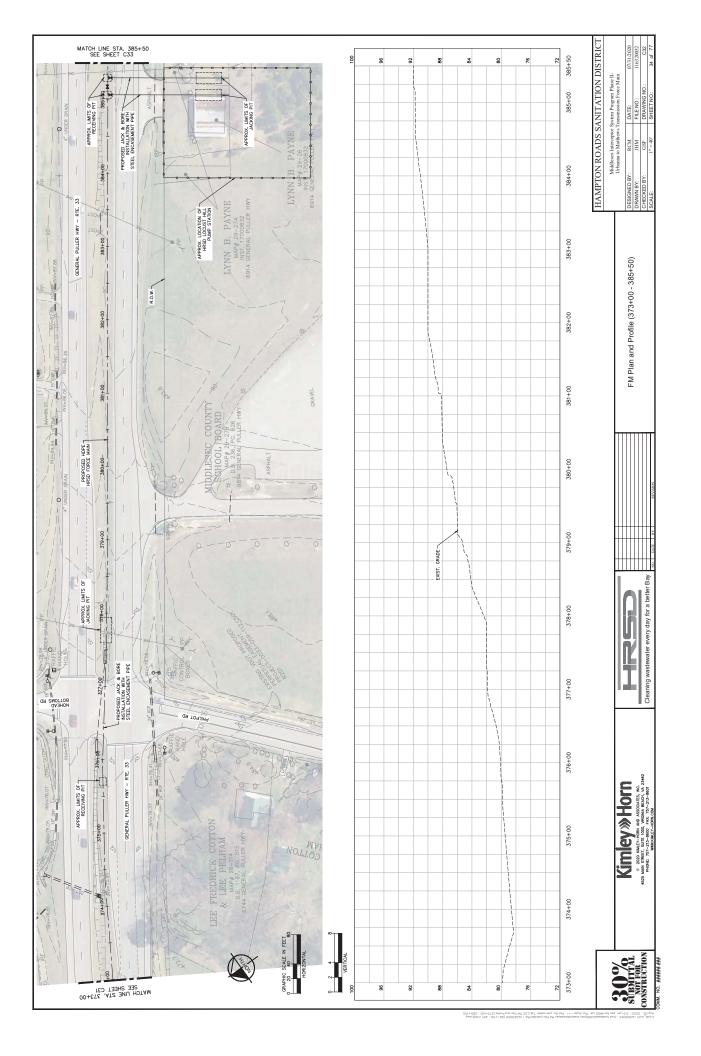
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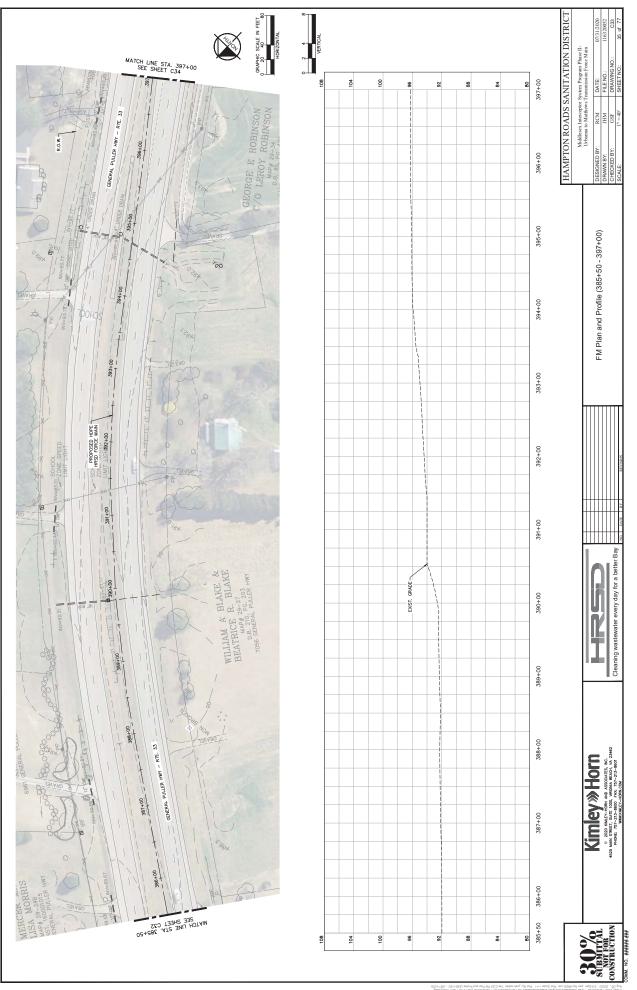
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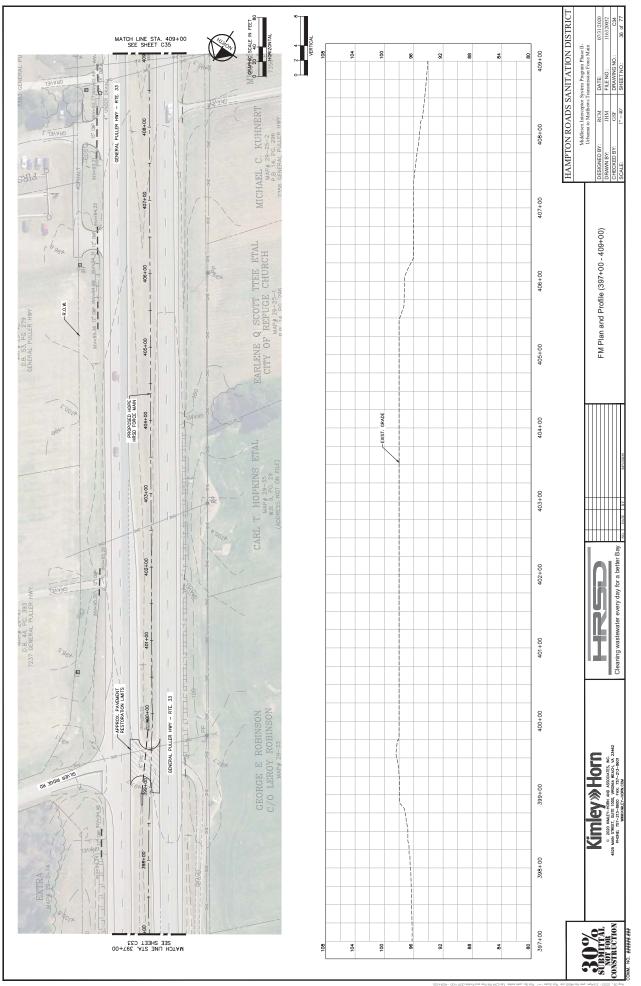


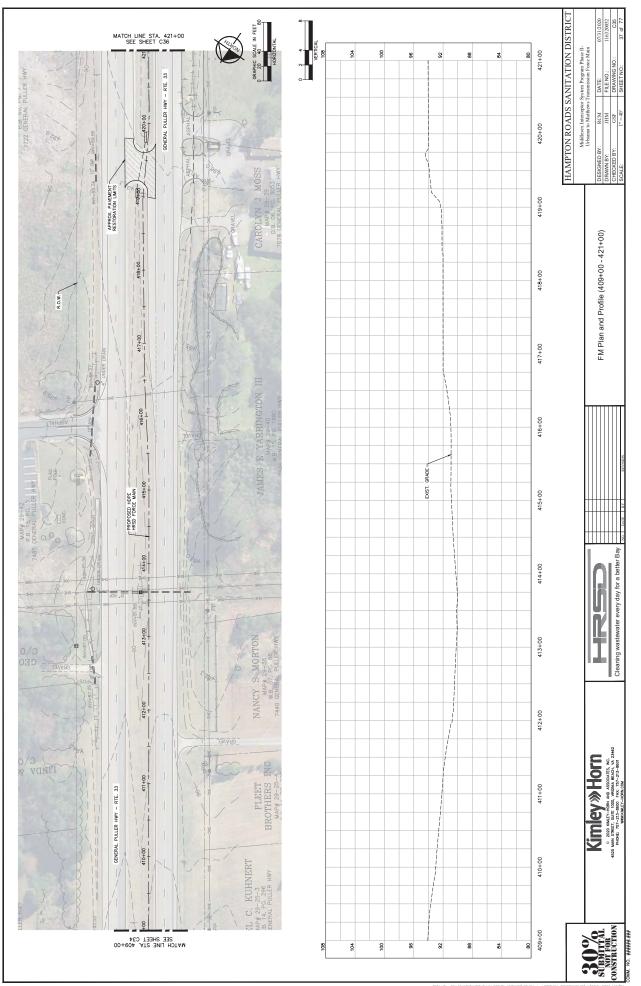


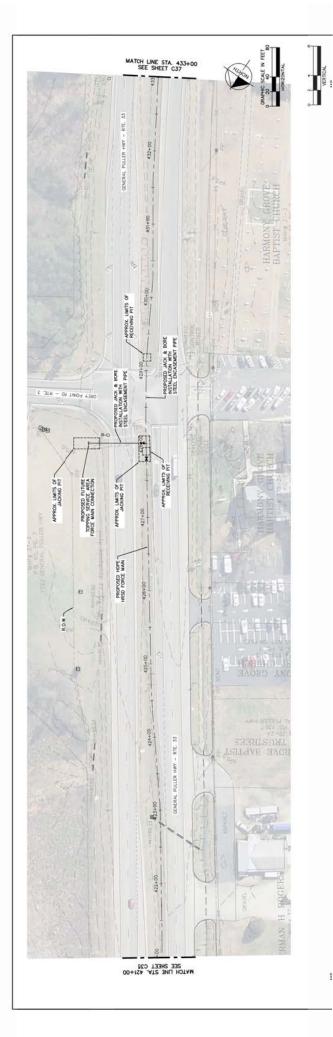










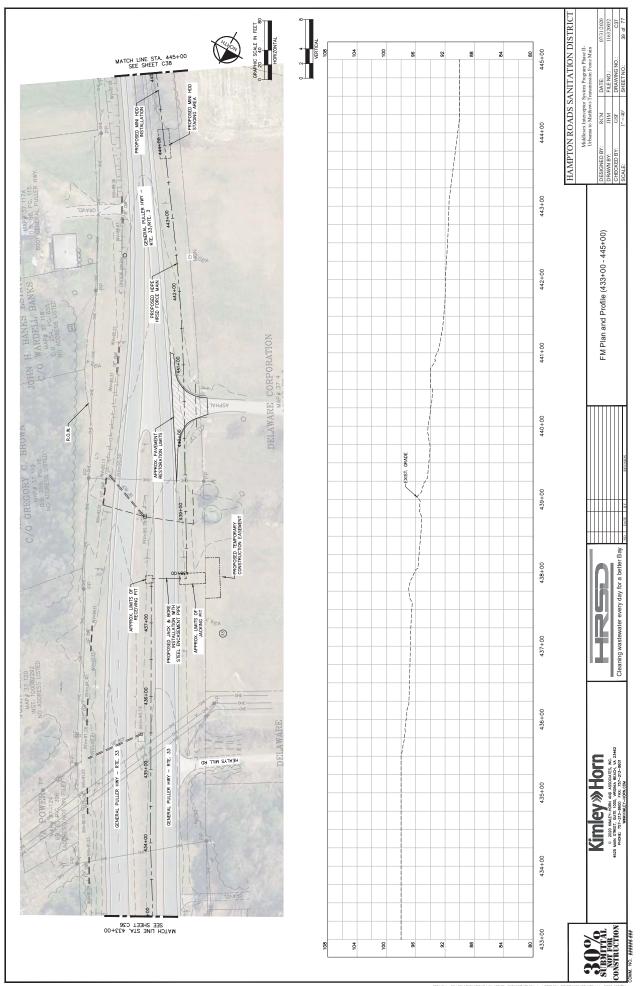


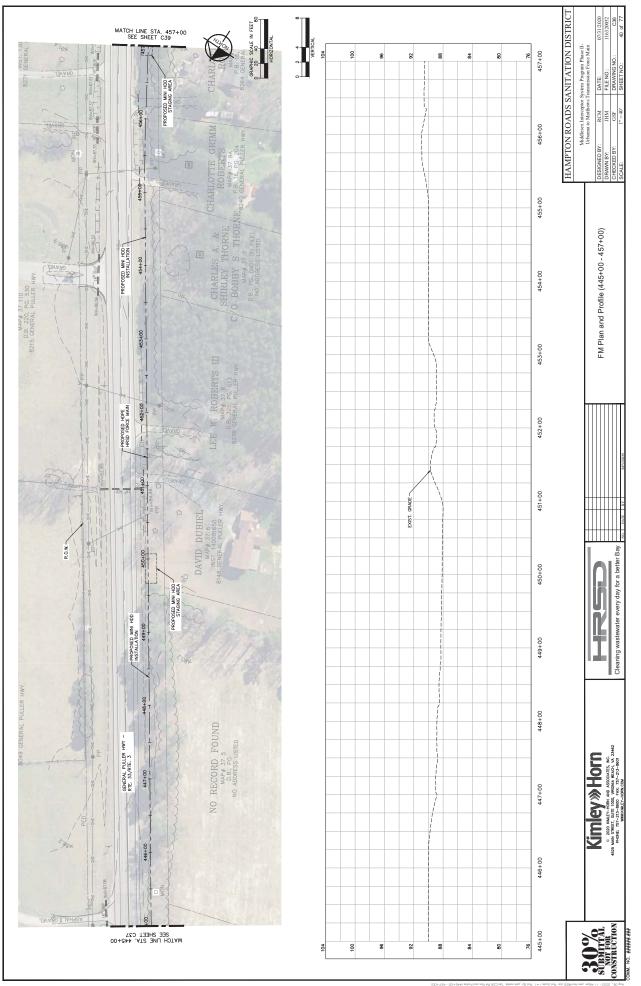
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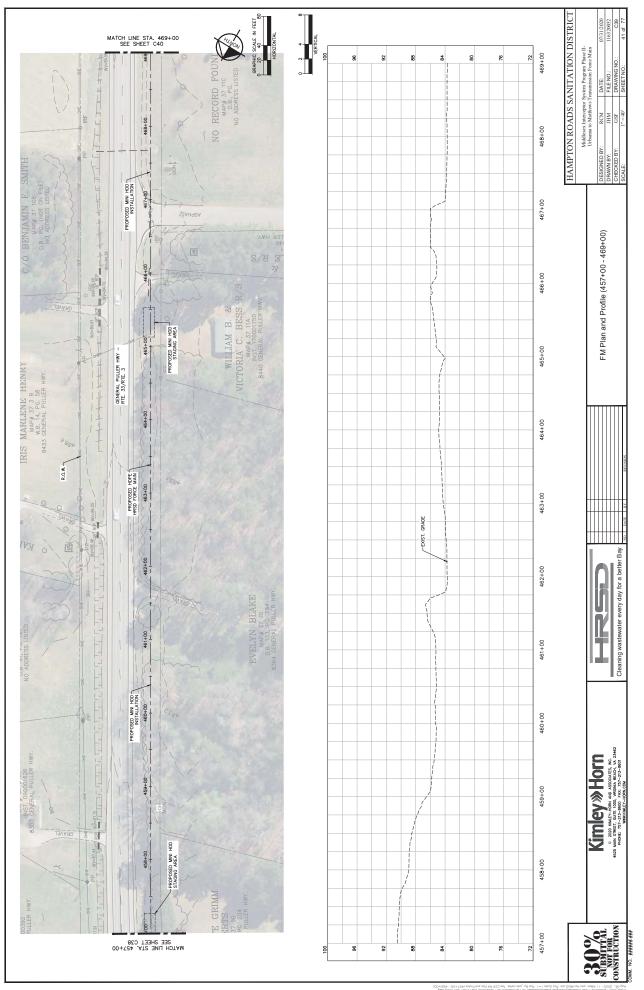
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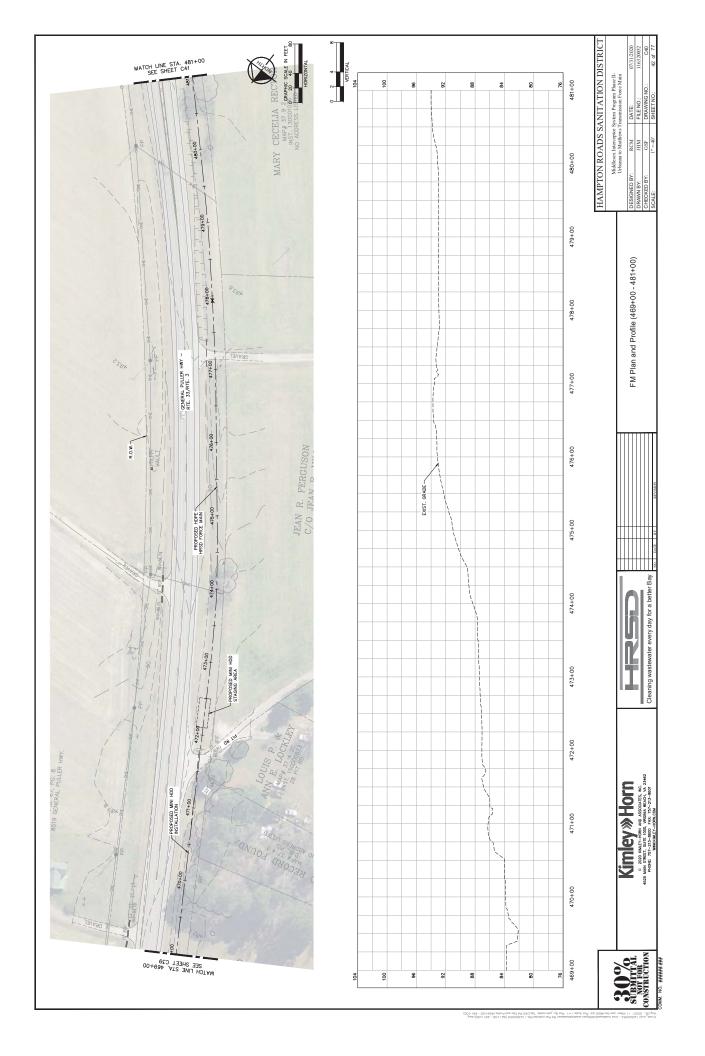
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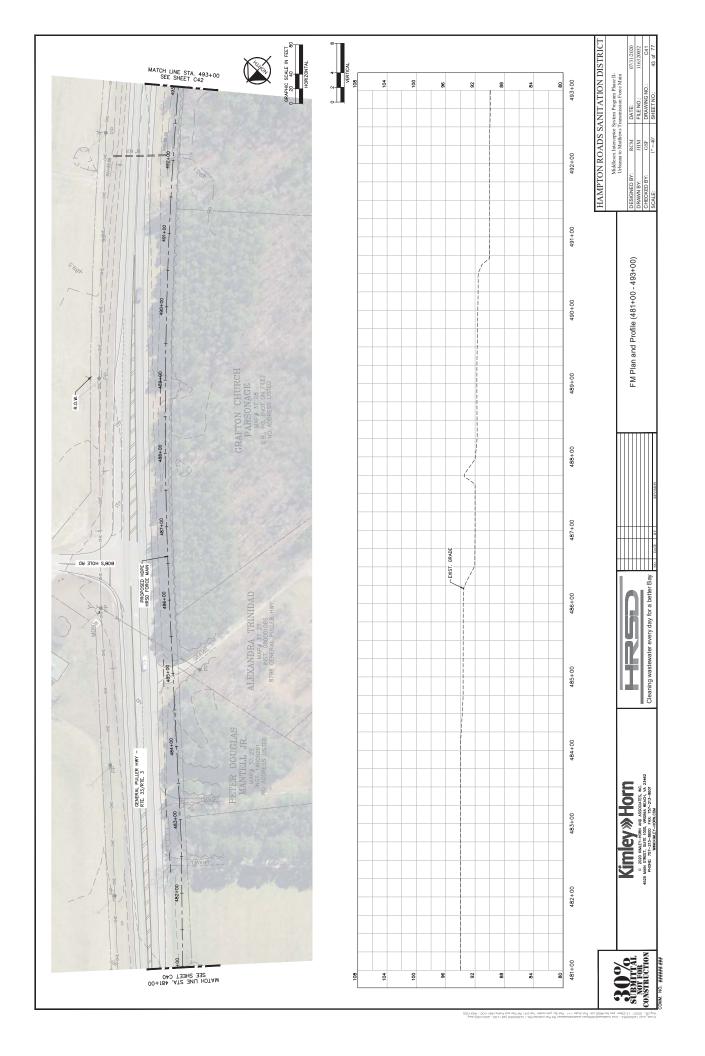
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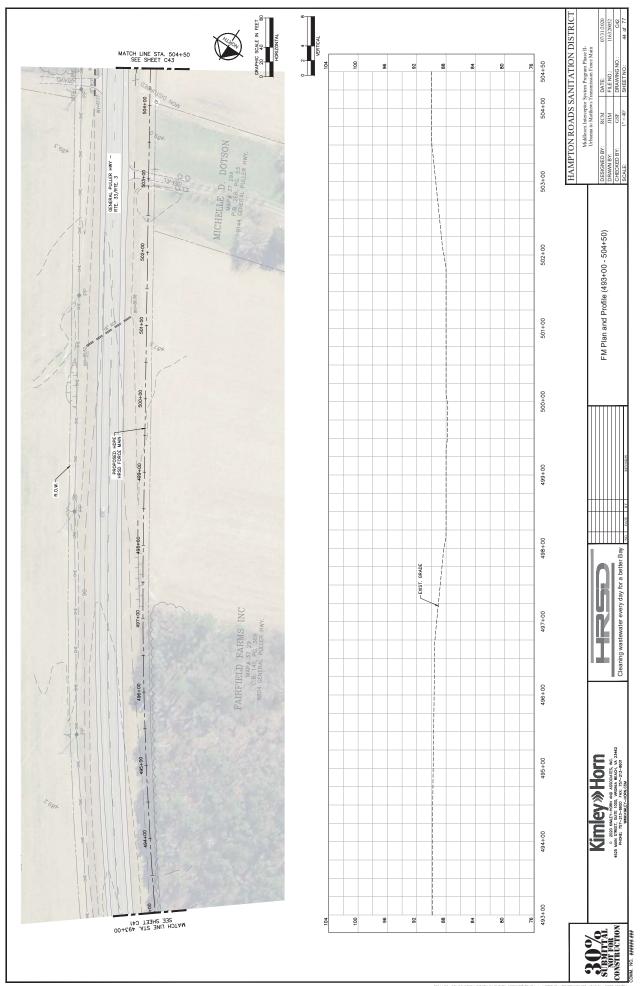


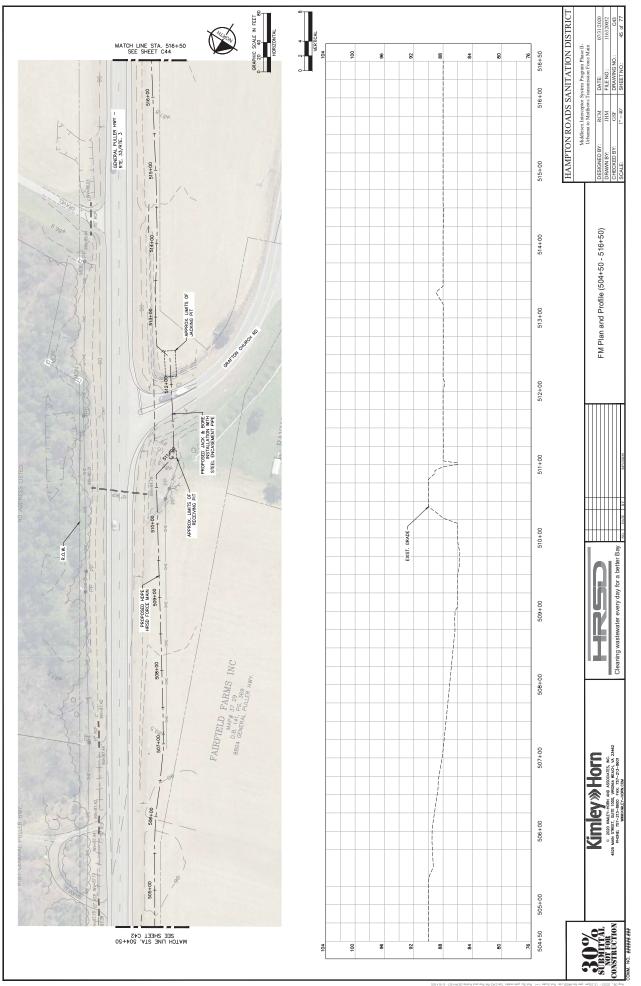


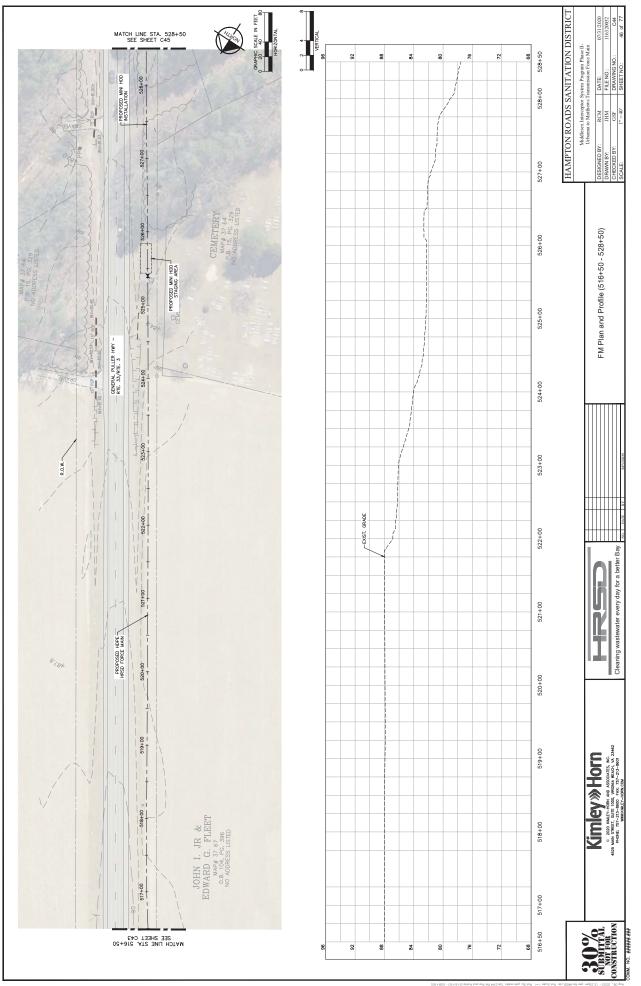


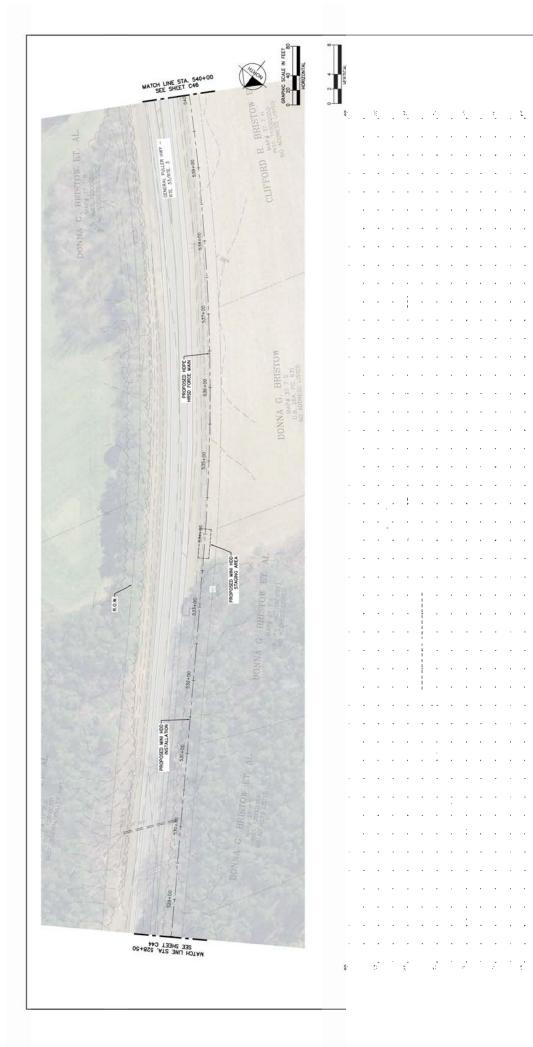








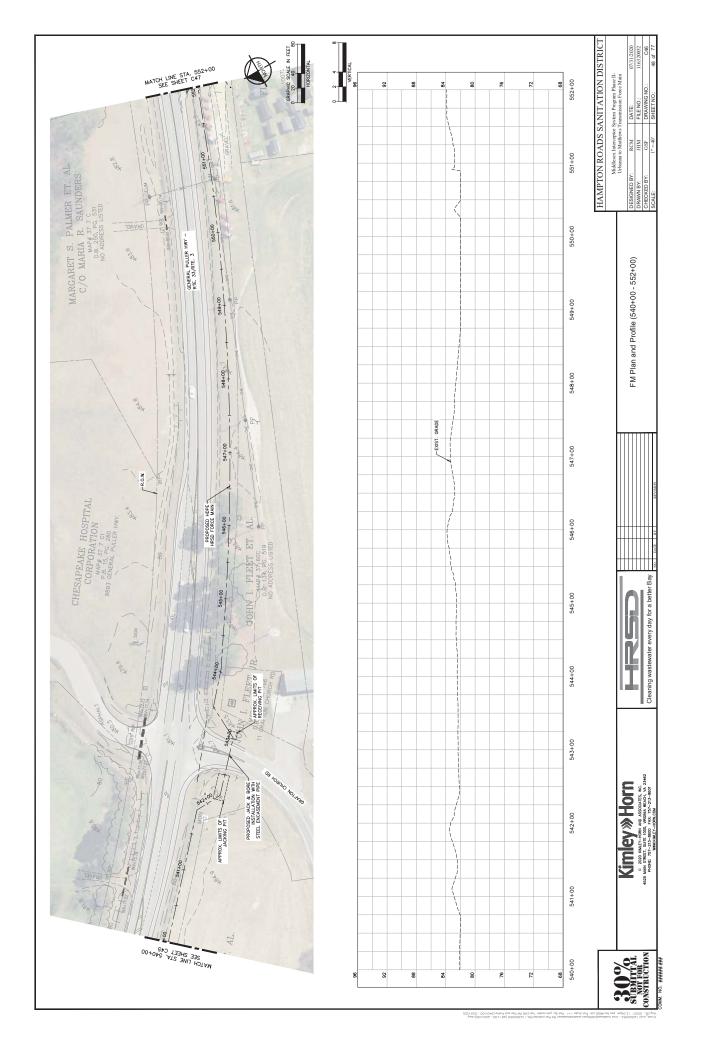


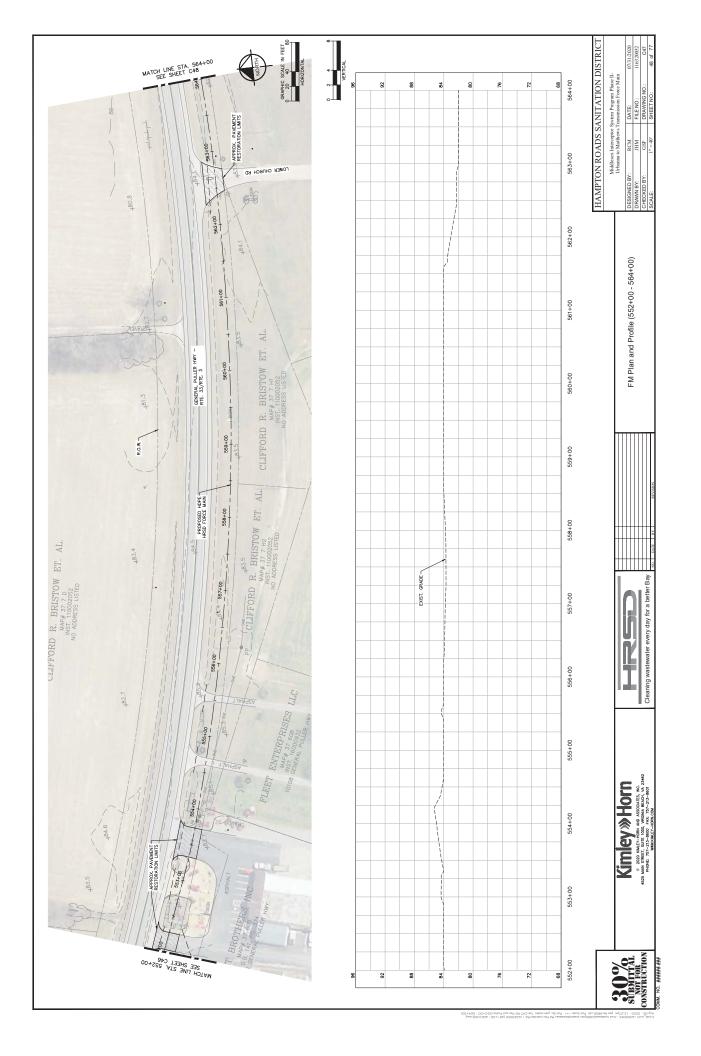


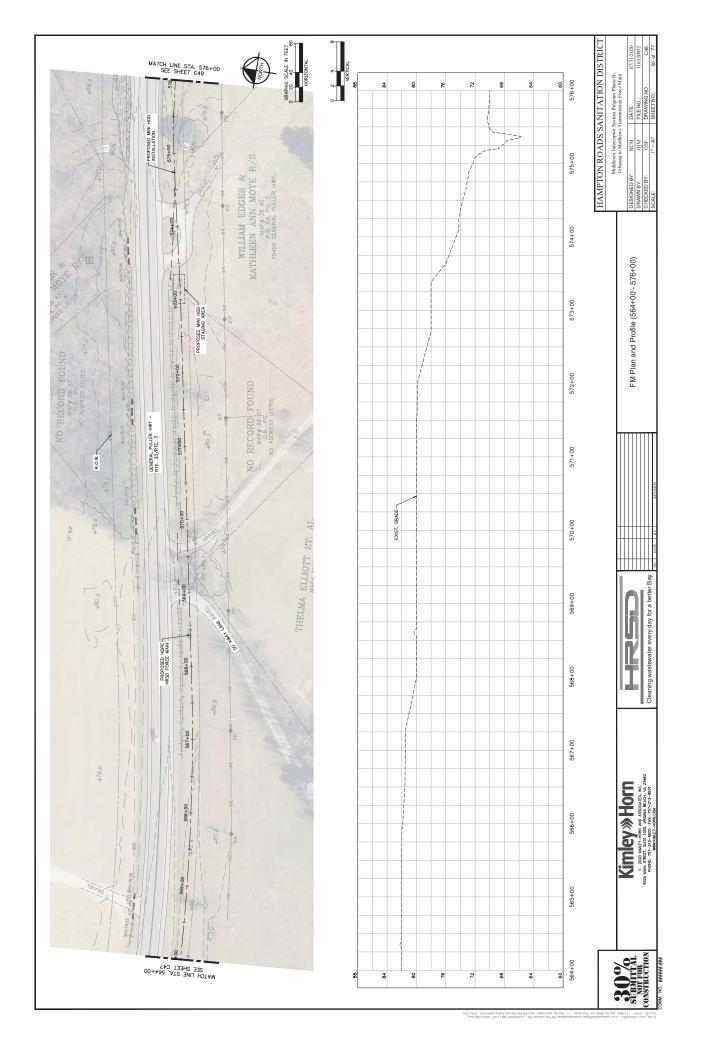
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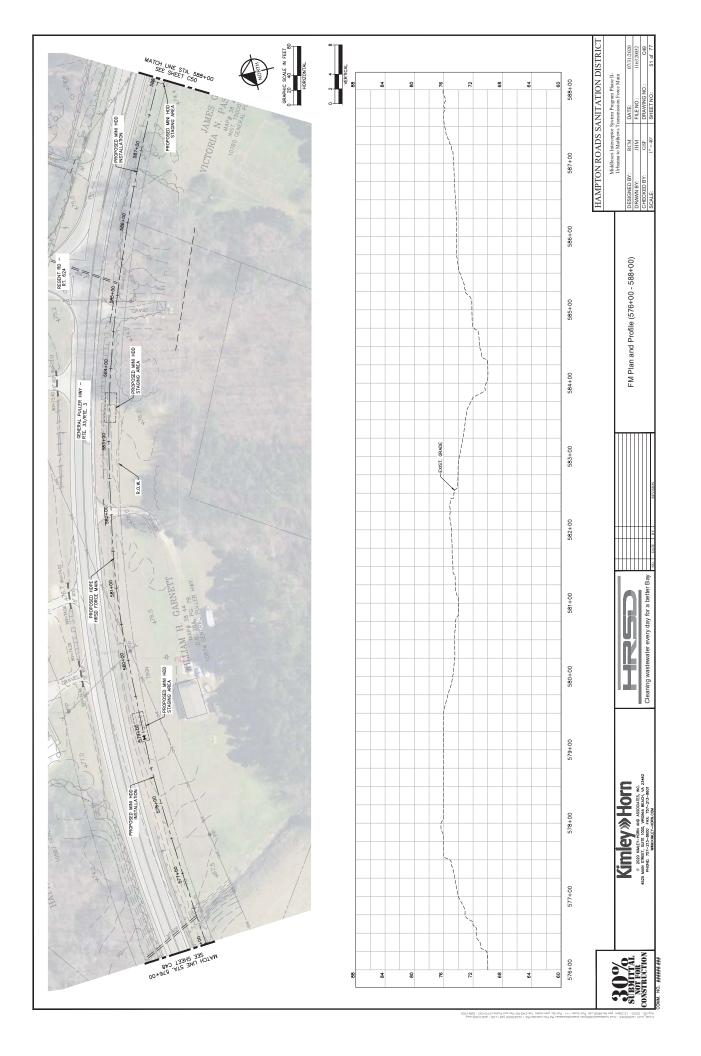
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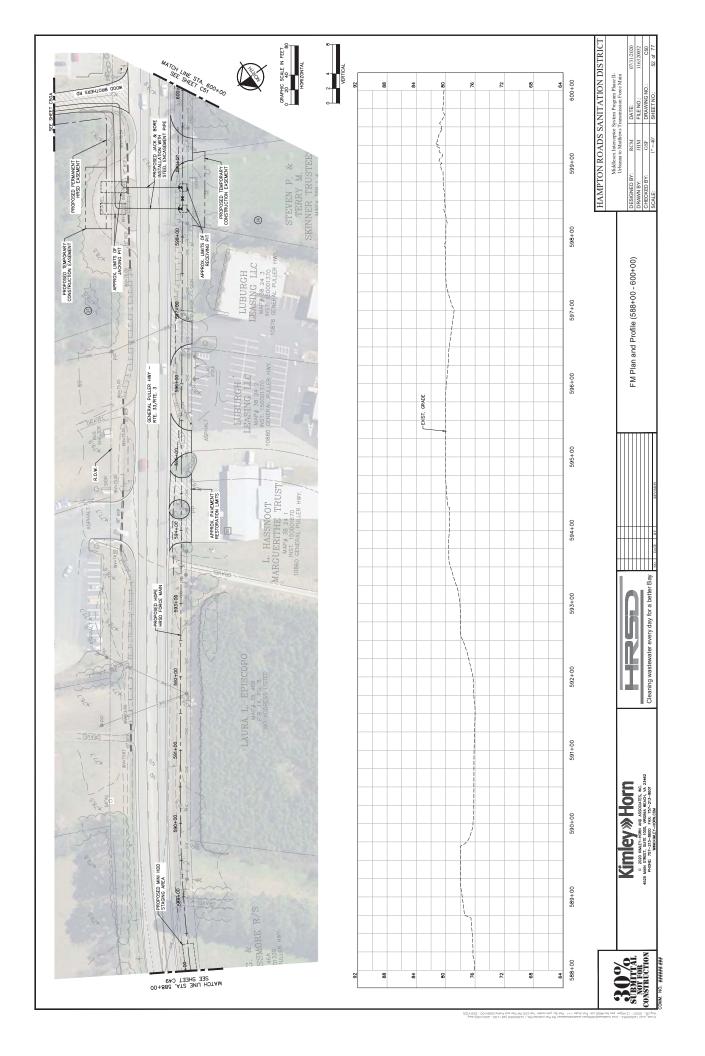
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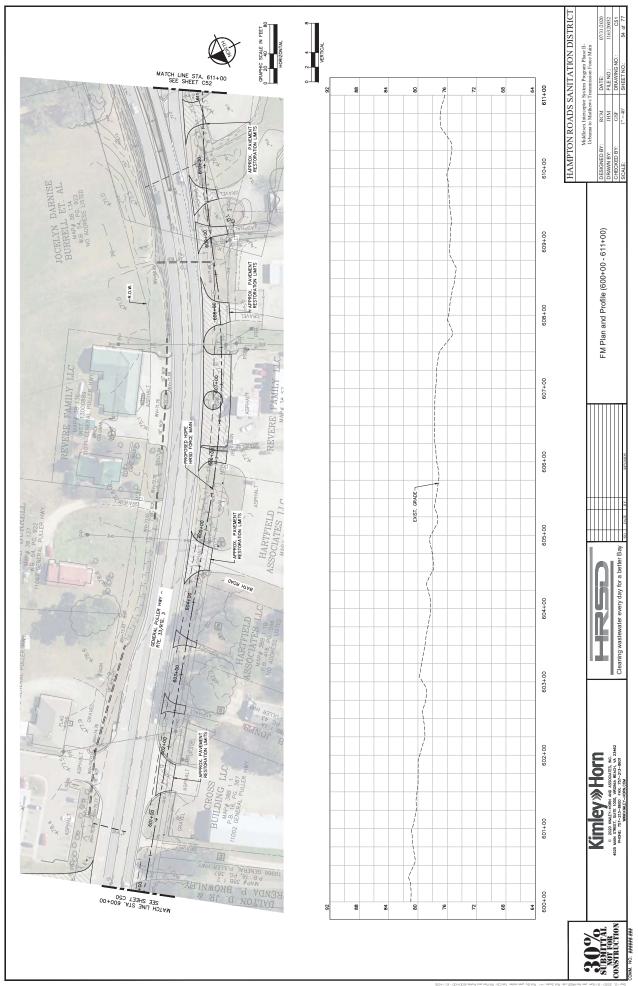


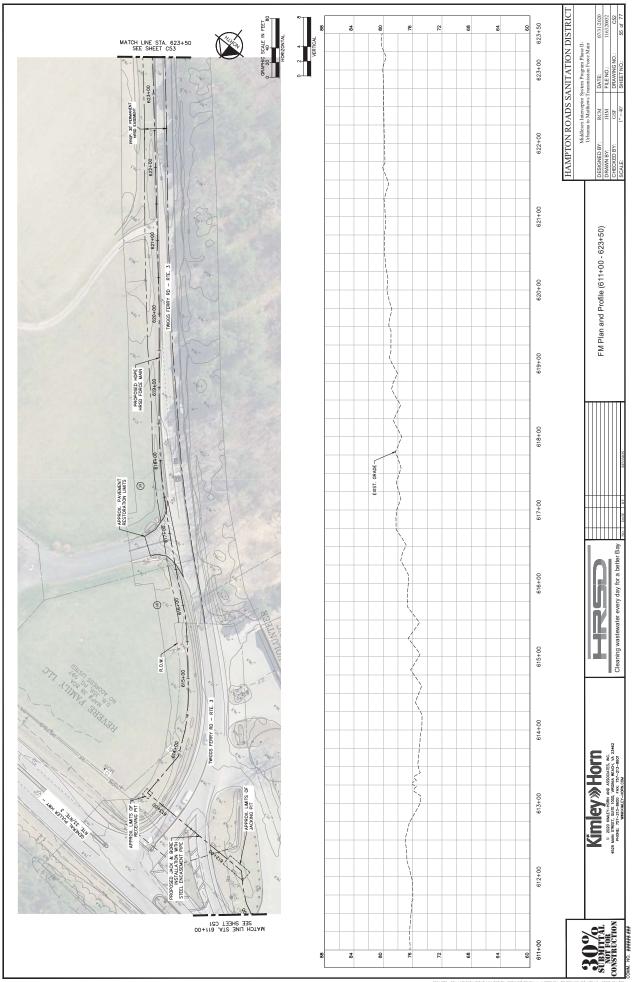
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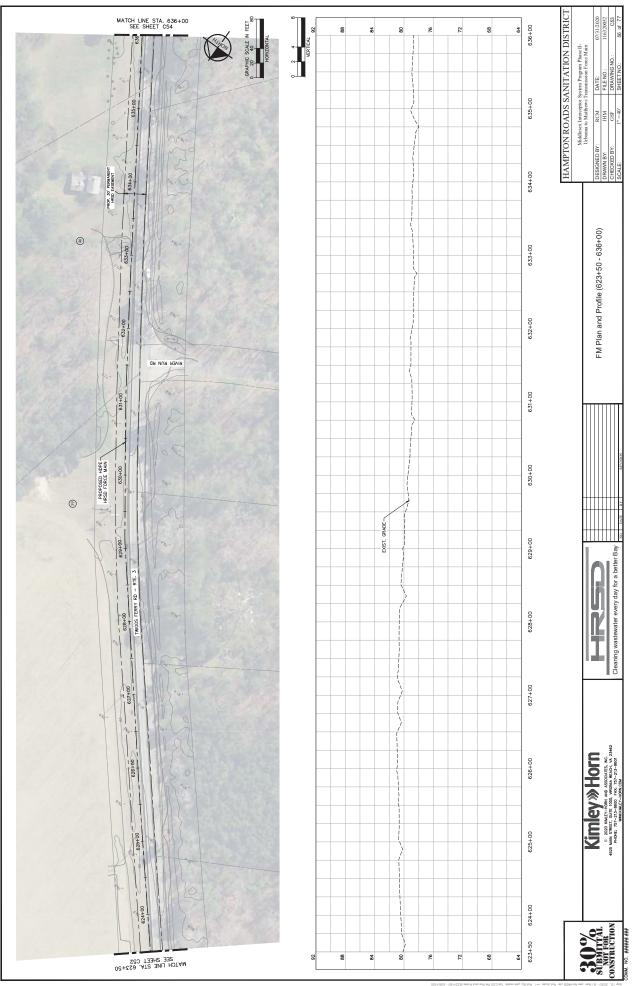
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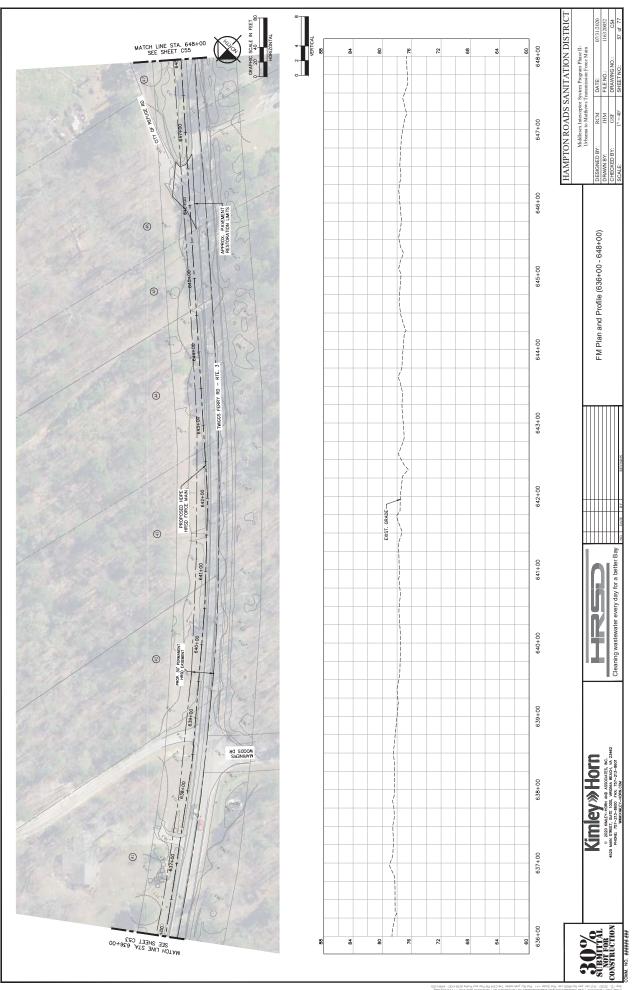
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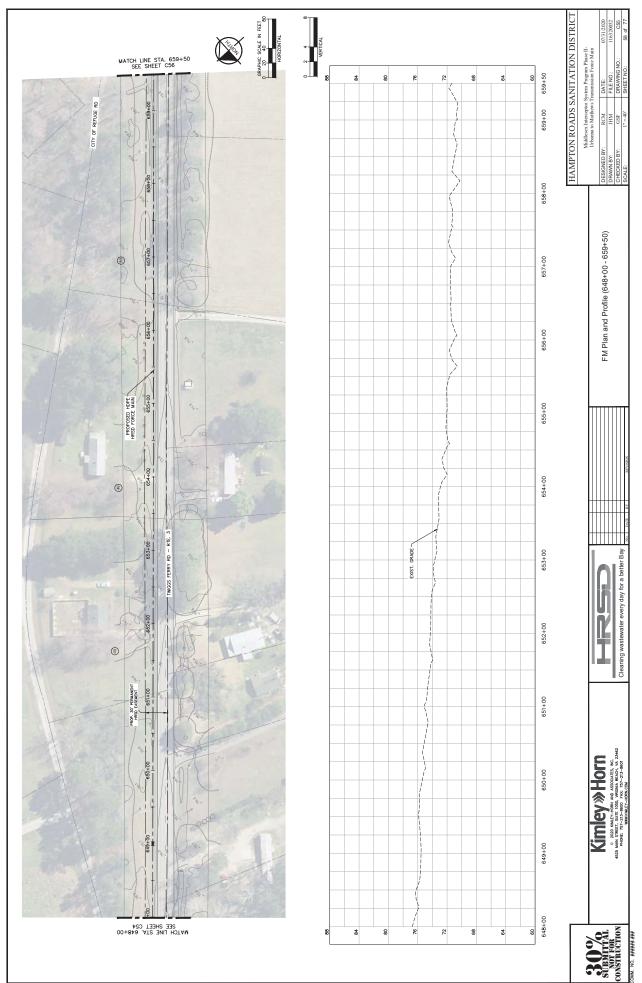
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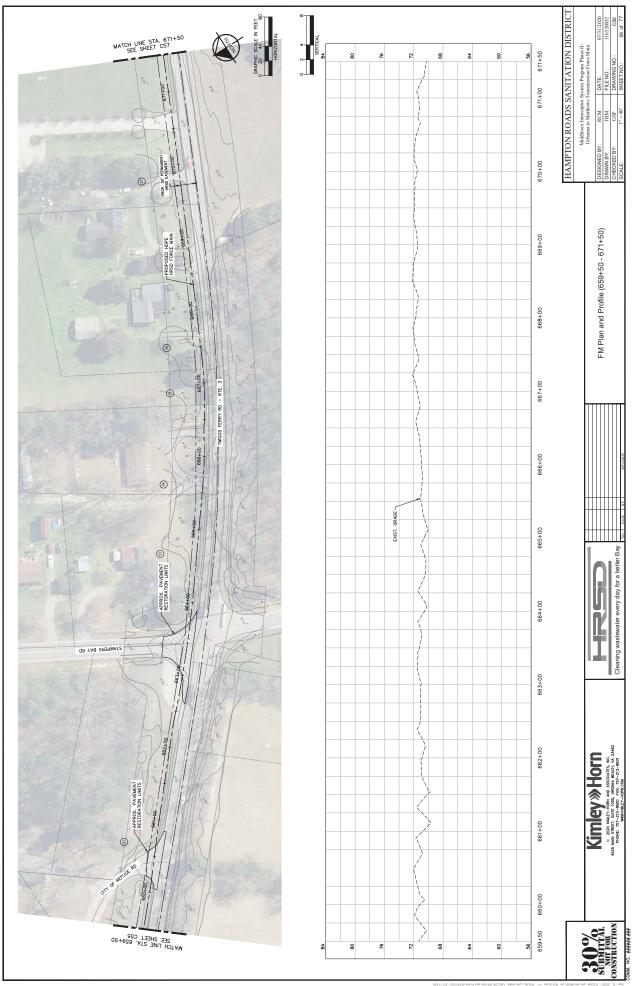


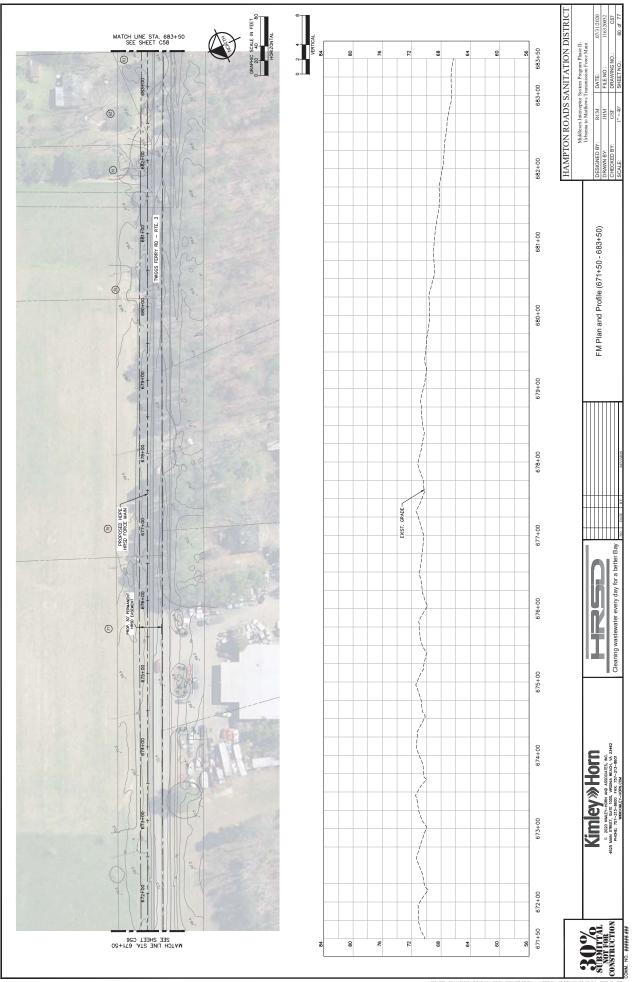


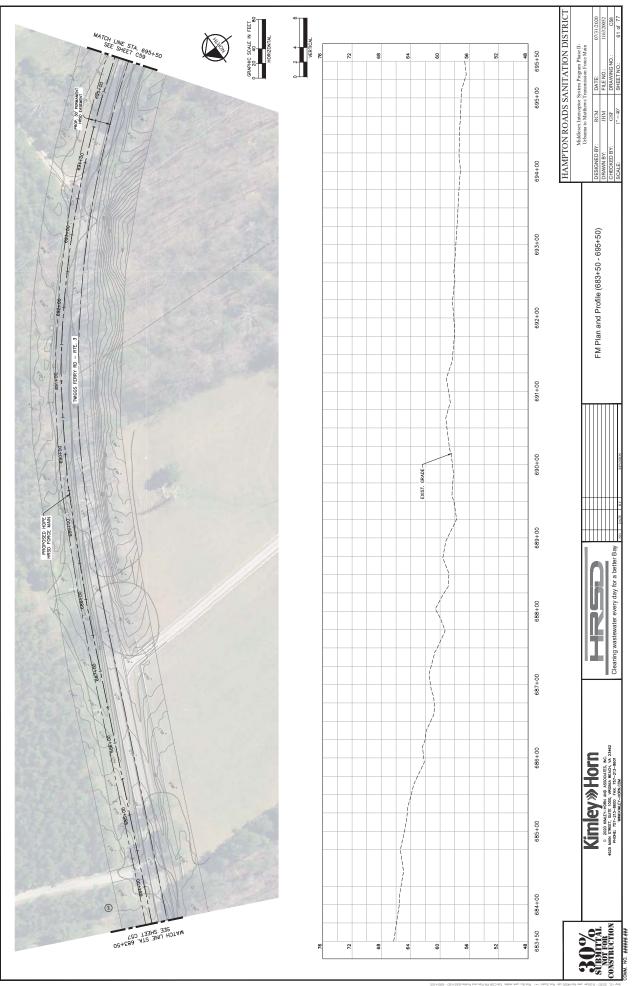


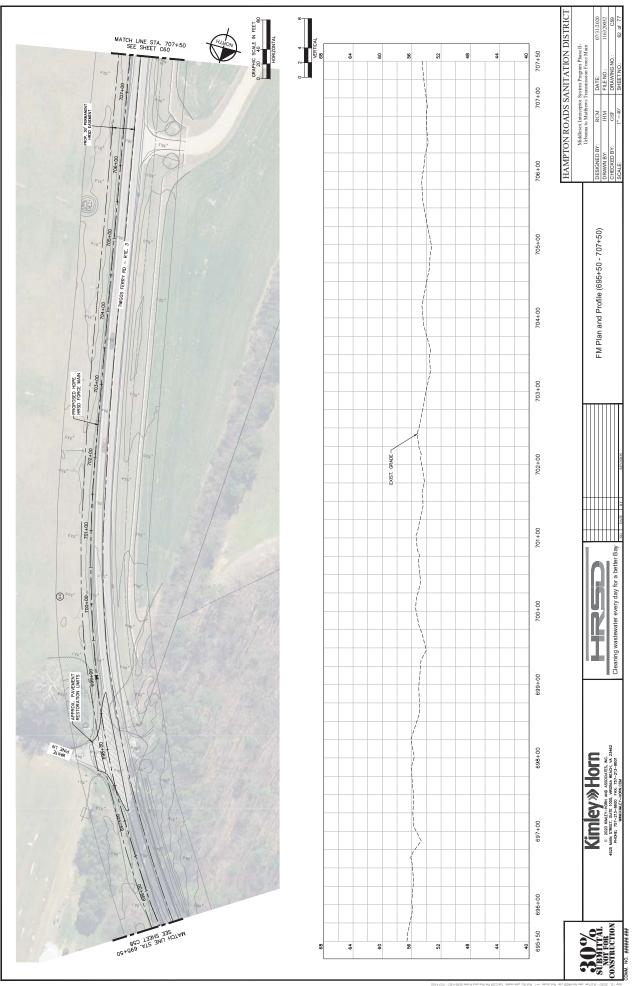


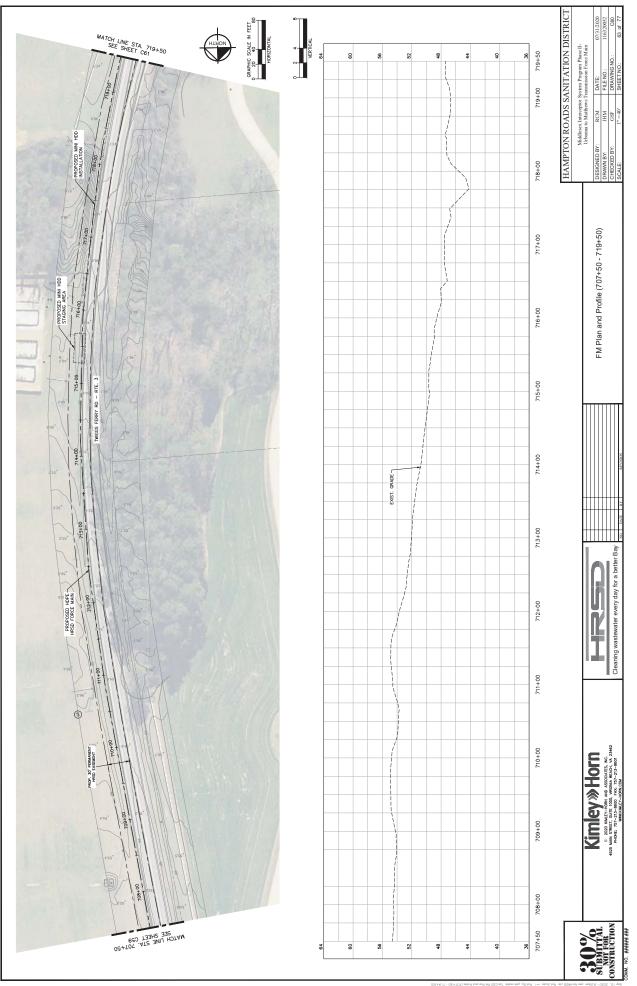


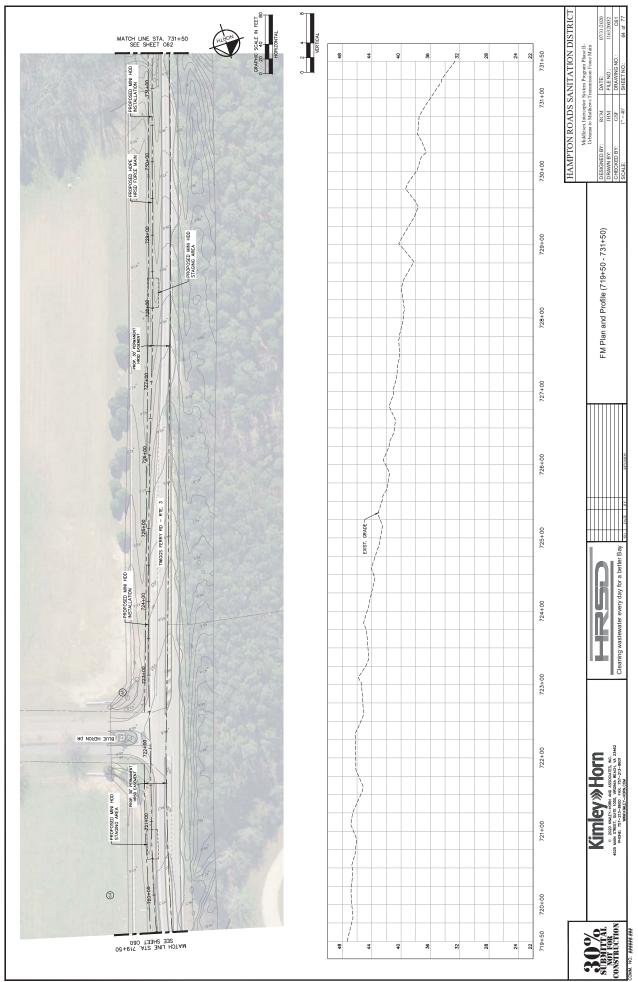


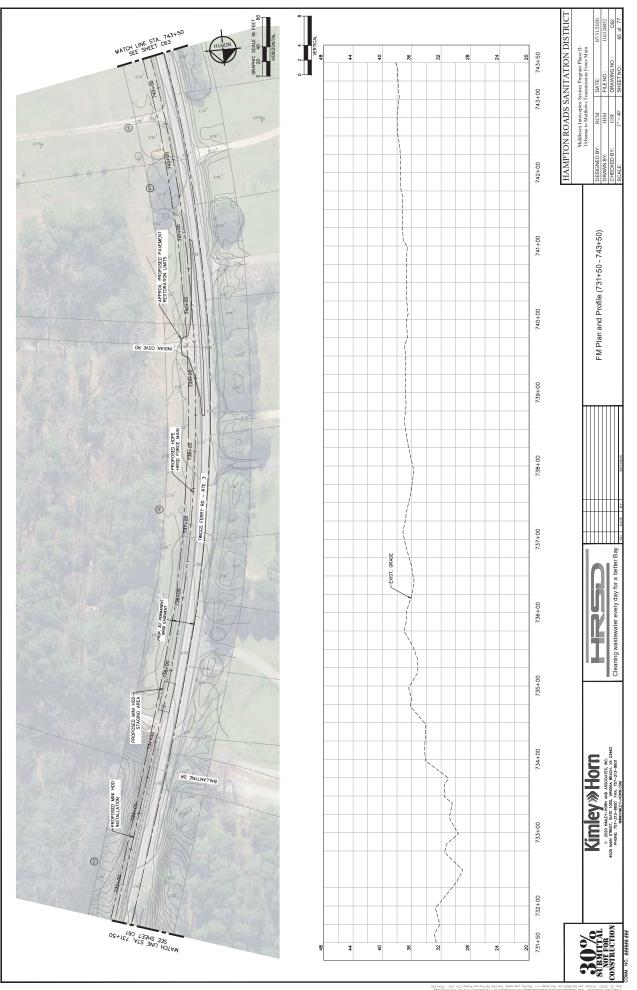


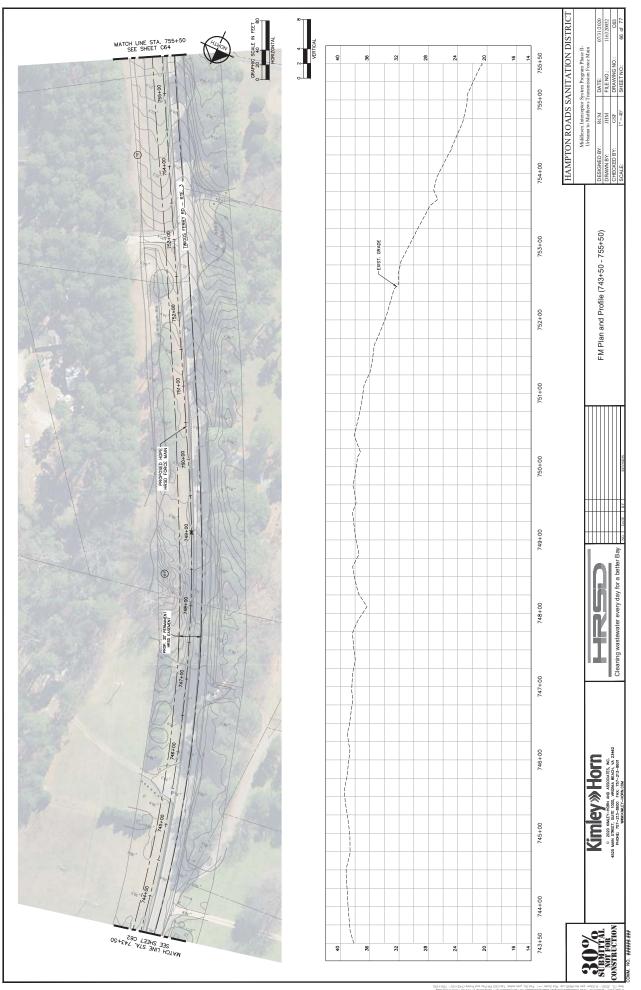


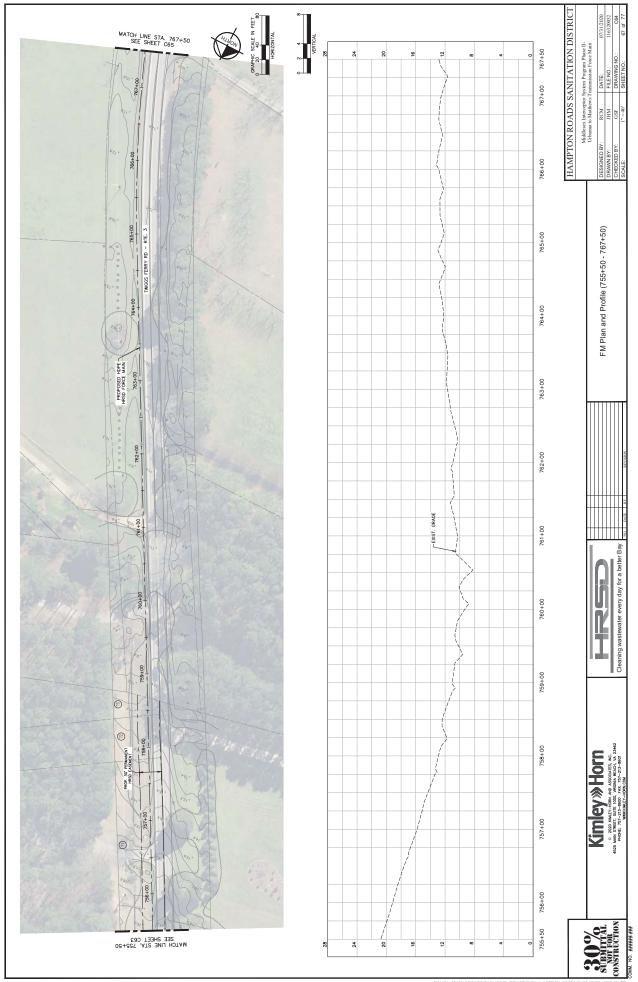


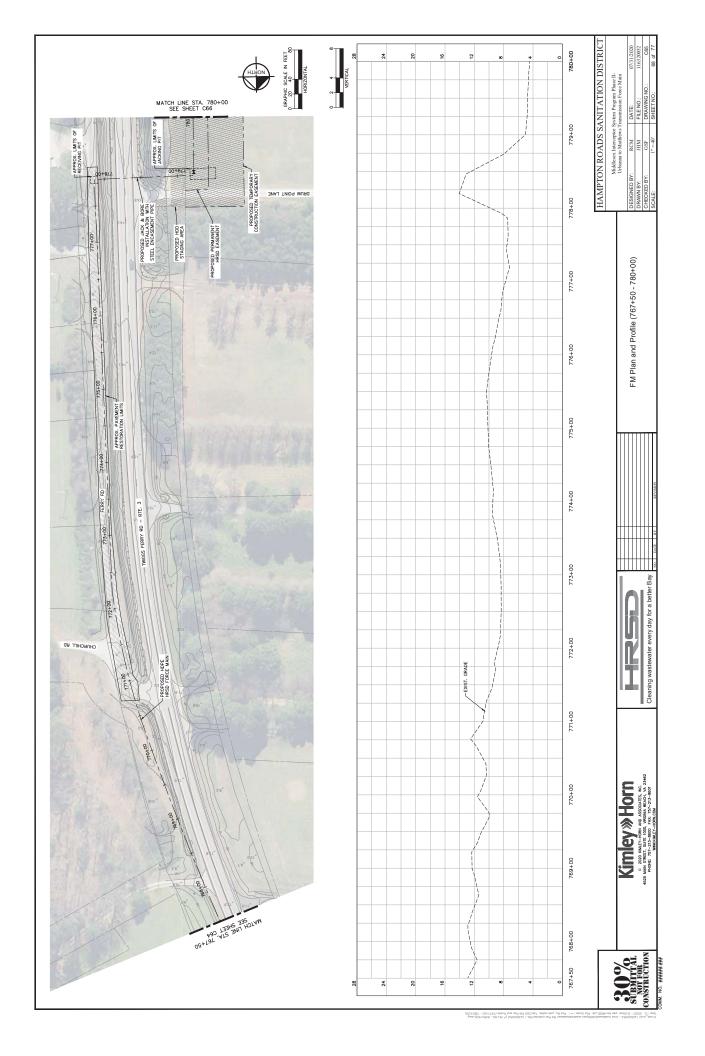


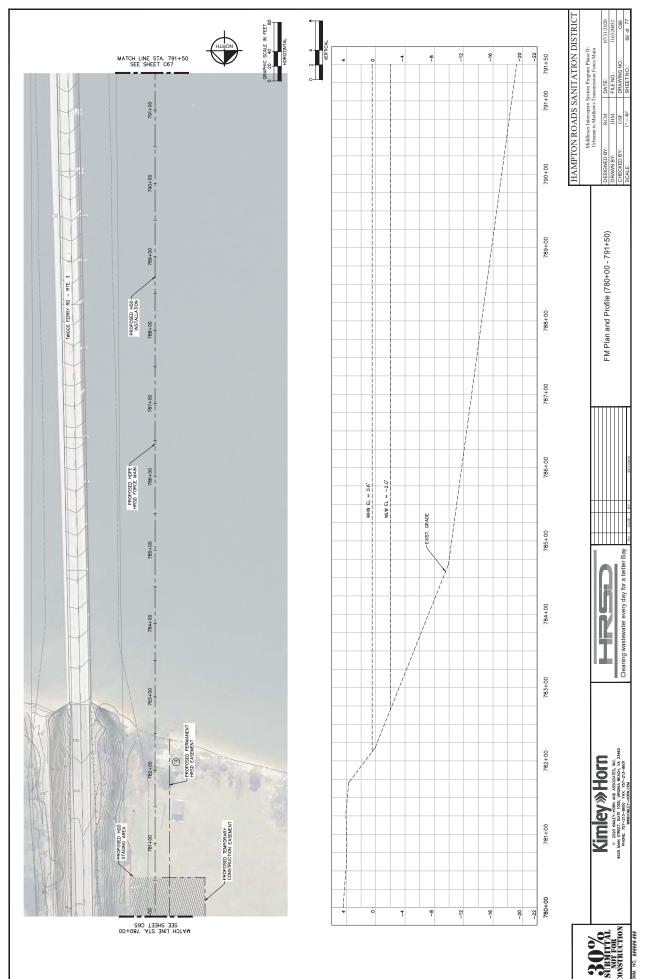


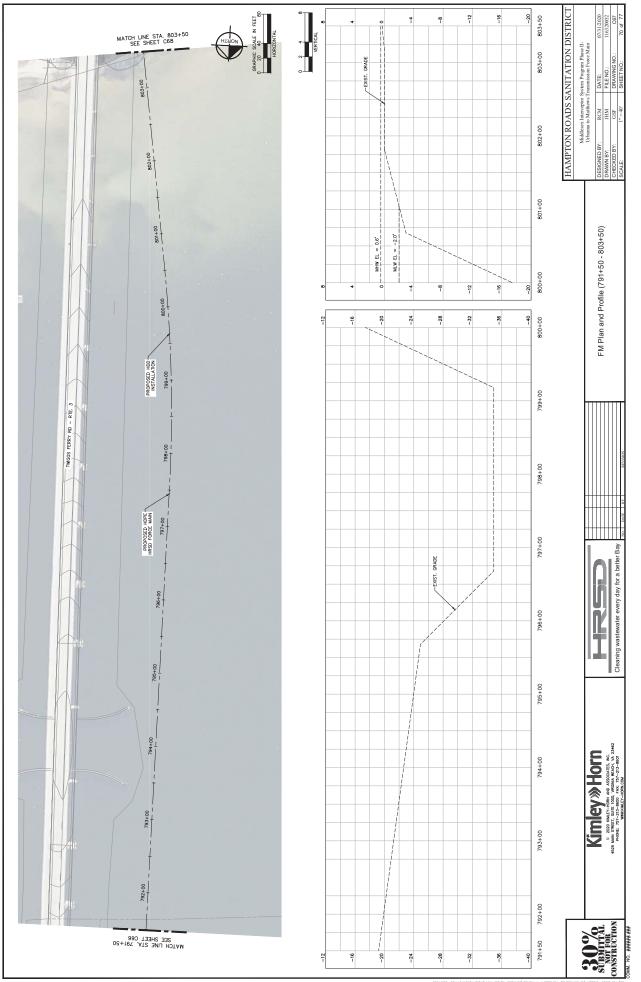


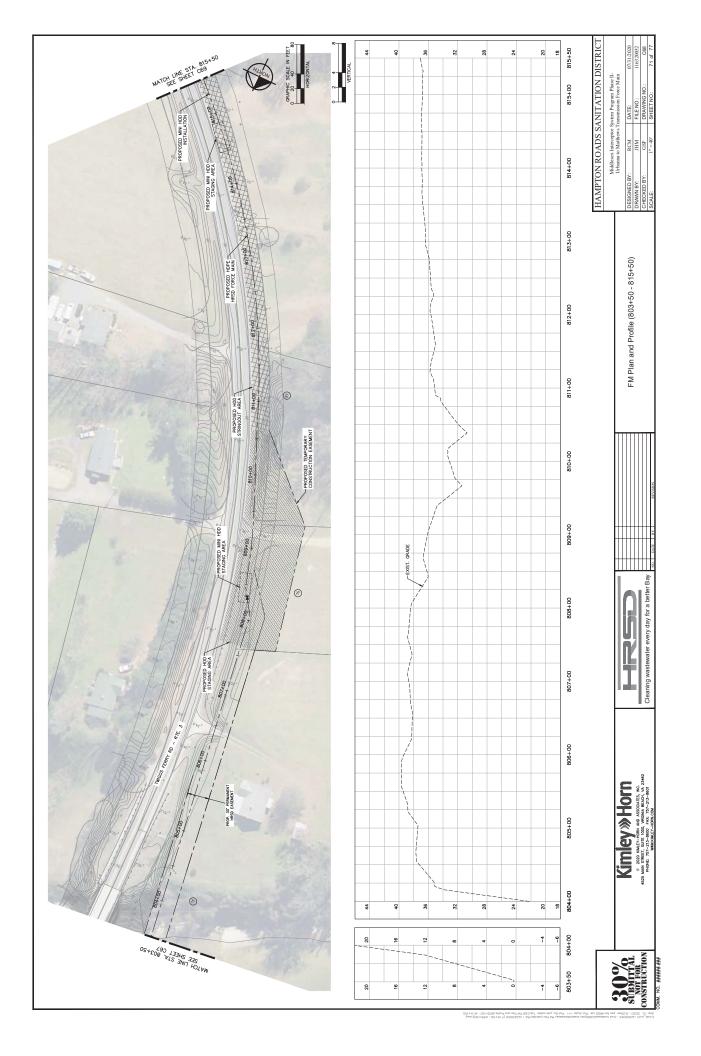


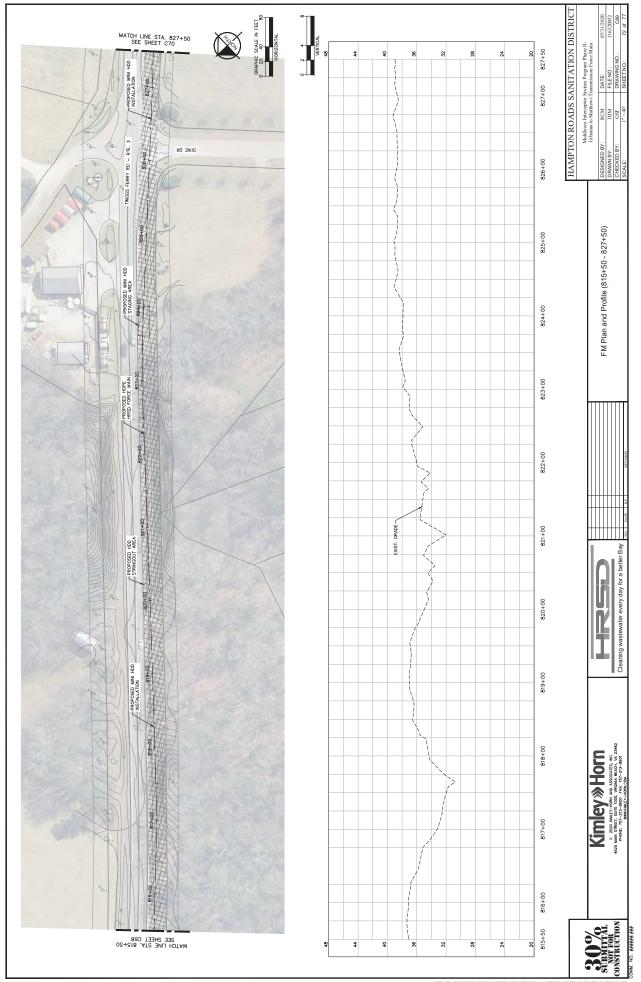


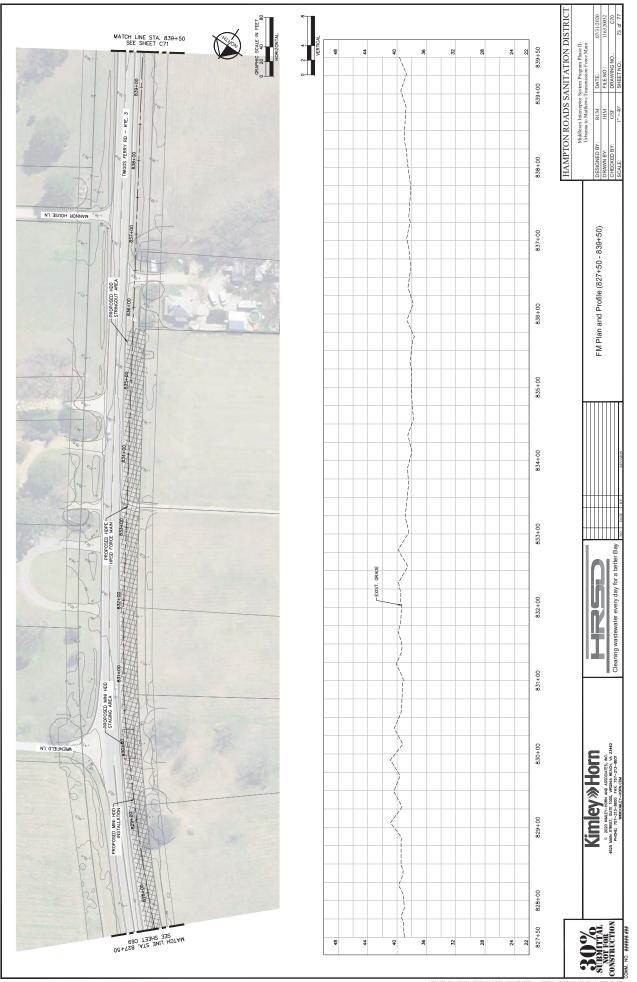


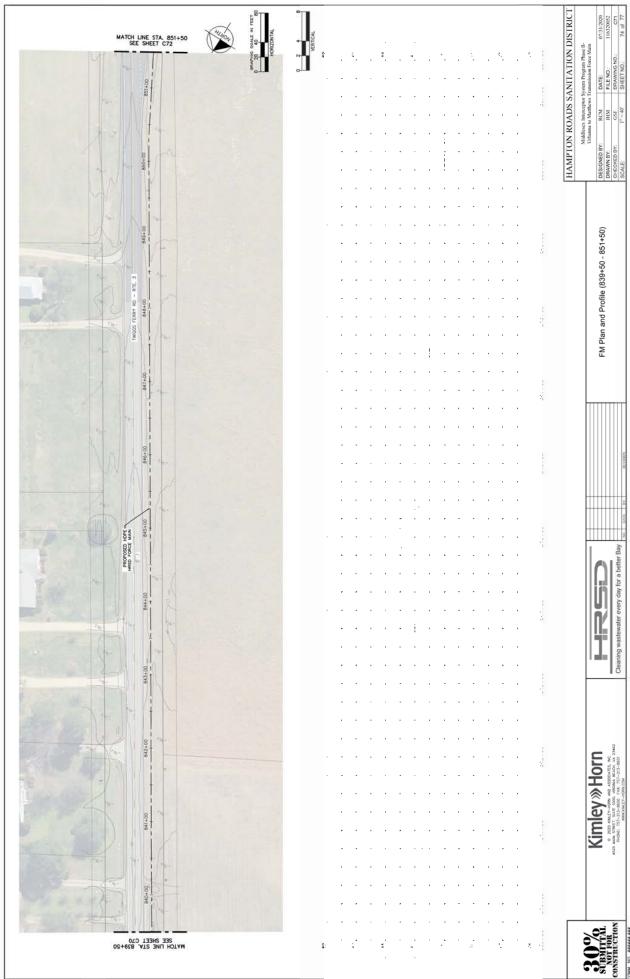


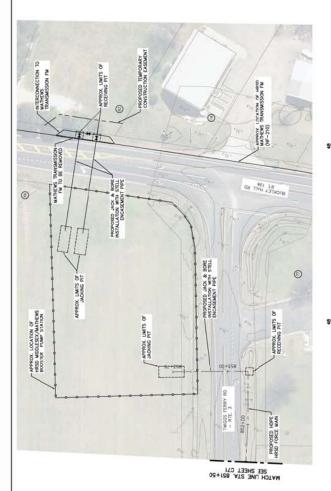


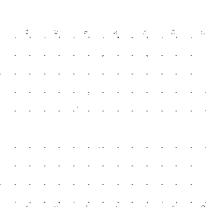




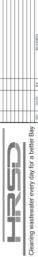








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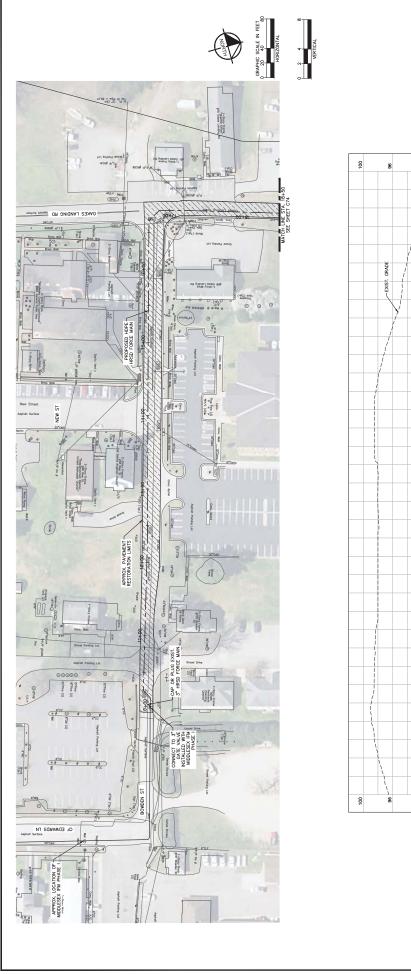
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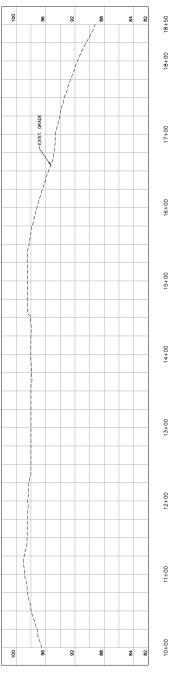
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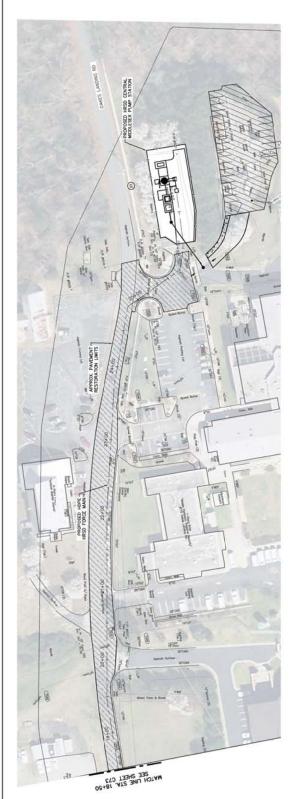
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PRELIMINARY CULTURAL RESOURCES ASSESSMENT FOR THE HRSD MIDDLESEX INTERCEPTOR SYSTEM PROGRAM PHASE II—URBANNA TO MATHEWS TRANSMISSION TFM MIDDLESEX AND MATHEWS COUNTIES, VIRGINIA

May 2020

Prepared For:

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I. INTRODUCTION

The Hampton Roads Sanitation District (HRSD) is planning to undertake the Middlesex Interceptor System Program Phase II – Urbanna to Mathews Transmission Force Main project in Middlesex and Mathews counties, Virginia. The project will involve the construction of a 3.2-mile force main from Urbanna to Cooks Corner via State Route 227 (Urbanna Road), and a 13-mile force main along State Route 33 (General Puller Highway) and State Route 3 (Twiggs Ferry Road) from Cooks Corner to the existing Mathews Transmission Force Main in Mathews County (Figures 1-5). The new Middlesex transmission force main (TFM) will convey wastewater from Middlesex County to the York River Treatment Plant and enable decommissioning of both the Urbanna Treatment Plant and the Central Middlesex Treatment Plant in Saluda. The project will also include the construction of new pump stations at the Urbanna Treatment Plant, Central Middlesex Treatment Plant, and Cooks Corner, and potentially two additional booster stations along the TFM. Finally, the project will also require horizontal directional drilling (HDD) under Urbanna Creek and the Piankatank River.

This preliminary cultural resource assessment prepared by the James River Institute for Archaeology, Inc. (JRIA) is intended to assist in planning for potential cultural resource investigations which may be required for the project under Section 106 of the National Historic Preservation Act. It includes a prehistoric and historic context of the overall project area; an analysis of the earliest available detailed historic mapping; a summary of all previously recorded cultural resources (including historic districts, standing structures, and archaeological sites) within or in the immediate vicinity of the proposed area of potential effect (APE) for the project; and recommendations concerning those areas with the highest potential for significant, intact archaeological resources.

In 1991, the William and Mary Center for Archaeological Research (WMCAR) completed a Phase I cultural resources survey of the proposed Route 33 project in Middlesex County (Gallucci et al. 1992). This project, which was conducted on behalf of the Virginia Department of Transportation (VDOT), was designed to identify and evaluate all cultural resources which would be affected by the proposed widening of a 5.3-mile section of Route 33 between Cooks Corner and Harmony Village. No new archaeological sites were identified in the course of this investigation, and two existing archaeological sites (44MX0012 and 44MX0013) were determined to be not eligible for listing in the National Register of Historic Places (National Register). It was determined that the project would have no direct effect on Christ Church (Virginia Department of Historic Resources [DHR] ID# 059-0002). However, four historic properties were determined to be potentially eligible for listing in the National Register, and were further evaluated at the Phase II level. Marsh Pungo (DHR ID# 059-0012), First Baptist Church (DHR ID# 059-0035), and Rappahannock High School (DHR ID# 059-0051) were determined to be not eligible, while the Walker House (DHR ID# 059-0063) was determined eligible.

Because the proposed Middlesex TFM will be constructed within the existing VDOT right-of-way, JRIA has not included the 5.3-mile section between Cooks Corner and Harmony Village previously investigated by WMCAR in this study.

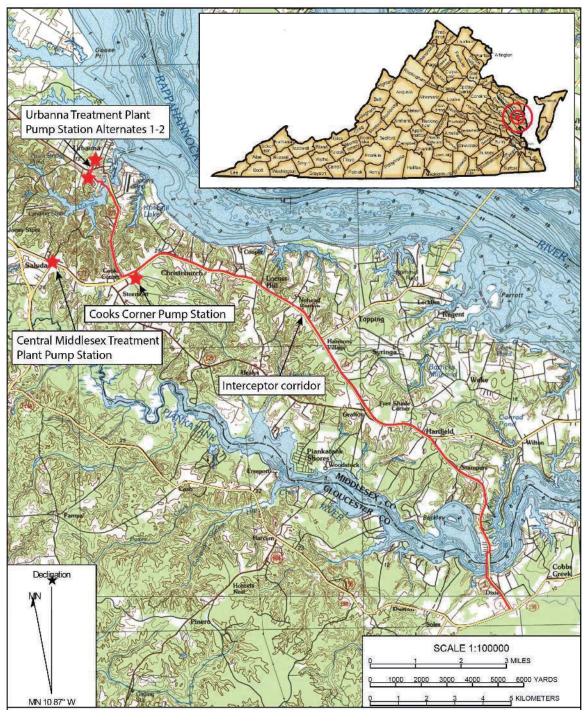


Figure 1. Location of the project corridor on detail of U.S.G.S. 1:100,000 Tappahannock (1984) and Williamsburg (1984) topographic quadrangle maps.

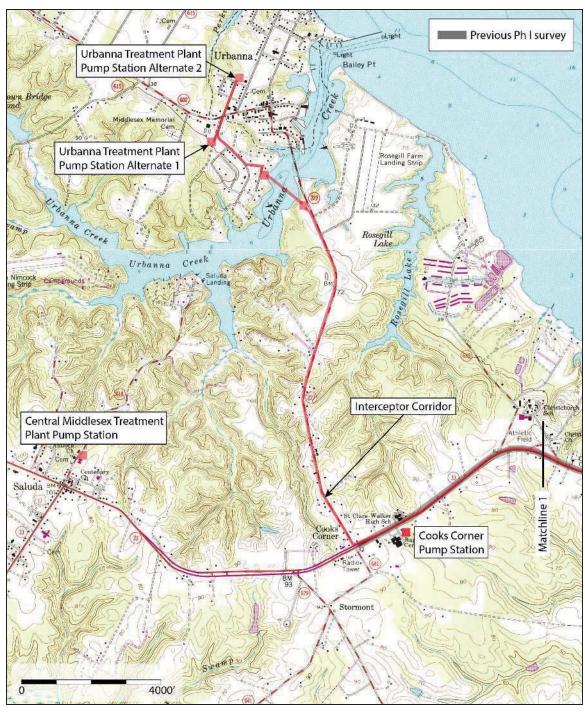


Figure 2. Location of the project area on detail of U.S.G.S. 7.5' Urbanna (1978) and Saluda (1986) topographic quadrangle maps.



Figure 3. Location of the project area on detail of U.S.G.S. 7.5' Urbanna (1978), Saluda (1986), and Wilton (1992) topographic quadrangle maps.

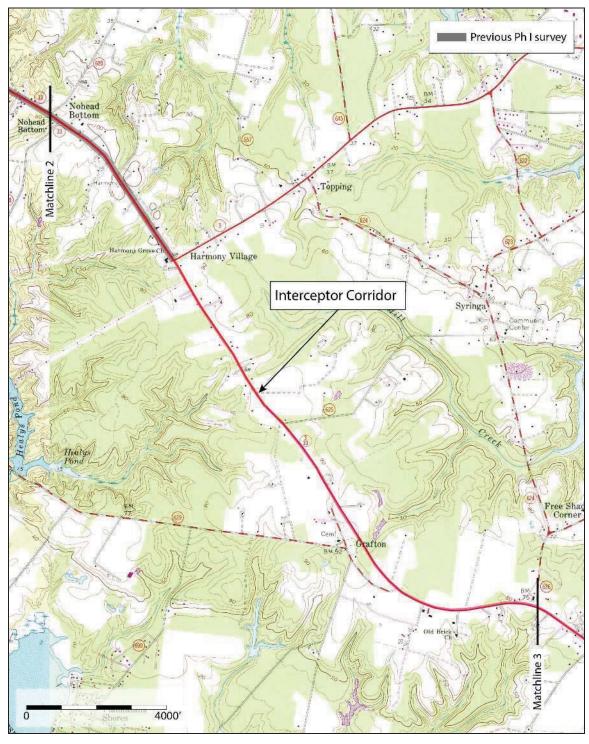


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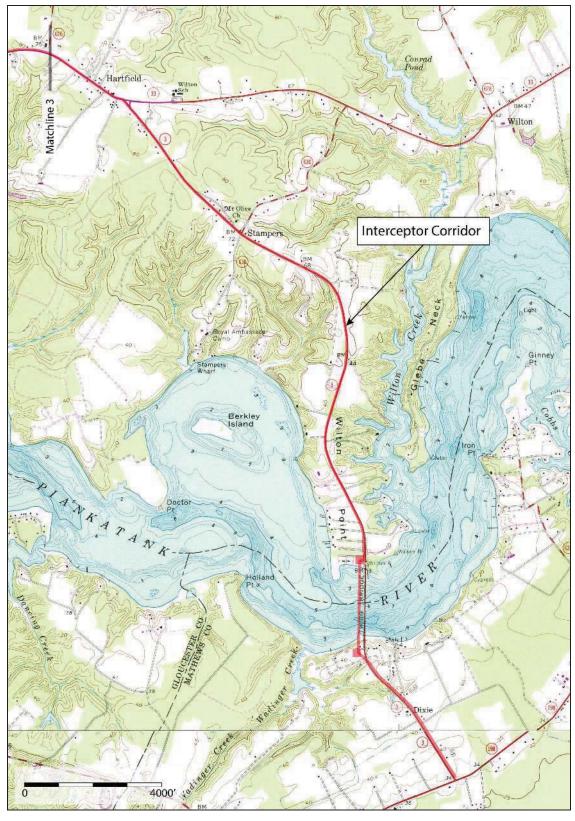


Figure 5. Location of the project area on detail of U.S.G.S. 7.5' Wilton (1992) and Ware Neck (1980) topographic quadrangle maps.

II. CULTURAL CONTEXT

PREHISTORIC CONTEXT

Virginia's prehistoric cultural chronology is subdivided into three major time periods based on changes in subsistence as exhibited by material remains and settlement patterns. These divisions are known as the Paleoindian, Archaic, and Woodland periods. A brief summary of the regional cultural chronology follows, with comments on manifestations of each period within the project area vicinity.

Paleoindian (Prior to 10,000 B.C.)

Paleoindian occupation in Virginia, the first human occupation of the region, began some time before 10,000 B.C. The earliest recognized diagnostic artifacts Clovis projectile points, typically fashioned of high-quality cryptocrystalline materials such as chert, chalcedony, and jasper. Later Paleoindian points include smaller Clovis-like and Cumberland variants, small "Mid-Paleo" points, and, at the end of the period, Dalton, Hardaway-Dalton and Hardaway Side-notched points. Also diagnostic, though to a lesser extent, are certain types of well-made endscrapers, sidescrapers, and other formalized tools. Most current views now hold that eastern Paleoindians were generalized foragers with an emphasis on hunting. Social organization apparently consisted of relatively small bands that exploited a wide, but defined, territory (Gardner 1989: 5-52; Turner 1989: 71-94).

The majority of Paleoindian remains in Virginia are represented by isolated projectile point finds and what appear to be small temporary camps. Although some larger and very notable base camps are present in the state, they are relatively rare and usually associated with sources of preferred, high quality, lithic materials. The most important Paleoindian sites in Virginia, and in the eastern U. S. as a whole, are the Thunderbird Site in the Shenandoah Valley (Gardner 1974, 1977), the Williamson Site in south-central Virginia (McCary 1951, 1975, 1983), and the Cactus Hill Site in Sussex County. Both the Thunderbird and Williamson sites are large base camps associated with local sources of high-grade cryptocrystalline lithic materials. At the Thunderbird site area and its surrounding environs, a site typology has been formulated which includes lithic quarries, quarry-related base camps, quarry reduction stations, base camp maintenance stations, outlying hunting sites, and isolated point sites (Gardner 1981, 1989). Cactus Hill (44SX202), located on the Nottoway River near Stony Creek, is characterized by stratified deposits associated with the Paleoindian through Woodland periods. The site has yielded numerous Clovis projectile points, and generated a radiocarbon date of 15,070 B.P. from a pre-Clovis occupation layer, which is characterized by artifacts in a pre-Clovis core blade tradition (McAvoy and McAvoy 1997)

Archaic (8000-1200 B.C.)

The beginning of the Archaic Period generally coincided with the end of the Pleistocene epoch, marked in the region by a climatic shift from a moist, cool period to a warmer, drier climate. Vegetation also changed at this time from a largely boreal forest setting to a mixed conifer-deciduous forest. In eastern Virginia, a temperate climate was established, and the formation of the Chesapeake estuary began. Increasing differences in seasonal availability of resources brought on by post-Pleistocene changes are thought to have coincided with increasing emphasis on strategies of seasonally geared mobility (Dent 1995:147).

Archaic populations likely were characterized by a band-level social organization involving seasonal movements corresponding to the seasonal availability of resources and, in some instances, shorter-interval movements. Settlement during this era probably involved the occupation of relatively large regions by single band-sized groups living in base camps during part of the year, and dispersing as necessary on seasonal basis, creating smaller microband camps that may have consisted of groups as small as single families. The Archaic period saw the development of more specialized resource procurement activities and associated technologies. These differences in material culture are believed to reflect larger, more localized populations, as well as changes in food procurement and processing methods. The Archaic Period also marked the beginning of ground stone technology, with the occurrence of ground atlatl weights and celts. New tool categories that developed during the Archaic include chipped and ground stone celts, ground stone net sinkers, pestles, pecked stones, mullers, axes, and, during the more recent end of the Late Archaic, vessels carved from soapstone quarried in the Piedmont (Custer 1990: 35-40; Geier 1990: 84-86, 93-94).

Early Archaic

Corner and side-notching became a common characteristic of projectile points at the beginning of the Archaic Period (Early Archaic), indicating changes in hafting technology and possibly the invention of the spear-thrower (atlatl). Notched point forms include Palmer and Kirk Corner-notched and, in localized areas, various side-notched types. The later end of the Early Archaic Period and the beginning of the Middle Archaic Period are marked by a series of bifurcate base projectile point forms that, in this area, are mainly represented by Lecroy points.

Middle Archaic

As a whole, the Middle Archaic ca. 6500 - ca. 3000 BC, witnessed the rise of various stemmed projectile point forms, and there is a notable increase in the number of early Middle Archaic components over the immediately preceding Early Archaic. In this area of central Virginia, the most common Middle Archaic artifact forms are, from oldest to youngest, Lecroy, Stanly, Morrow Mountain, and Guilford projectile point types, followed by the side-notched Halifax type at the end of the period as it transitions into the Late Archaic between ca. 3500 and 3000 B.C. The numbers of Middle Archaic sites recorded in eastern Virginia as a whole indicate population increase at this time.

Late Archaic

The Late Archaic Period (ca. 3000-1200 B.C.) was dominated by stemmed and notched knife and spear point forms, including various large, broad-bladed stemmed knives and projectile points that generally diminish in size by the succeeding Early Woodland period (e.g., Savannah River points and variants). Also found, though less common, are stemmed and notched-stem forms identical to those associated more prominently with areas of Pennsylvania and adjoining parts of the northeast (Susquehanna and Perkiomen points).

Marked increases in population density and, in some areas, decreased mobility characterized the Late Archaic Period in the Middle Atlantic states and eastern North America as a whole. Locally, there is an increase in the numbers of late Middle Archaic (Halifax) and Late Archaic (Savannah River) sites over those of earlier periods, suggesting a population increase and/or intensity of use of this region between about 3500 B.C. and ca. 1200 B.C.

Agriculture in the Middle Atlantic region probably has its origins during this period. Yarnell (1976: 268), for example, writes that sunflower, sumpweed, and possibly goosefoot may have been cultivated as early as 2000 BC. In the lower Little Tennessee River Valley, remains of squash have been found in Late Archaic Savannah River contexts (ca. 2400 BC), with both squash and gourd in slightly later Iddins period contexts (Chapman and Shea 1981: 70). However, no cultigens have been found in Late Archaic contexts locally.

Woodland (1200 B.C. - ca. A.D. 1600)

The Woodland Period was characterized by the introduction of ceramic technology, a gradually developing dependence on horticulture, and increased sedentism. Three sub-periods (Early, Middle, and Late Woodland) have been designated, based primarily on stylistic and technological changes in ceramic and projectile point types, as well as settlement patterns.

Early Woodland

The Early Woodland Period, ca. 1200-500 B.C., is generally defined by the appearance of ceramics in the archaeological record. The earliest Woodland ceramic wares, Marcey Creek Plain and variants, are rectangular or oval and resemble the preceding Late Archaic soapstone vessels. These ceramics are followed by cord-marked, soapstone-tempered Selden Island ceramics, then by sand-and-grit-tempered Elk Island (Accokeek) ceramics with both plain and cord-marked surfaces. The latter traditionally were referred to as the Stony Creek series, although this type is now known to subsume several Early, Middle, and Late Woodland ceramic wares (Egloff 1991: 243-48).

Early Woodland sites in this section of Tidewater Virginia typically consist of small camps in both riverine and lesser-order stream locations, particularly those also occupied in the earlier part of the Middle Woodland period.

Middle Woodland

The Middle Woodland Period in this area, ca. 500 B.C. and A.D. 900, was marked by the appearance of net-marked, sand-tempered, and pebble-tempered pottery that generally spans the period ca. 500 B.C. to about A.D. 300 (Pope's Creek and Prince George wares). These ware types were supplanted by shell-tempered net- and cord-marked Mockley pottery until about A.D. 900 in areas lying east of the Fall Line. Local wares, such as Varina net-marked, were quite common in the Inner Coastal Plain, and have been dated to ca. A.D. 200/250 (Egloff 1991: 243-48).

Previous archaeological studies in the region have demonstrated the intensive use of small tributary streams as well as major river floodplains throughout the Middle Woodland period (ca. 500 B.C. and A.D. 900). Archaeologists have suggested that the Middle Woodland was characterized by "restricted wandering," in which groups used various campsites for several weeks at a time, obtaining needed materials in the site vicinity (Stewart 1992: 12-16).

Late Woodland

By the Late Woodland Period (A.D. 900-1600), agriculture had assumed a role of major importance in the prehistoric subsistence system. The adoption of agriculture represented a major change in the subsistence economy and patterns of settlement. The availability of large areas of arable land became a dominant factor in settlement location, and sites increasingly were located on fertile floodplain soils or on higher terraces or ridges adjacent to them.

Diagnostic artifacts of this period include several triangular projectile point styles that originated during the latter part of the Middle Woodland Period and decreased in size through time. Late Woodland ceramics from about A.D. 900 to the time of European contact in Tidewater Virginia include shell-tempered, Townsend, and Roanoke ceramics; untyped, sand-tempered, fabric-impressed ceramics that are otherwise similar to Townsend; and lithic- and sand-tempered simple-stamped ceramics similar to Gaston and Cashie types of North Carolina.

Although settlements dating to this time include some small camps, a large number of villages and small hamlets appear to have been occupied on a more permanent basis than those of older settlements are present. Some villages were highly nucleated while others were internally dispersed over a wide area. A number of villages were completely fortified by circular or oval palisades, indicating a rise in inter-group conflict, while others contained both a fortified core area and outlying houses. The more dispersed settlements were scattered over a wide area and characterized by fluid settlements within large, sprawling, and loosely defined town or village territories (Turner 1992: 108-114).

Drawings and journals of early European explorers describing Indian villages indicate that houses were constructed of oval, rectanguloid, or circular frameworks of flexible, green sapling poles set in the ground, lashed together, and covered with thatch or bark mats. Burial sites of the period were situated in individual pits or in ossuaries. Such

historical accounts are consistent with data obtained from archaeological excavations of Coastal Plain Late Woodland village sites (Hodges and Hodges 1994).

With the development of a more sedentary settlement-subsistence system culminating in the Late Woodland period, permanent habitation sites gradually replaced base camp habitation sites more characteristic of those of previous foragers and huntergatherers. Various supporting camps and activity areas were established in the day-to-day procurement of food and other resources (i.e., short-term hunting and foraging camps, quarries, butchering locations, and re-tooling locations). Locations used partially or largely for ceremonial purposes were also present, usually in association with habitation sites. Late Woodland hamlets and villages typically are found on bluffs, terraces, or floodplains adjacent to rivers or major tributaries. Small seasonal camps and non-seasonally based satellite camps supporting nearby sedentary villages and hamlets are located along smaller streams in the interior. These campsites typically are characterized by limited concentrations and sparse scatters of lithics and ceramics (Turner 1992: 108-114).

When John Smith and his fellow English explorers arrived in Tidewater Virginia in the spring of 1607, they stumbled into the territory of the powerful Powhatan Confederacy, one of the most well-organized and populous chiefdoms in the mid-Atlantic region. In his map depicting the location of Native American settlements, it is clear that the settlement in the Rappahannock valley was concentrated on the north bank of the river. However, Smith noted the location of the village of Opiscopank (variously known as Opiscatumek) on the south side of the Rappahannock, east of the mouth of Urbanna Creek (Figure 6). when he mapped it in 1608, he indicated that Opiscopank was the residence of a chief. However, he did not mention it in his narratives, and so it has become known as "John Smith's mystery village." English settlers did not begin taking up land in this area until the 1640s; but when they did, they recorded the presence of former Native American settlements in this vicinity. In 1649, when Ralph Wormeley patented the land that would become Rosegill plantation, the grant noted that his acreage on the east side of what is now Urbanna Creek included the "Indian Townes of old & new Nimcock." Archaeological investigations at Rosegill have identified evidence of Native American settlement dating to the Late Woodland and Contact periods, suggesting that this was the location of the Opiscopank/Nimcock villages (Nugent 1992: 181; DHR 2010).

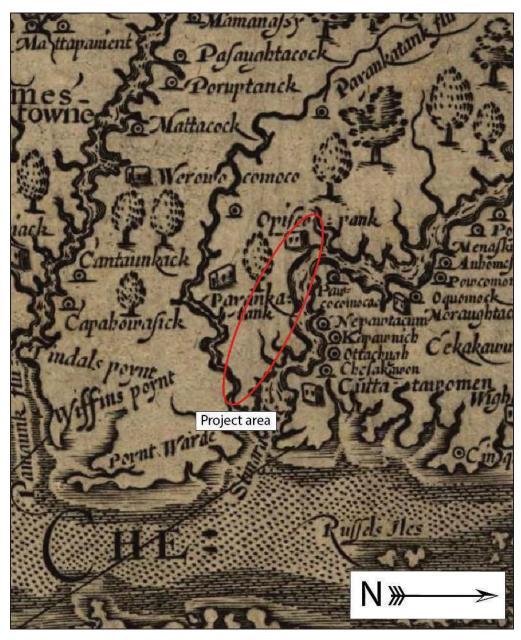


Figure 6. Location of the project corridor on detail of *Virginia Discovered and Discribed* [sic.] (Smith 1624).

HISTORIC CONTEXT

Settlement to Society (1607-1750)

The land on the south shore of the Rappahannock River remained essentially off-limits to English settlement until the late 1640s. With its prime agricultural lands and convenient access to shipping, however, it was only a matter of time before wealthy landowners began taking up large riverfront tracts and establishing tobacco plantations in this area. The foremost of these was Ralph Wormeley, who patented 3,200 acres east of what is now Urbanna Creek in 1649 and established Rosegill plantation. Within 20 years, the population of this area had grown to the extent that Middlesex County was created from Lancaster County in 1669 (Rutman and Rutman 1984: 46; Gray et al. 1978: 43-44). When he sketched the extent of settlement in Tidewater Virginia in 1670, Augustine Herrman indicated that settlement in Middlesex County was strung out along the Rappahannock River, the primary artery of transportation, communication, and commerce (Figure 7).

In the Rappahannock River valley, and throughout the Chesapeake, it was tobacco, above all, which shaped nearly every aspect of life in the colonial period, encompassing the economy, the cultural landscape, and social relations. By the middle of the seventeenth century, tobacco cultivation formed the principal economic activity of every rank, from the largest landowner to the humblest tenant farmer. And once the system of tobacco monoculture had been established, it was nearly impossible to break free. Though prices for the crop in Europe fluctuated, often drastically, most planters preferred to stick with the staple, rather than risk an expensive investment of time and money in a less reliable export, such as grain (Kulikoff 1986: 4-5; Rutman and Rutman 1984: 41-43).

Much of the territorial conflict in seventeenth-century Virginia can be traced to the fact that the same prime agricultural lands which had supported Native American agricultural settlements for generations now proved equally attractive to Anglo-Virginian planters bent on profiting from tobacco. The location of seventeenth-century English tobacco plantations depended on three primary considerations: proximity to major water routes for ease of transportation; the availability of freshwater springs for drinking water; and good silty or sandy loams for growing tobacco. Because these considerations were identical to those of the resident Late Woodland peoples, there was a strong correlation between the sites of Late Woodland Algonquian villages and seventeenth-century English settlements. The labor-intensive nature of tobacco cultivation limited crops to approximately three acres per person. A perennial shortage of laborers and draft animals made traditional plowing impractical, so tobacco planters adopted Native American methods of hoe agriculture, planting their tobacco and corn around the stumps of newly cleared land. Likewise, the English soon realized the relative infertility of abandoned Indian fields, building their houses in these vegetation-free areas while using the adjoining former village locations for planting (Norris 1983: 27; Potter 1993: 220-21).

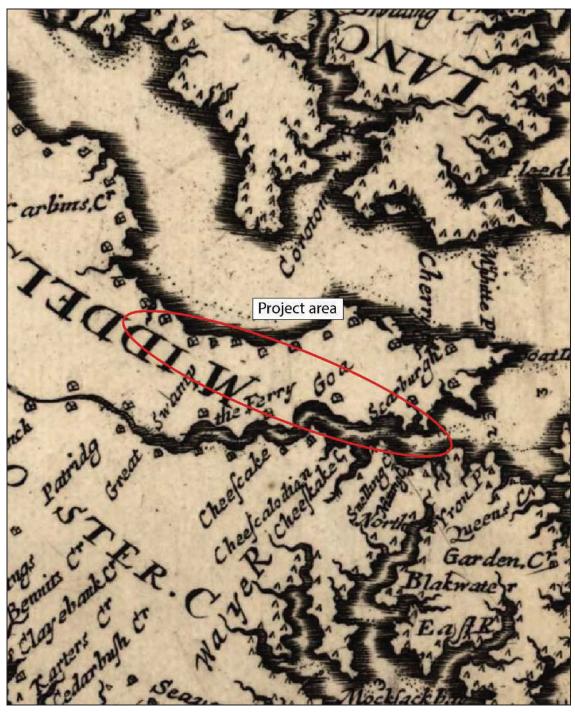


Figure 7. Location of the project corridor on detail of Virginia and Maryland as it is Planted and Inhabited This Present Year 1670 (Herrman 1673).

In his quantitative study of settlement patterns in colonial James City and York counties, Craig Lukezic discovered that soil type, more than any other consideration, determined where Chesapeake tobacco planters chose to live. Since tobacco was overwhelmingly important as a staple crop, Lukezic hypothesized, it should follow that planters would choose to settle on lands most conducive to growing this crop. When he examined statistically the relative importance of a variety of environmental factors in site selection, including soils, access to drinking water, proximity of navigable waterways, and distance from the nearest neighbor, Lukezic discovered that soil type was the most significant locational factor affecting colonial settlement (Lukezic 1990).

Tobacco plants grow best in gently sloped (2-6 percent), well-drained, loosely-structured soils such as light sand or sandy loam. The taste of the tobacco is also strongly influenced by soils, with the best flavor imparted by those with siliceous parentage. Though soil type is critical to the success of tobacco cultivation, topography is also an important consideration. Since tobacco plants will not mature properly if the roots are deprived of oxygen (e.g. by flooding), gently sloping soils in the range of 2-6 percent provide the ideal drainage for healthy plants. Thus, the primary considerations in defining areas of archaeological sensitivity for colonial sites were soil type and slope, with an emphasis on well-drained soils with slopes of 10 percent or less. The probability of locating colonial period resources diminishes accordingly on soil types and slopes less conducive to growing tobacco (Lukezic 1990).

Gaining access to productive tobacco lands was only the first step, however. Maintaining an adequate pool of labor proved more problematic to planters during the colonial era. Without breaking entirely away from tobacco, the only way to combat a decline in prices was to increase production. Greater yields required more plants, and more plants needed the attention of more laborers. Planters had relied for decades on a steady stream of white indentured servants willing to trade seven years of their lives for passage to the colonies, and the chance ultimately to become planters themselves. Beginning in the 1680s, however, the number of white servants arriving in Virginia was declining acutely. Desperate for workers, planters turned reluctantly to a new source: African slaves. In Middlesex County, enslaved Africans came to exceed white servants at some point between 1687, when blacks comprised only 8 percent of the total population, and 1699, when they accounted for 22 percent. The implications of Tidewater's darkening complexion would be profound (Kulikoff 1986: 4-6; Rutman and Rutman 1984: 41-43, 165-66).

The transition from white to black labor throughout Tidewater Virginia coincided with a lengthy period of economic instability. From the 1680s through the 1720s, Virginia suffered through a prolonged depression in the tobacco market. During this period, tobacco prices exceeded the costs of production in only one year out of five. To compound the problem, European wars regularly interrupted transatlantic trade. Chesapeake planters of all ranks responded by becoming more self-sufficient. Many shifted their focus from tobacco to other subsistence crops, such as wheat and corn; they also began to make their own cloth and consume a variety of local products. Released from the tyranny of tobacco, Virginians now had more time on their hands. More time allowed for increasing craft specialization, which in turn fed the growing demand for local products. As a result, Virginians were significantly more self-sufficient in 1750

than they had been at the turn of the eighteenth century (Kulikoff 1986:5; Carr and Walsh 1994).

In addition to its distinctive architectural forms, Tidewater Virginia's particular geography and economy resulted in a unique pattern of settlement that would persist well beyond the colonial period. The overwhelming dependence on tobacco monoculture, combined with the relative ease of waterborne transportation along the region's vast network of navigable rivers and streams, resulted in an extremely dispersed form of settlement, with the landscape characterized by a patchwork of relatively self-sufficient plantations and smaller farms. Colonial officials had long expressed concern about the scattered nature of settlement and the relative absence of urban development. By the latter years of the seventeenth century, Virginia's House of Burgesses began to draft legislation to address this perceived problem. Over the next several decades, this effort to urbanize the colony had a direct effect on this area. A 1680 act for the establishment of towns authorized the establishment of the port town of Urbanna, situated on the only accessible harbor on the south shore of the Rappahannock. Despite a protracted struggle with Ralph Wormeley, upon whose land the town site was located, Urbanna's lots were eventually laid out and the first was sold in 1691. Urbanna had grown considerably by the early years of the eighteenth century, attracting considerable residential and commercial development, and becoming the focal point of trade and commerce in Middlesex County. As such, it figured prominently on the map of Virginia published by Joshua Fry and Peter Jefferson in 1755 (Figure 8) (Reps 1972: 78-79; Ryland et al. 1980: 11-12).

During the seventeenth- and early eighteenth centuries, the project area likely was encompassed by the estate of the wealthy and prominent Robinson family known as Hewick. Christopher Robinson arrived in Virginia around 1666, and by about 1678 had built a home called "The Grange" to the south of what was later named Robinson Creek. Robinson held a number of important political offices, serving as clerk of Middlesex County, as a Burgess and Councilor, and as Secretary of State for the colony. His son, Christopher Robinson II, inherited the property when he died in 1693. The plantation eventually passed to Christopher Robinson III in 1727. It is likely he who renamed the property Hewick after the family's ancestral home in Yorkshire, and built the core of the brick house that survives, in significantly altered form, on the property today (Gray et al. 1978: 1-4; VHLC 1978; Ryland et al. 1980: 14-15).

Colony to Nation (1750-1789)

Although the "noxious weed" had shaped all aspects of economic, social, and material life in the colonial period, Tidewater Virginia's "Golden Age" of tobacco-based prosperity would be relatively short-lived. By the second half of the eighteenth century, even the great plantation-owning gentry were beginning to feel the pinch of a sputtering, century-old tobacco economy. After a few decades of prosperity, tobacco was once again on the decline by the 1760s and 1770s. Severe economic problems in England precipitated by the costly Seven Years' War reverberated throughout the colonies. Faced with economic ruin, English merchants began calling in their debts, threatening the very foundation of the Tidewater economic system. For some time, Virginians of all ranks had relied on British credit to maintain, and gradually increase, their consumption of

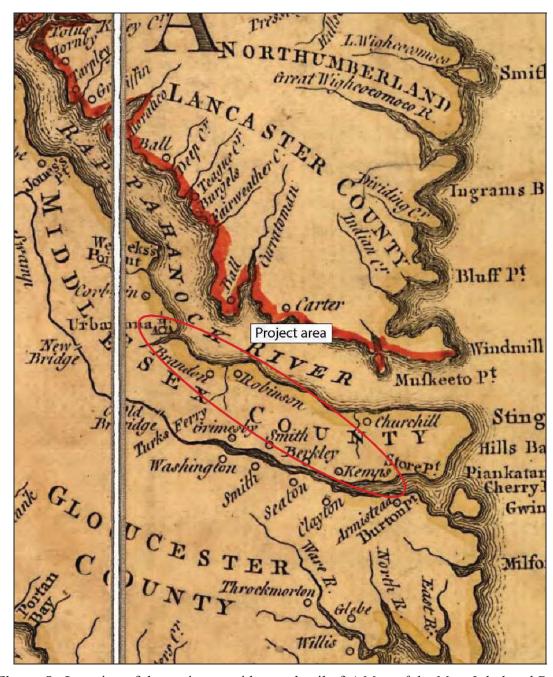


Figure 8. Location of the project corridor on detail of *A Map of the Most Inhabited Part of Virginia* (Fry and Jefferson 1755).

imported goods, thereby raising their standard of living. This constriction of credit threatened to topple even the most prominent planters (Kaplan 1993: 55, 67).

The Anglo-American commercial crisis also had significant political ramifications. Virginians and residents of other colonies balked at the growing imposition of taxes to maintain the imperial interests of Great Britain in America, and were particularly incensed by duties on imported items, of which tea was perhaps the most conspicuous example. The regular meeting of the local militia had long been a fixture of life at the county level, though it was more an opportunity for drinking and socializing than a display of martial prowess. The formerly jovial atmosphere surrounding militia training would soon take on a deadly seriousness, however, for by the following year a state of war existed between the American colonies and Great Britain, and Virginians took up arms to fight for independence. Although no major fighting occurred in this part of the Commonwealth during the Revolutionary War, the Virginia campaign of 1781 brought the rival armies through the area in the waning stages of the conflict, inflicting damage to the area's towns and farms alike. More profoundly, the Revolution effectively brought an end to Virginia's tobacco economy. During the war, the markets for Virginia tobacco were almost completely severed. Planters were forced to diversify, turning primarily to corn, wheat, and livestock for export to the West Indies. As a result, by the 1790s, tobacco had virtually disappeared north of the James River (Kaplan 1993: 55, 67).

Until the American Revolution, the region had been dominated politically, economically, and socially by a relatively small group of wealthy plantation owners who owned the preponderance of the land, slaves, and other resources. The most visible symbols of their prestige were the large stately homes that dotted the landscape, typically set on prominences overlooking the Pamunkey and Mattaponi rivers. But few could afford to live in the relative splendor enjoyed by the plantation elite. In her study of housing in the Northern Neck in the latter part of the eighteenth century, Camille Wells describes a rural landscape characterized by modest tracts of 200 acres or less. These largely self-sufficient farms had a distinct form that caught the attention of a German traveler in 1783. "A plantation in Virginia," he wrote,

and also in the lower parts of Maryland, has often the appearance of a small village, by reason of the many small buildings, which taken all together would at times hardly go to make a single roomy and commodious house. Here are living-rooms, bed-chambers, guest-chambers, store-rooms, kitchens, quarters for the slaves, and who knows what else (Wells 1994: 6).

Wells' study of property advertisements from the *Virginia Gazette* and other records revealed each plantation as a highly structured landscape, "determined by the impulse of land-owning planters to achieve, maintain, and demonstrate their authority over others." Around the main house were arrayed a number of satellite structures, kitchens, smoke-houses, dairies, barns, sheds, and slave quarters, comprising the "small village" noted by the foreign visitor (Wells 1994: 28).

Early National and Antebellum Periods (1789-1860)

In the latter years of the eighteenth century, the entire Chesapeake region underwent a radical transition between the tobacco-based plantation economy of the colonial period and a new, diversified, grain-based economy that would characterize the region through the nineteenth and twentieth centuries. By the time of the American Revolution, all arable land in the Tidewater and Piedmont regions of Virginia had been planted in tobacco at least once, and most areas were experiencing the effects of severe soil depletion. Between 1790 and 1820, as many as 250,000 Virginians moved from the older settled parts of the state to the recently opened southwest frontier, taking approximately 150,000 enslaved African Americans with them. The virtual collapse of the tobacco economy and the resultant outmigration of significant numbers of people had a revolutionary effect on the social and economic character of the Tidewater region. Large plantations that had relied on slave labor were increasingly subdivided into smaller-scale farmsteads that grew corn and wheat rather than tobacco. This change was also reflected in the cultural landscape, as settlement tended to move away from major rivers and creeks, the primary routes of transportation and communication in the colonial period, and clustered along an increasingly complex system of interior roads (Kulikoff 1986: 422, 429).

As tobacco declined as Virginia's principal export crop, so did the once flourishing port town of Urbanna. When the British minister Harry Toulmin visited the town in 1793, he clearly was unimpressed with its current condition. "Urbanna was formerly a place of some trade and importance," he recorded,

for as the custom house for the Rappahannock was there, the vessels were obliged to clear at that port. But the customhouse being removed to Port Royal, it is now a deserted village and as the land in the neighborhood is engrossed by a few great proprietors there are only three or four store- or shipkeepers in the town, besides some sauntering young men, the vacuity of whose countenances unites with the grass-covered streets to give the place a most melancholy aspect. I believe there are not above a dozen houses in the town (Reps 1972: 79).

Regardless of their social standing, farmers in the Rappahannock River valley found themselves confronted in the early years of the nineteenth century by land that was simply worn out by decades of tobacco farming. Meanwhile, the prevailing agricultural practice of crop rotation every three years insured that even wheat and corn depleted the soils at an alarming rate. But it was not long before a small group of far-sighted Virginians dedicated to "scientific agriculture" helped to usher in a new era of productive farming. In his series of essays entitled *Arator*, Caroline County's John Taylor demonstrated the benefits of four-field crop rotation, in which soils could be improved significantly by rotating corn, wheat, fertilizer, and clover. Similarly, in the early 1820s, Edmund Ruffin publicized the effectiveness of marl in reducing soil acidity, a technique that could triple the productivity of Tidewater soils. Other agricultural improvements included contour plowing to reduce erosion, cast iron plows, threshing machines, and corn shellers. To some extent, the improved yields offered by the new farming practices helped staunch the hemorrhaging of the region's population (Kaplan 1993: 87-88).

The introduction of new crops, and advances in farm management and fertilization had a significant effect on settlement patterns in nineteenth-century Tidewater Virginia. Lands formerly considered marginal could now be incorporated into agricultural production, a process accelerated by the increasing subdivision of family farms through inheritance. Regional locational models also suggest that soil type and slope remained the most important factors influencing nineteenth-century settlement patterns. Though a somewhat broader variety of soils could now be brought into production through advances in agricultural practices, areas of prime farmland and gentle slope were still most valued for farming and settlement. The resurgence of the region's agricultural economy in the first half of the nineteenth century prompted a minor industrial boom in the form of gristmills. With increasing amounts of grain for export, local farmers needed a reliable means of grinding their grain. Water-powered mills sprang up across the county, and the economic and social importance of their owners was underscored by the fact that millers were exempted from militia musters. Much official ink also was spilled in ensuring the upkeep of roads leading to mills, the quality of their output, and the accuracy of their measuring equipment (Heath 1999: 53-67; Kaplan 1993: 86).

Just as the tobacco economy had an enormous influence on the built landscape in the colonial period, the emergence of a new consumer culture in the late eighteenth- and early nineteenth centuries had a similarly transformative effect on how people lived. Like refined earthenwares or tea sets, Edward Chappell notes, buildings can also be viewed as "consumer goods." Houses, he claims, "embody attitudes toward material life and are shaped by new domestic activities and changing economic conditions." The size and design of houses say much about their occupants' perceived domestic needs, social priorities, and relative wealth. Scholars of early American architecture have increasingly noted a profound transformation in Chesapeake housing after the American Revolution that appears to correlate with a contemporary "revolution" in consumer behavior. Throughout the eighteenth century, the most common rural house type consisted of a single- or two-room frame building with little or no trim, plaster, or paint. Post-inground construction remained evident throughout the century, though this "impermanent" building style increasingly became associated with the most modest buildings, such as slave quarters or poor tenant households. Though the "building revolution" of the late eighteenth and early nineteenth century had more of an impact on urban dwellers and more affluent rural residents, a general change in domestic architecture has been noted archaeologically even in modest vernacular housing during this period. Attitudes towards permanence are reflected in an increasing emphasis on brick or stone foundations as opposed to earthfast building techniques, while an increasing desire for privacy, comfort, and sanitation may be reflected archaeologically by a greater division of interior space and more focused areas of domestic activity (Chappell 1994: 167-232).

During this period, local farmers had considerable success with a variety of crops, particularly corn and wheat, as well as oats and cotton. Despite slow improvements to the internal road network, the Rappahannock River still provided the quickest and most economical way of transporting goods to market, and regular passenger and freight service from Urbanna linked Middlesex County with outside markets, particularly Baltimore. In general, however, this region did not see any significant development of

the transportation infrastructure—such as canals, turnpikes, and railroads—which characterized other parts of the state in the antebellum period.

Civil War (1861-1865)

Compared with northern Virginia and the immediate vicinity of Richmond, Middlesex County witnessed relatively little direct military action during the Civil War, and no major battles. Union gunboats regularly patrolled the Rappahannock River, and on one memorable occasion in 1861 fired on the town of Urbanna, the site of a Confederate training camp. Although spared much of the destruction and bloodshed endured elsewhere in Virginia, the residents of this region still suffered considerably during the conflict. The majority of able-bodied Middlesex County men served in units of the Confederate army, leaving farms to languish in their absence. Meanwhile many local enslaved African Americans took advantage of the presence of Union forces to flee their farms and plantations. When the war came to an end in April 1865, the physical, social, and economic landscape of the county had been irreversibly altered (Ryland et al. 1980: 49-50; Atkinson 1990: 96-97; 163).

Reconstruction and Growth (1865-1917)

The combined loss of manpower and draft animals, the neglect of agricultural land, and the emancipation of the slave population had a detrimental effect on the region's economic and social landscape in the postwar era. Property values plummeted over the next several years: land that had sold for \$10 per acre before the war now fetched only \$1-3. In fact, the real estate market was so depressed that during their 1869-70 session the General Assembly enacted a law prohibiting the sale of land for less than 75 percent of its assessed value (Kaplan 1993: 153-56).

Even the climate appeared to be conspiring against Tidewater farmers. "A severe drought has prevailed here for a long time," noted Cornelius Hart Carlton of neighboring King and Queen County in the summer of 1872.

I heard a man say lately that the last fall of water he had was the last snow. Our gardens are very bad; the oat crop a failure, and the corn crop set back. . . . It has been very hot for the last seven or eight days. It is so dry that the mills cannot grind (Kaplan 1993: 155).

Despite these many hardships, the region was boosted by the emergence of a strong market for local oysters, fish, and crabs, and in the late nineteenth and early twentieth centuries Urbanna became the center of a profitable seafood industry. Even so, agriculture remained the mainstay of the local economy. By the latter years of the nineteenth century, the face of Tidewater farming had shifted to market gardening. In 1892, Virginia was producing upwards of \$7 million in produce. Canneries sprang up to facilitate transportation of these products to distant markets, and by 1900 the Old Dominion ranked third among states engaged in market farming and canning. Principal crops in the region now included corn, wheat, oats, rye, tobacco, potatoes, beans, and peas, as well as peanuts, sorghum, and broom-corn. In a pattern reminiscent of the early nineteenth century, postwar agricultural difficulties prompted many local farmers to seek alternative sources of income. Farm fields neglected since the Civil War had produced

stands of mature trees, providing ample resources for an expanding timber industry. While many residents chose to leave the area for jobs in Richmond or elsewhere, those who stayed and continued to farm joined the "Grange," or "Patrons of Husbandry," a fraternal order established in 1867 and dedicated to helping farmers learn new agricultural methods. Though Virginians were initially slow to join, by 1876 the organization claimed 18,000 members in Virginia in 685 local chapters. Though the Grange had lost most of its power by the 1890s, it was replaced by similar organizations, including the Farmers' Assembly and Farmers' Alliance, and the annual Farmers' Institutes (Ryland et al. 1980: 79; Kaplan 1993: 155, 176-77, 180-81, 198).

World War I to World War II (1917-1945)

Aside from a few significant changes—chiefly the emancipation of the enslaved population—this region remained much the same in the early twentieth century as it had been before the Civil War. Residents remained relatively isolated on self-sufficient farms, roads were poor, and communication was slow. Daily life revolved around the agricultural schedule, while churches continued to be important social institutions. Despite the rapid progress witnessed in urban America during these years, few in the county would have access to automobiles, electricity, or telephones for many years to come (Kaplan 1993: 199-204).

The New Dominion (1945 to Present)

Despite the rapid spread of the MSX virus that nearly wiped out the Chesapeake's oyster beds in the 1940s, Urbanna's well-established seafood industry managed to survive. The town's reputation as the oyster capital of Virginia has been bolstered by its renowned oyster festival, held annually since 1958. Middlesex County has remained largely rural and agricultural since World War II, its economy bolstered by tourism and property development by non-residents. As part of Tidewater Virginia's "Gold Coast," the county has attracted a significant retirement-age population, with the percentage of residents aged 65 and older approximately twice the state average (Edwards and Salmon 1990; Landmark Design Group 2001).

HISTORIC MAP ANALYSIS

The earliest detailed maps of those areas included within project area consist of coastal surveys completed by cartographers of the U.S. Coast Survey in the 1850s and 1860s. According to the 1856 *Map of a Portion of the Rappahannock River*, the proposed Urbanna pump station and associated TFM corridor were well beyond the developed area of the town (Figure 9). And there is no evidence of any buildings or other significant features in the vicinity of the HDD crossing of Urbanna Creek. Similarly, the 1869 *Piankatank River, Virginia* survey does not indicate any built improvements on either the north or south side of the proposed HDD crossing (Figure 10).

The earliest 15' U.S.G.S. topographic quadrangle maps including the project area were published in 1916 (Kilmarnock) and 1917 (Urbanna) (Figures 11-13). These maps

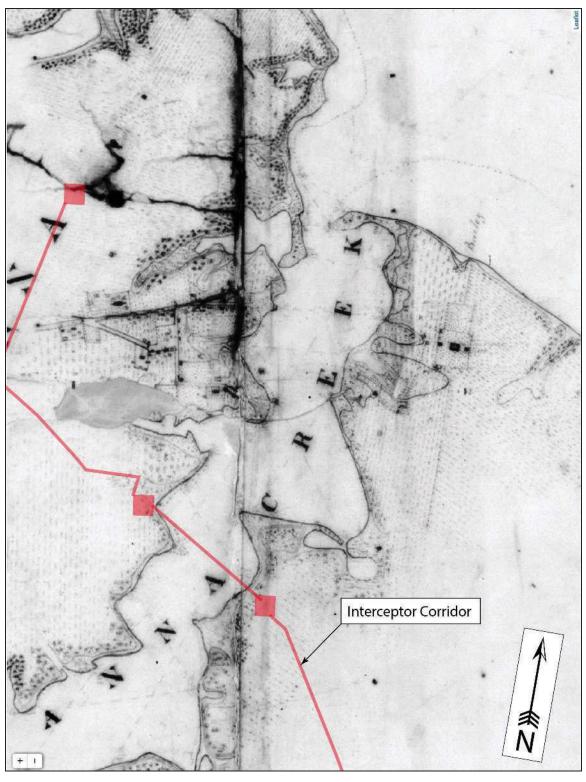


Figure 9. Location of the project corridor on detail of *Map of a Portion of the Rappahannock River*, Sheet No. 12 (Adams 1856).

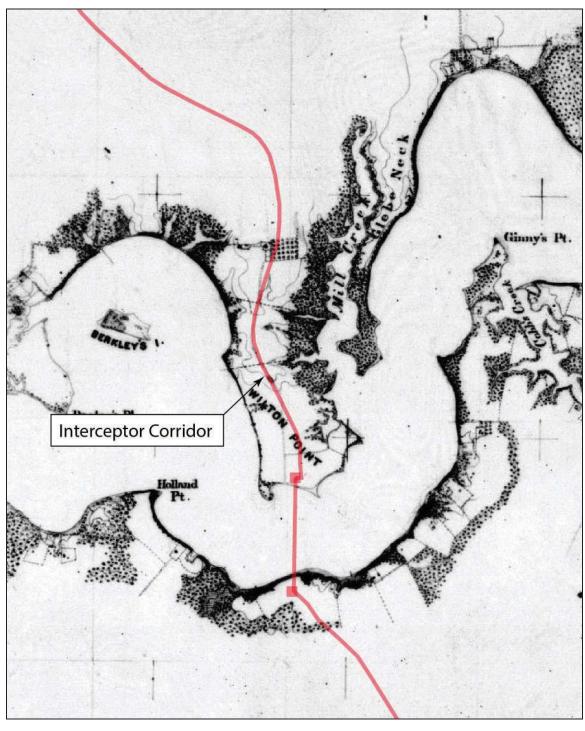


Figure 10. Location of the project corridor on detail of *Piankatank River, Virginia* (Donn 1869).

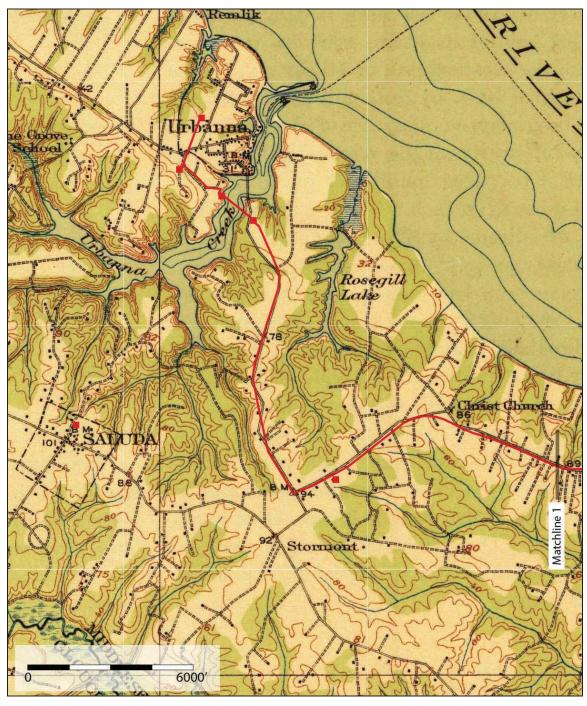


Figure 11. Location of the project corridor on detail of U.S.G.S. 15' Urbanna (1917) topographic quadrangle map.

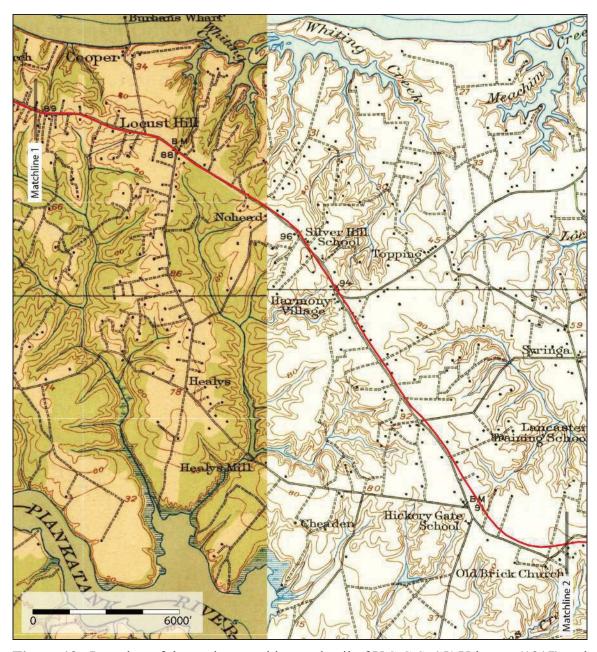


Figure 12. Location of the project corridor on detail of U.S.G.S. 15' Urbanna (1917) and Kilmarnock (1916) topographic quadrangle maps.

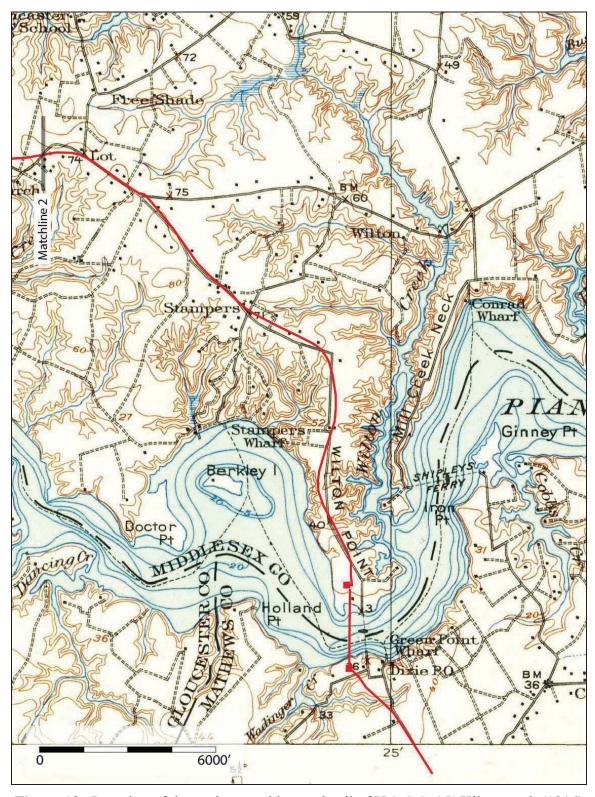


Figure 13. Location of the project corridor on detail of U.S.G.S. 15' Kilmarnock (1916) topographic quadrangle map.

that, with only some minor deviation, the precursors to the modern Routes 227, 33, and 3 followed essentially the same course as they had since the seventeenth century, when the main east-west thoroughfare, known simply as "The Road," was the main artery linking settlements across the county, extending 35 miles from the northwest corner of Middlesex County to the Chesapeake Bay. The section of the current Route 33 between Cooks Corner and Harmony Village was then a branch of the main road (which followed what is now Route 629). It was known as "the Church Path" because it led to ca. 1712 Christ Church, familiarly called the "Mother Church," of which the Wormeleys of Rosegill were the primary patrons (Galluci et al. 1992: 10).

There are two notable differences between the early twentieth-century transportation routes depicted on these maps and the present. A section of what is now Route 227 immediately south of Urbanna Creek was located to the west of the current right-of-way. And the current Route 3 terminated at the south end of Wilton Point, where Twigg's Ferry crossed the Piankatank River to Mathews County before the John Andrew Twigg Bridge was built in 1953.

III. PREVIOUSLY RECORDED CULTURAL RESOURCES

The following section details all cultural resources (including historic districts, standing structures, and archaeological sites) recorded in the DHR's Virginia Cultural Resource Information System (V-CRIS) within 100 feet of the proposed Saluda, Urbanna, and Cooks Corner pump stations, Middlesex TFM corridor, and associated HDD crossings.

DHR V-CRIS Map 1 (Figure 14)

The proposed location of the Central Middlesex Treatment Plant pump station is in the parking lot adjacent to the existing wastewater treatment plant, which is situated to the north of the Middle Peninsula Regional Security Center. The proposed pump station location is within 100 feet of the northern boundary of the Saluda Historic District (DHR ID# 059-5124) which has been determined eligible for listing in the National Register. There are no other previously recorded archaeological or architectural resources in the immediate vicinity.

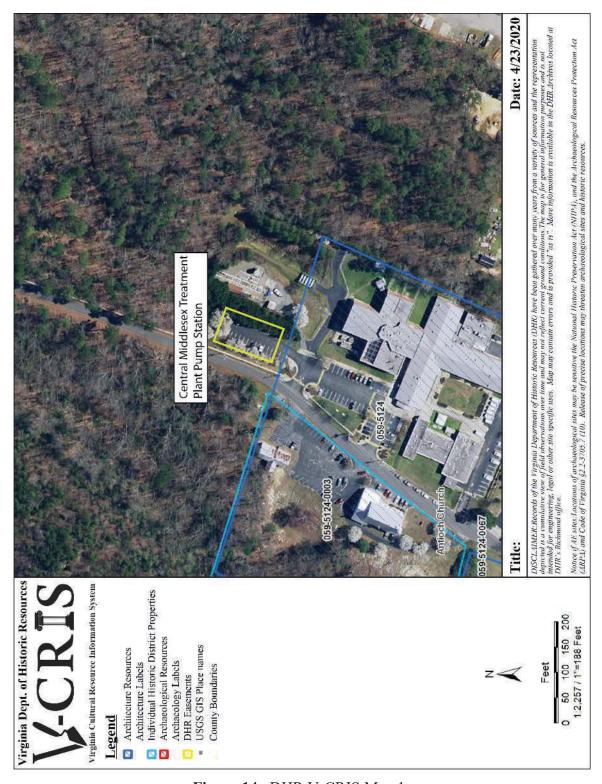


Figure 14. DHR V-CRIS Map 1.

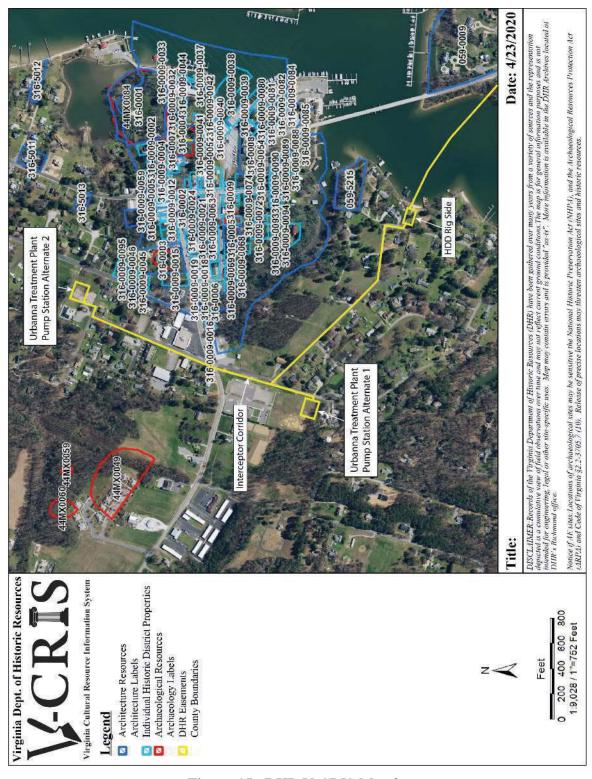


Figure 15. DHR V-CRIS Map 2.

DHR V-CRIS Map 2 (Figure 15)

The proposed location of the Urbanna Treatment Plant pump station (Alternate 2) and the associated TFM corridor within the limits of the Town of Urbanna are situated outside of the boundaries of the Urbanna Historic District (DHR ID# 316-0009), which is listed in the National Register and the Virginia Landmarks Register. On the south of Route 602/Virginia Street, the proposed location of the Urbanna Treatment Plant pump station (Alternate 1), TFM corridor, and HDD rig on the west side of Urbanna Creek do not coincide with any previously recorded archaeological or architectural resources.

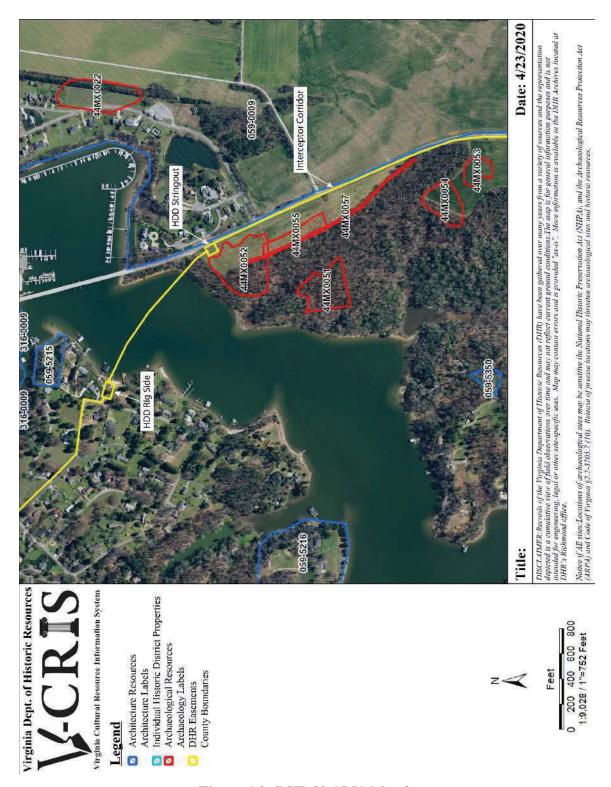


Figure 16. DHR V-CRIS Map 3.

DHR V-CRIS Map 3 (Figure 16)

Archaeological Resources

The proposed location of the HDD stringout on the east side of Urbanna Creek is in the immediate vicinity of previously recorded Site 44MX0052. This site was first recorded in the course of a Phase I surface collection survey of Rosegill completed by Cultural Resources, Inc. (CRI) on behalf of Rosegill Development LLC in 2006. CRI subsequently conducted a Phase II investigation of the site which suggested that it represents a multi-component prehistoric/historic resource with evidence of occupation during the Middle Woodland through Contact periods, and the nineteenth century. Shovel testing and test unit excavation during the Phase I and II investigations yielded a variety of Native American artifacts, including Mockley (Middle Woodland), Roanoke (Contact Period), and unidentified ceramics, debitage/shatter, a biface, groundstone fragments, a cobble tool, and fire-cracked rock. Given the date of the prehistoric artifacts, it is possible that this site is associated with the village of Opiscopank mapped by John Smith, and/or the subsequent Nimcock towns described by Ralph Wormeley (see Figure 6). Based on the results of the Phase II investigation, CRI recommended that the prehistoric Native American site component was eligible for listing in the National Register under Criterion D, but that the historic component was not eligible (Brady et al. 2006). To date, the DHR has not reviewed the CRI Phase II report nor concurred with these recommendations

In the course of their 2006 Phase I survey, CRI also recorded a section of relict road trace corresponding with the precursor to the current Route 227 (see Figure 11). The southern end of the road trace is in the vicinity of the TFM corridor on the west side of Route 227. The National Register eligibility of this resources has not been evaluated.

Architectural Resources

The boundary of the Rosegill property (DHR ID# 059-0009), which is listed in the National Register and Virginia Landmarks Register, runs along the east side of Route 227.

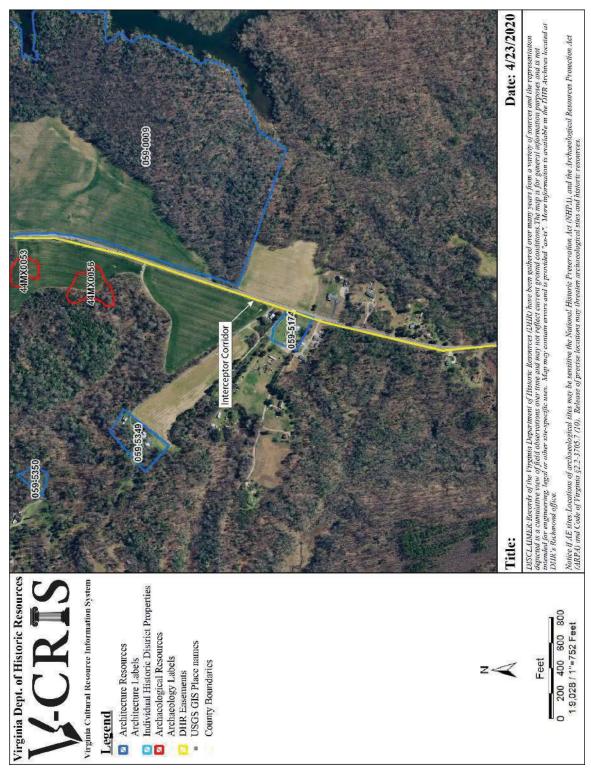


Figure 17. DHR V-CRIS Map 4.

DHR V-CRIS Map 4 (Figure 17)

Architectural Resources

The TFM corridor bypasses one previously recorded architectural resource adjacent to the west side of Route 227:

 House, 1103 Urbanna Road (DHR ID# 059-5174), ca. 1940, National Register eligibility not evaluated.

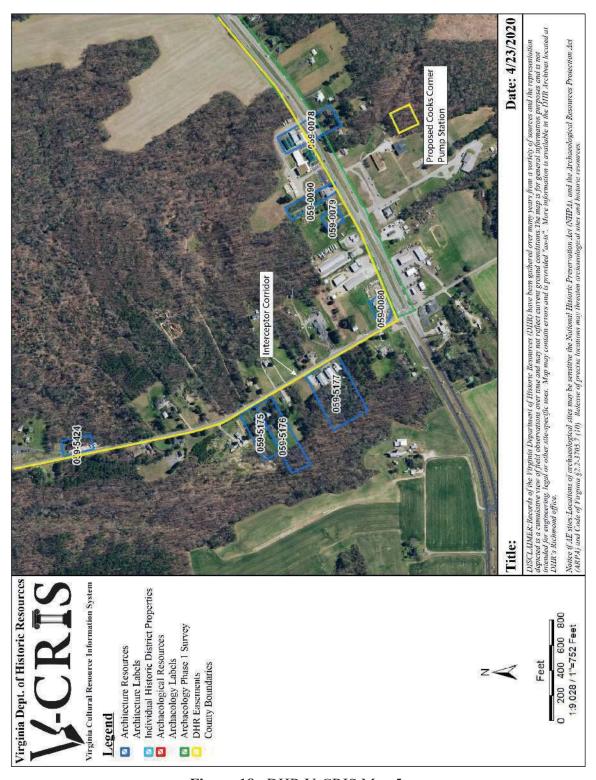


Figure 18. DHR V-CRIS Map 5.

DHR V-CRIS Map 5 (Figure 18)

Architectural Resources

The TFM corridor bypasses three previously recorded architectural resources adjacent to the west side of Route 33:

- House, 281 Urbanna Road (DHR ID# 059-5175), ca. 1954, National Register eligibility not evaluated.
- House, 267 Urbanna Road (DHR ID# 059-5176), ca. 1950, National Register eligibility not evaluated.
- Store, 147-165 Urbanna Road (DHR ID# 059-5177), ca. 1950, National Register eligibility not evaluated.

The TFM corridor bypasses one previously recorded architectural resource adjacent to the east side of Route 33:

• G.L. Davis Service Center, Café, and Tavern (DHR ID# 059-5424), pre-1960, National Register eligibility not evaluated.

There are no previously recorded archaeological or architectural resources in the immediate vicinity of the proposed Cooks Corner pump station location.

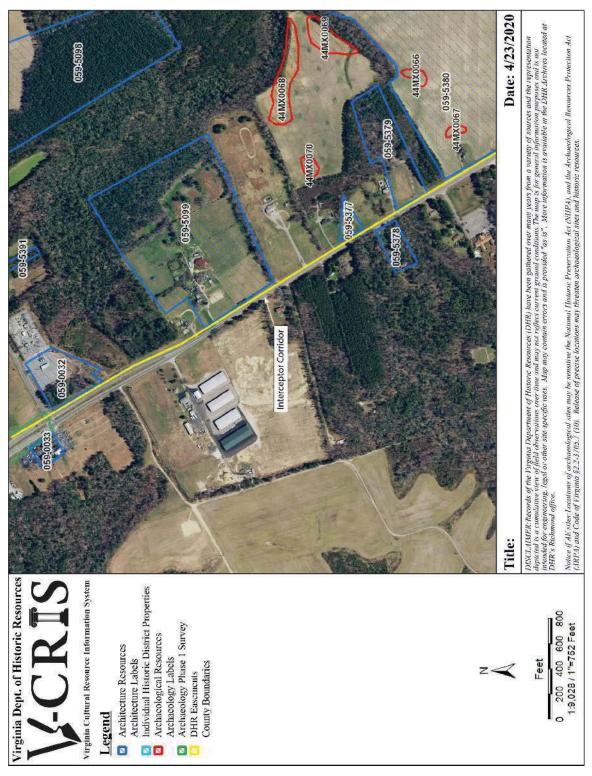


Figure 19. DHR V-CRIS Map 6.

DHR V-CRIS Map 6 (Figure 19)

Architectural Resources

The TFM corridor bypasses four previously recorded architectural resources adjacent to the east side of Route 33:

- House, General Puller Highway (DHR ID# 059-0032), pre-1960, no longer extant.
- Farm, 8049 General Puller Highway (DHR ID# 059-5099), ca. 1928, National Register eligibility not evaluated.
- House, 8307 General Puller Highway (DHR ID# 059-5377), ca. 1952, National Register eligibility not evaluated.
- House, 8433 General Puller Highway (DHR ID# 059-5379), ca. 1964, determined not eligible for the National Register.

The TFM corridor bypasses one previously recorded architectural resource adjacent to the west side of Route 33:

 House, 8364 General Puller Highway (DHR ID# 059-5378), ca. 1920, determined not eligible for the National Register.



Figure 20. DHR V-CRIS Map 7.

DHR V-CRIS Map 7 (Figure 20)

Archaeological Resources

The TFM corridor bypasses Site 44MX0073, which is located within 100 feet of the east side of Route 33. The site was identified by Dutton + Associates, Inc. in 2017 in the course of a Phase I survey of the proposed Puller Solar project area. The site consisted of a scatter of late nineteenth-/early twentieth-century artifacts, and the DHR concurred that the site is not eligible for listing in the National Register.

Architectural Resources

The TFM corridor bypasses two previously recorded architectural resources adjacent to the east side of Route 33:

- House, 8519 General Puller Highway (DHR ID# 059-5380), ca. 1900, determined not eligible for the National Register.
- House, 9 Bobs Hole Road (DHR ID# 059-5382), ca. 1930, determined not eligible for the National Register.

The TFM corridor bypasses two previously recorded architectural resources adjacent to the west side of Route 33:

- House, 8656 General Puller Highway (DHR ID# 059-5381), ca. 1940, determined not eligible for the National Register.
- House, 9144 General Puller Highway (DHR ID# 059-5383), ca. 1890, determined not eligible for the National Register.



Figure 21. DHR V-CRIS Map 8.

DHR V-CRIS Map 8 (Figure 21)

Architectural Resources

The TFM corridor bypasses four previously recorded architectural resources adjacent to the east side of Route 33:

- Store, 10675 General Puller Highway (DHR ID# 059-5083), ca. 1874,
 National Register eligibility not evaluated.
- House, 10715 General Puller Highway (DHR ID# 059-5082), ca. 1912, National Register eligibility not evaluated.
- House, 10801 General Puller Highway (DHR ID# 059-5085), ca. 1940,
 National Register eligibility not evaluated.
- House, 10889 General Puller Highway (DHR ID# 059-5084), ca. 1875, National Register eligibility not evaluated.

The TFM corridor bypasses one previously recorded architectural resource adjacent to the west side of Route 33:

• Lower United Methodist Church (DHR ID# 059-0007), ca. 1717, listed in the National Register/Virginia Landmarks Register.

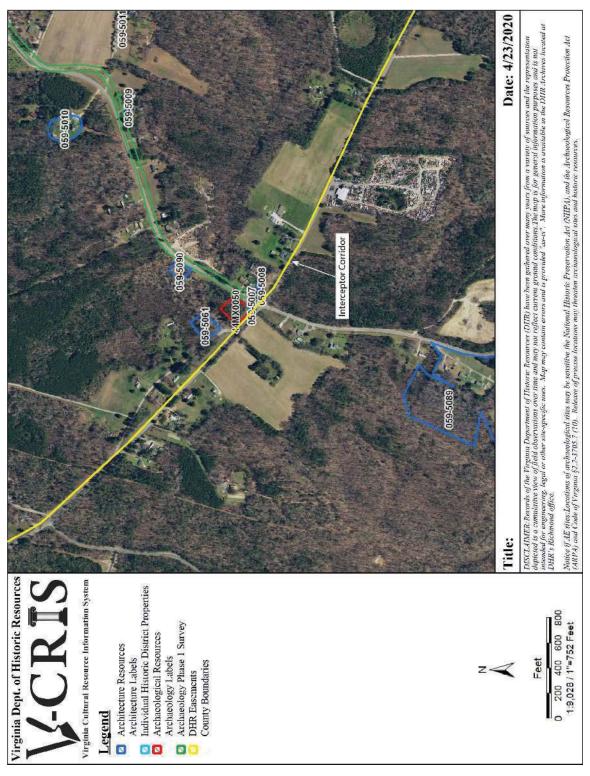


Figure 22. DHR V-CRIS Map 9.

DHR V-CRIS Map 9 (Figure 22)

Archaeological Resources

The TFM corridor bypasses Site 44MX0050, which is adjacent to the east side of Route 3. The site was identified by WMCAR in 2004 in the course of a Phase I survey for the Route 630 project. The site represented the remains of a store which operated at the site from the 1920s through the 1970s. The DHR concurred that the site is not eligible for listing in the National Register.

Architectural Resources

The TFM corridor bypasses three previously recorded architectural resources adjacent to the east side of Route 3:

- City of Refuge Church, 20 City of Refuge Road (DHR ID# 059-5061), ca.
 1920, National Register eligibility not evaluated.
- Kent's Store, Routes 3 and 630 (DHR ID# 059-5007), ca. 1930, determined not eligible for the National Register.
- Thomas House, Routes 3 and 630 (DHR ID# 059-5008), ca. 1945, determined not eligible for the National Register.

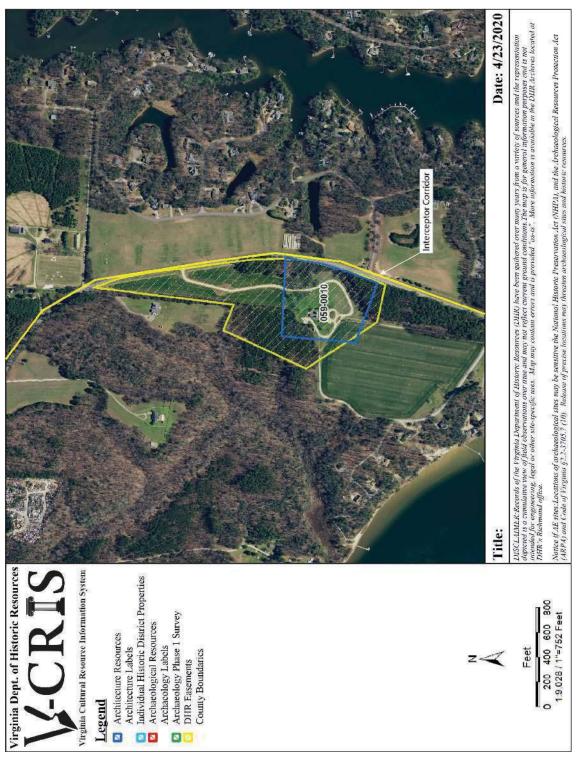


Figure 23. DHR V-CRIS Map 10.

DHR V-CRIS Map 10 (Figure 23)

The boundary of Wilton (DHR ID# 059-0010) runs along the west side of Route 3. This historic property, which dates to 1763, is listed in the National Register/Virginia Landmarks Register, and is subject to an historic preservation easement held by the Virginia Board of Historic Resources.

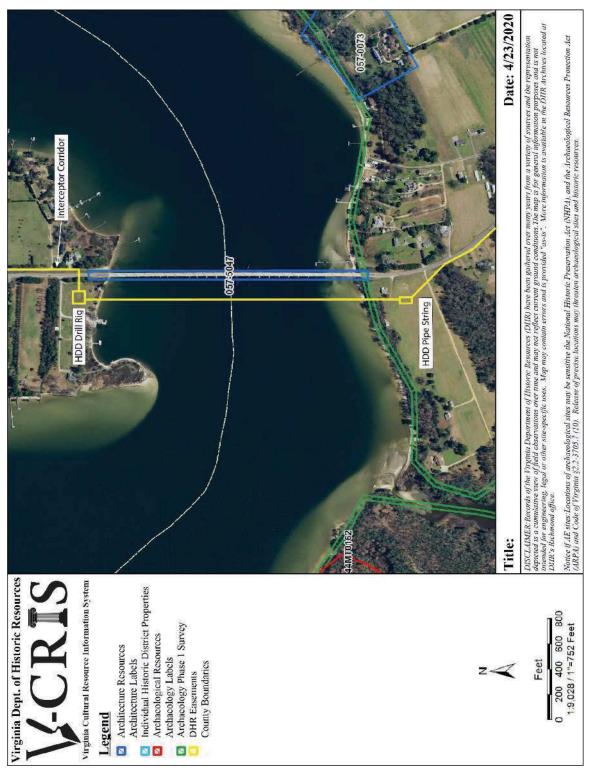


Figure 24. DHR V-CRIS Map 11.

DHR V-CRIS Map 11 (Figure 24)

The HDD drill rig location on the north side of the Piankatank River is adjacent to the ca. 1953 John Andrew Twigg Bridge (DHR ID# 057-5047) which carries Route 3 across the river. The DHR has determined that this resource is not eligible for listing in the National Register.

There are no additional archaeological or architectural resources recorded within the immediate vicinity of the HDD drill rig or pipe string locations. The south shore of the Piankatank River in the vicinity of the HDD pipe string location was investigated by the Chesapeake Watershed Archaeological Research Foundation in 2008 in the course of a Phase I archaeological survey of coastal shorelines in Mathews County (Lowery 2008). The survey identified no archaeological sites along the river shore in this vicinity.

IV. RECOMMENDATIONS

Considering the extent of existing "urban" disturbances within the proposed pump station locations in Saluda, Urbanna, and Cooks Corner, there is relatively low potential for any effects to significant, intact archaeological resources. Similarly, WMCAR identified no new archaeological sites in the course of their 1991 Phase I survey of the 5.3-mile Route 33 right-of-way between Cooks Corner and Harmony Village. "Modern 20th-century debris constituted the largest percentage of material recovered," they reported. "Many areas of the survey were severely disturbed due to modern construction and land use (Gallucci et al. 1992: ii). It is anticipated that conditions within the remainder of the VDOT right-of-way will be similarly disturbed, and JRIA therefore recommends that the potential for identifying significant, intact archaeological resources along the proposed Middlesex TFM is low.

The greatest potential for disturbance to archaeological resources which may be eligible for listing in the National Register will be from the HDD under Urbanna Creek and the Piankatank River. The proposed HDD stringout location on the east side of Urbanna Creek is in the immediate vicinity of Site 44MX0052, which includes evidence of Native American occupation during the Middle and Late Woodland periods, and which may be associated with the Contact Period Opiscopank/Nimcock villages. Considering its situation adjacent to Urbanna Creek, the HDD rig location on the west side of Urbanna Creek may also include prehistoric Native American remains. While there are no previously recorded archaeological sites associated with the proposed HDD impact areas on the north and south sides of the Piankatank River, these riverside locations offer relatively high potential for identifying both prehistoric and historic archaeological sites.

If possible, JRIA recommends that the Middlesex TFM should avoid direct impacts within the defined boundaries of Rosegill (DHR ID# 059-0009), which is listed in the National Register/Virginia Landmarks Register, and Wilton (DHR ID# 059-0010), which is listed in the National Register/Virginia Landmarks Register, and is subject to an historic preservation easement held by the Virginia Board of Historic Resources.

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- 7.5' Ware Neck topographic quadrangle map.
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- 1984 1:100,000 Williamsburg topographic quadrangle map.
- 1986 7.5' Saluda topographic quadrangle map.

7.5' Wilton topographic quadrangle map.

Virginia Department of Historic Resources (DHR)

"Opiscopank—Smith's Mystery Town." Historical Highway Marker N-78. Accessed at: https://vcris.dhr.virginia.gov/HistoricMarkers/.

Virginia Historic Landmarks Commission (VHLC)

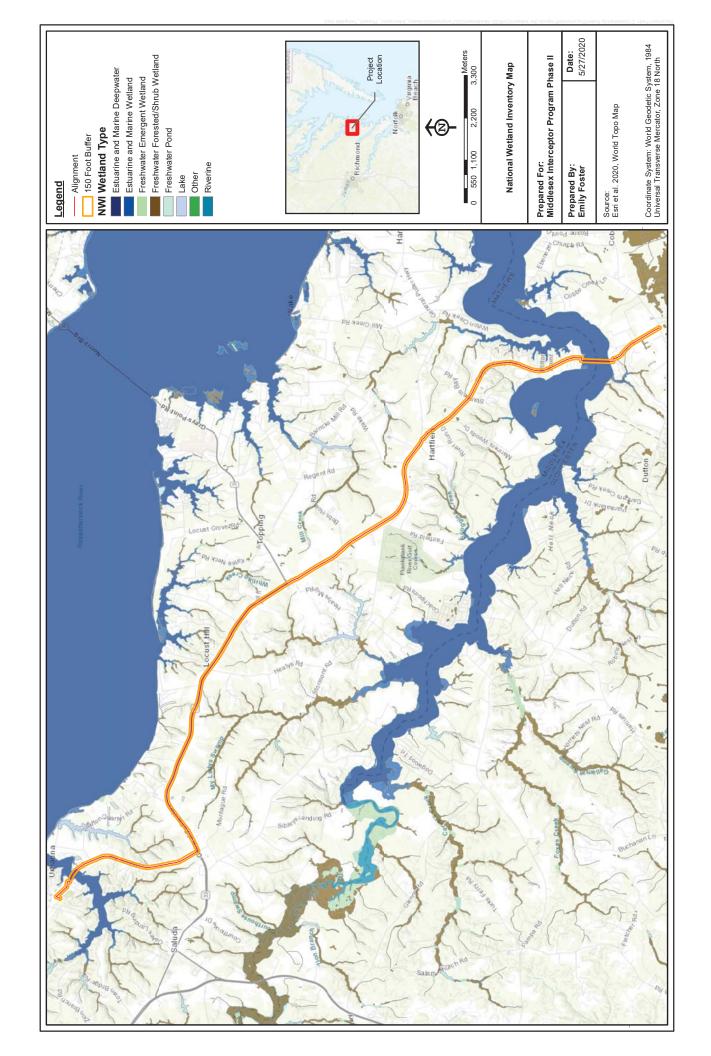
National Register of Historic Places Nomination for Hewick (DHR ID# 059-0006). Virginia Department of Historic Resources, Richmond, Virginia.

Wells, Camille

"Social and Economic Aspects of Eighteenth-Century Housing on the Northern Neck." Unpublished doctoral dissertation, The College of William and Mary, Williamsburg, Virginia.

Yarnell, Richard A.

1976 "Early Plant Husbandry in Eastern North America." In *Cultural Change and Continuity: Essays in Honor of James Bennett Griffin*, edited by Charles E. Cleland, Academic Press, New York.



HRSD Middlesex IFM



May 27, 2020

Wetlands

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Pond

Freshwater Forested/Shrub Wetland

Freshwater Emergent Wetland

Lake

Other

Riverine

National Wetlands Inventory (NWI) This page was produced by the NWI mapper



MAP LEGEND

The soil surveys that comprise your AOI were mapped at scales

ranging from 1:15,800 to 1:20,000.

MAP INFORMATION

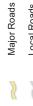
Special Line Features Streams and Canals Very Stony Spot Spoil Area Stony Spot Wet Spot Other Water Features W 8 Soil Map Unit Polygons Area of Interest (AOI) Soil Map Unit Points Soil Map Unit Lines Special Point Features **Borrow Pit** Area of Interest (AOI) Blowout 9 Soils





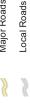
Closed Depression

Clay Spot



Gravelly Spot

Gravel Pit







Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot Sandy Spot

Marsh or swamp

Lava Flow

Landfill

Mine or Quarry

Aerial Photography

Survey Area Data: Version 11, Sep 16, 2019 Mathews County, Virginia of the version date(s) listed below. Soil Survey Area:

Soil Survey Area: Middlesex County, Virginia

This product is generated from the USDA-NRCS certified data as

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.

Maps from the Web Soil Survey are based on the Web Mercator

Coordinate System: Web Mercator (EPSG:3857)

Web Soil Survey URL:

Source of Map: Natural Resources Conservation Service

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

measurements.

projection, which preserves direction and shape but distorts

different levels of detail. This may result in map unit symbols, soil scales, with a different land use in mind, at different times, or at Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different properties, and interpretations that do not completely agree Survey Area Data: Version 12, Sep 16, 2019

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

across soil survey area boundaries.

Date(s) aerial images were photographed: Dec 31, 2009—Feb

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.

Severely Eroded Spot

Slide or Slip

Sinkhole

Sodic Spot

USDA

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Dr	Dragston fine sandy loam, shallow	0.0	0.0%
Fa	Fallsington fine sandy loam	1.3	0.2%
KtA	Kempsville loamy fine sand, thick surface, 0 to 2 percent slopes	3.3	0.6%
SaA	Sassafras fine sandy loam, 0 to 2 percent slopes	9.6	1.6%
SdA	Sassafras loamy fine sand, 0 to 2 percent slopes	12.1	2.1%
StE	Steep sandy land	6.2	1.1%
W	Water	7.7	1.3%
Wo	Woodstown fine sandy loam	5.3	0.9%
Subtotals for Soil Survey Area		45.5	7.8%
Totals for Area of Interest		581.9	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Bethera and Daleville soils	7.4	1.3%
4	Catpoint loamy sand	1.5	0.3%
5B	Craven silt loam, 2 to 6 percent slopes	2.0	0.3%
6A	Emporia loam, 0 to 2 percent slopes	6.3	1.1%
6B	Emporia loam, 2 to 6 percent slopes	129.8	22.3%
7D	Emporia-Nevarc complex, 6 to 15 percent slopes	18.5	3.2%
7F	Emporia-Nevarc complex, 15 to 45 percent slopes	8.2	1.4%
8	Eunola loam	13.9	2.4%
9A	Kempsville sandy loam, 0 to 2 percent slopes	7.0	1.2%
9B	Kempsville sandy loam, 2 to 6 percent slopes	39.5	6.8%
10	Kenansville fine sand	0.1	0.0%
13	Myatt loam	6.8	1.2%
15	Ochlockonee silt loam	18.7	3.2%
18B	Rumford fine sandy loam, 2 to 6 percent slopes	8.1	1.4%
19A	Slagle silt loam, 0 to 2 percent slopes	68.9	11.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19B	Slagle silt loam, 2 to 6 percent slopes	146.6	25.2%
20A	Suffolk fine sandy loam, 0 to 2 percent slopes	2.2	0.4%
20B	Suffolk fine sandy loam, 2 to 6 percent slopes	25.7	4.4%
21D	Suffolk-Remlik complex, 6 to 15 percent slopes	2.5	0.4%
21F	Suffolk-Remlik complex, 15 to 45 percent slopes	4.6	0.8%
22B	Udorthents and Psamments, gently sloping	3.8	0.7%
W	Water	14.3	2.5%
Subtotals for Soil Survey A	Area	536.3	92.2%
Totals for Area of Interest		581.9	100.0%

National Flood Hazard Layer FIRMette





Legend

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

Without Base Flood Elevation (BFE)

SPECIAL FLOOD HAZARD AREAS

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway

areas of less than one square mile Zone X Future Conditions 1% Annual

Area with Reduced Flood Risk due to Chance Flood Hazard Zone X

Area with Flood Risk due to Levee Zone D Levee. See Notes. Zone X

Area of Minimal Flood Hazard Zone X NO SCREEN

Effective LOMRs

Area of Undetermined Flood Hazard Zone D

Channel, Culvert, or Storm Sewer

GENERAL | - - - - Channel, Culvert, or Storr
STRUCTURES | 1111111 Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation

Base Flood Elevation Line (BFE) Coastal Transect ww 513 ww

Coastal Transect Baseline Jurisdiction Boundary

Hydrographic Feature

OTHER

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.

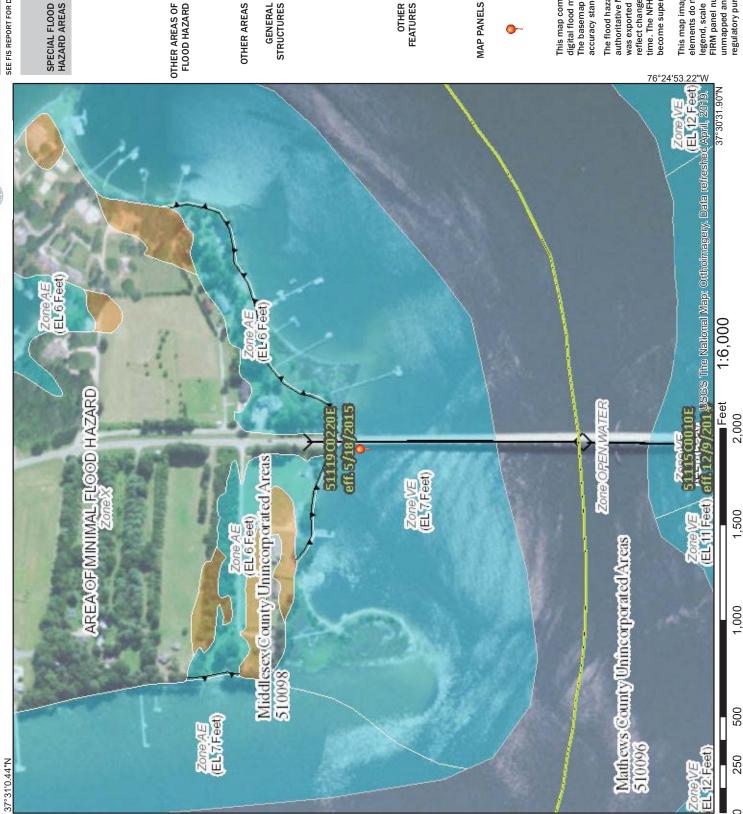
This map complies with FEMA's standards for the use of The basemap shown complies with FEMA's basemap digital flood maps if it is not void as described below. accuracy standards

authoritative NFHL web services provided by FEMA. This map reflect changes or amendments subsequent to this date and was exported on 5/27/2020 at 2:54:18 PM and does not time. The NFHL and effective information may change or The flood hazard information is derived directly from the 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.

National Flood Hazard Layer FIRMette

W"76.25'30.67"W





Legend

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

Without Base Flood Elevation (BFE) SPECIAL FLOOD HAZARD AREAS

0.2% Annual Chance Flood Hazard, Areas depth less than one foot or with drainage areas of less than one square mile Zone X of 1% annual chance flood with average With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

Area with Flood Risk due to Levee Zone D Area with Reduced Flood Risk due to Levee. See Notes. Zone X

Future Conditions 1% Annual

Chance Flood Hazard Zone X

Area of Minimal Flood Hazard Zone X NO SCREEN

Effective LOMRs

Area of Undetermined Flood Hazard Zone D

Channel, Culvert, or Storm Sewer GENERAL | - - - - Channel, Culvert, or Storr STRUCTURES | 1111111 Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance

Water Surface Elevation Coastal Transect

Base Flood Elevation Line (BFE) Limit of Study ww 513 www

Jurisdiction Boundary

Coastal Transect Baseline

Hydrographic Feature Profile Baseline

OTHER

FEATURES

Digital Data Available

Unmapped

No Digital Data Available

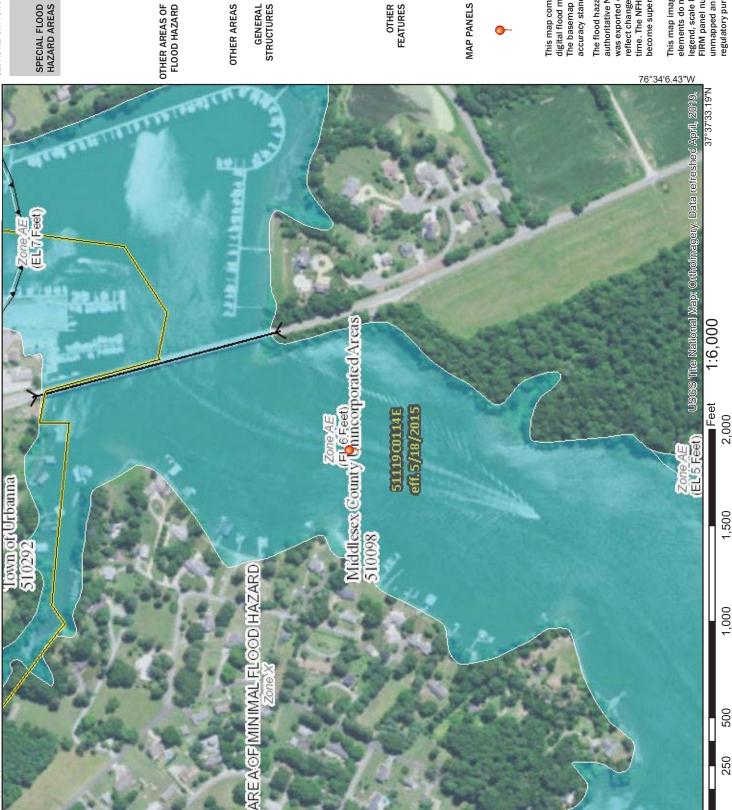
point selected by the user and does not represent an authoritative property location. The pin displayed on the map is an approximate

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

authoritative NFHL web services provided by FEMA. This map reflect changes or amendments subsequent to this date and was exported on 5/27/2020 at 3:01:32 PM and does not time. The NFHL and effective information may change or The flood hazard information is derived directly from the 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.

National Flood Hazard Layer FIRMette





Legend

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

Without Base Flood Elevation (BFE) SPECIAL FLOOD HAZARD AREAS

0.2% Annual Chance Flood Hazard, Areas depth less than one foot or with drainage of 1% annual chance flood with average areas of less than one square mile Zone X With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway

Future Conditions 1% Annual

Area with Flood Risk due to Levee Zone D Area with Reduced Flood Risk due to Chance Flood Hazard Zone X Levee. See Notes. Zone X

NO SCREEN Area of Minimal Flood Hazard Zone X **Effective LOMRs**

Area of Undetermined Flood Hazard Zone D

Channel, Culvert, or Storm Sewer GENERAL | - - - - Channel, Culvert, or Storr
STRUCTURES | 1111111 Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect

Base Flood Elevation Line (BFE)

Jurisdiction Boundary

Coastal Transect Baseline

OTHER

FEATURES

Hydrographic Feature

Digital Data Available

Unmapped

No Digital Data Available

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 The basemap shown complies with FEMA's basemap digital flood maps if it is not void as described below accuracy standards

authoritative NFHL web services provided by FEMA. This map reflect changes or amendments subsequent to this date and was exported on 5/27/2020 at 3:05:02 PM and does not time. The NFHL and effective information may change or The flood hazard information is derived directly from the 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.



DEPARTMENT OF THE ARMY

US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

March 28, 2022

Northern Virginia Regulatory Section NAO-2020-02102 / VMRC#22-0374 (Piankatank River and Urbanna Creek)

Deborah Painter – Tetra Tech, Inc. 5700 Lake Wright Drive, Suite 102 Norfolk, Virginia 23502 Debbie.Painter@tetratech.com

Dear Ms. Painter:

This is in response to the Tetra Tech, Inc. letter dated September 22, 2021, concerning the study of the proposed construction of the Hampton Roads Sanitation District Middlesex Interceptor System Program Phase II - Urbanna to Mathews Transmission Force Main project.

Upon initial review, we have determined that the project will require a Norfolk District Army Corps of Engineers (Norfolk District) permit for the underwater crossings of the Piankatank River and Urbanna Creek, pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). We will review the Preliminary Jurisdiction Determination (PJD) and Joint Permit Application (JPA) received by our office on February 18, 2022 and determine whether the proposed work will also impact waters, including wetlands, regulated by the Norfolk District under Section 404 of the Clean Water Act of 1972 (33 U.S.C. 1344)

Federal review requirements may extend beyond the Norfolk District's jurisdiction. Under the Virginia Clean Water Revolving Loan Fund (CWRLF), the U.S. Environmental Protection Agency (EPA) has confirmed that the Virginia Department of Environmental Quality is the lead agency for this project. Virginia CWRLF Regulation 40 C.F.R. § 35.3145 Application of other Federal Authorities states the following:

- (a) Generally. The State must agree to comply and to require all recipients of funds "directly made available by" capitalization grants to comply with applicable Federal authorities.
- (b) Informing EPA. The State must inform EPA when consultation or coordination by EPA with other Federal agencies is necessary to resolve issues regarding compliance with those requirements.

Furthermore, the project may require coordination with the Virginia Department of Historic Resources and the Federally recognized Tribes, pursuant to Section 106 of the National Historic Preservation Act; and with the U.S. Fish and Wildlife Service and the

National Oceanic and Atmospheric Administration, pursuant to Section 7 of the Endangered Species Act.

We wish to participate in any interagency meetings and field reviews for this project to the extent possible. We request regular coordination with the appropriate state and federal agencies. The Norfolk District further encourages the use of a collaborative process for the study of this project, documenting concurrence of the pertinent federal agencies at important steps, to provide the local governments and the public with a more dependable framework for planning decisions.

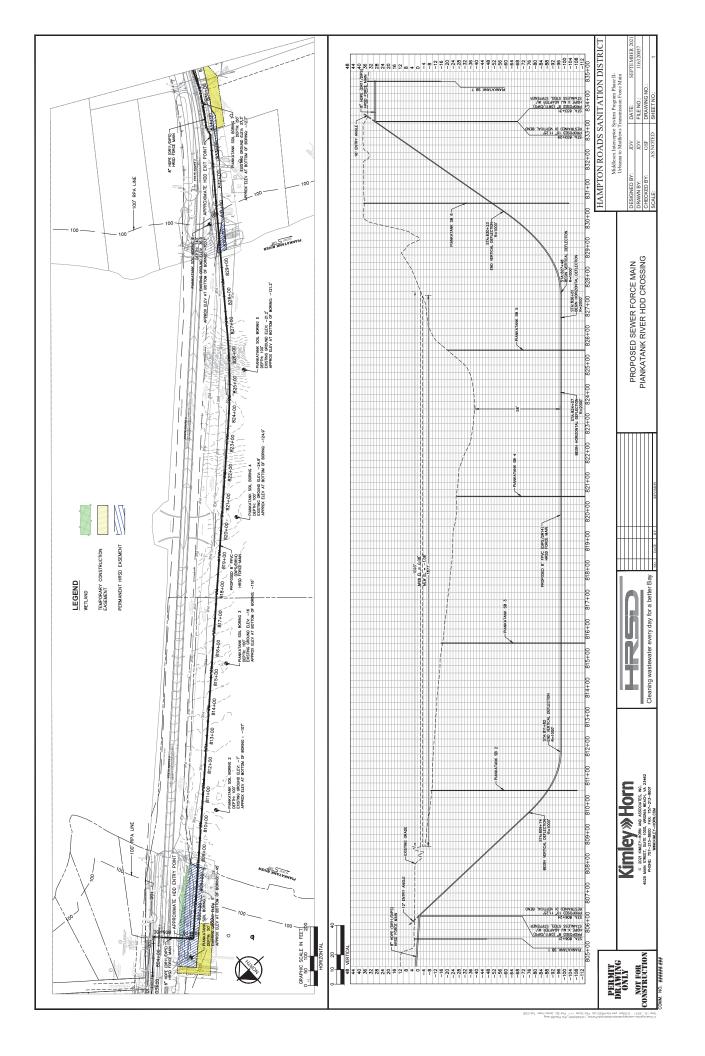
Our regulations require that we consider a full range of public interest factors and conduct an alternatives analysis in order to identify the least environmentally damaging practicable alternative (LEDPA), which is the only alternative we can authorize. In addition to waters, including wetlands, impacts, we must consider factors such as land use (including displacements of homes and businesses), floodplain hazards and values, water supply and conservation, water quality, safety, cost, economics, threatened and endangered species, historic and cultural resources, and environmental justice.

Thank you for the opportunity to submit comments for this project. If you have any questions, you may contact Nancy Davis at nancy.p.davis@usace.army.mil or via telephone at (757) 201-7044.

Sincerely,

Tucker Smith
Section Chief
Northern Virginia Regulatory Section
Norfolk District Corps of Engineers

Copies Furnished: Magdalene Cunningham – (EPA)





19 November 2021

Virginia Marine Resource Commission

Tidewater Joint Permit Application For VMRC subaqueous Crossing Piankatank River and Urbanna Creek Middlesex and Mathews, Virginia

Applicant: Mr. Edward Henifin

Hampton Roads Sanitation District

P.O. Box 5911

Virginia Beach, VA, 23471

Agent: Ms. Emily Foster

Tetra Tech

5700 Lake Wright Drive Norfolk, VA, 23502

Subject: HRSD - Middlesex Interceptor System Program Phase II; Urbanna to Mathews

Transmission Force Main project (MISPPII); NAO-2020-02102

To Whom It May Concern,

On behalf of the Hampton Roads Sanitation District (HRSD), Tetra Tech, Inc. has enclosed a completed Tidewater Joint Permit Application and Jurisdictional Determination Request in support of a proposed project to construct a sewage conveyance system through Mathews and Middlesex Counties, Virginia (HUCs).

The Middlesex Interceptor System Program Phase II — Urbanna to Mathews Transmission Force Main project (MISPPII) includes the design and construction of a sewage conveyance system to serve Middlesex County. A small diameter transmission force main will serve as the system backbone and extend 3.2 miles from Urbanna to Cook's Corner and approximately 13 miles along Route 33 from Cook's Corner to the connection to HRSD's Mathews Transmission force main near the intersection of Twiggs Ferry Road and Buckley Hall Road (Route 3/198). The Project will consist of a new force main to convey wastewater from Middlesex County to HRSD's York River Treatment Plant and enable decommissioning of both the HRSD Urbanna and Central Middlesex Treatment Plants. The Project also includes installation of pump stations and equalizer tanks.

The Project is predominantly co-located within existing roads and easements, and no impacts to wetlands are currently proposed. A wetland delineation was performed for the Project during the 2021 growing season, and a Jurisdictional Determination Request is attached to this application. All wetlands are to be avoided and silt fence will be installed adjacent to wetland boundaries prior to the start of construction. As HRSD intends to utilize funding from the Virginia Clean Water Revolving Loan Fund (CWRLF), an Environmental Assessment (EA) is also being prepared for this Project in accordance with CWRLF requirements.

This Joint Permit Application pertains specifically to the proposed crossings at the Piankatank River and Urbanna Creek, as the design of these Project components are less likely to be significantly altered as the planning and design phase moves forward. Because the Project includes subaqueous crossings of the Piankatank River and Urbanna Creek via Horizontal Direction Drill (HDD), HRSD is requesting VMRC authorization for the subaqueous crossings and requests concurrence from USACE and VADEQ that no



additional CWA Section 401/404 permits are required for these crossing locations. If any impacts to wetlands or waters of the U.S. are anticipated within the linear route or pump station location as design progresses, additional JD requests and JPAs for those locations will be submitted.

To assist the entities involved with the review and approval of this activity, please find the enclosed Tidewater JPA, Jurisdictional Determination Request, Figures, site photos and additional supporting information. Upon receipt and review of this package, please feel free to contact me by phone or e-mail at (540) 841-4752 or emily.foster@tetratech.com.

Respectfully submitted,

Emily Foster, PWS #2718 Environmental Scientist Tetra Tech, Inc

Enclosure

CC Edward Henifin, HRSD Scott Funk, P.E., Kimley-Horn Tim Moore, P.E., Tetra Tech Brad Sweeney, P.E., Tetra Tech

Attachments:

- 1. Tidewater JPA Form and Signatures
- 2. Property Owner Information
- 3. Jurisdictional Determination Request
- 4. Proposed Sewer Force Main Piankatank River HDD Crossing (Project Drawings)
- 5. Proposed Sewer Force Main Urbanna Creek HDD Crossing (Project Drawings)
- 6. USFWS IPaC Official Species List
- 7. VDWR VaFWIS Search Report
- 8. VDCR Natural Heritage Database Explorer Resources Report

ATTACHMENT 1: TIDEWATER JPA

Regulatory Agency Contact Information



Virginia Marine Resources Commission (VMRC)

Habitat Management Division 380 Fenwick Road, Building 96 Fort Monroe, VA 23651

Phone: (757) 247-2200, Fax: (757) 247-8062

Website: http://www.mrc.virginia.gov/hmac/hmoverview.shtm



United States Army Corps of Engineers (USACE)

Norfolk District

803 Front Street, ATTN: CENAO-WR-R

Norfolk, Virginia 23510-1011 Phone: (757) 201-7652, Fax: (757) 201-7678

Website: http://www.nao.usace.army.mil/Missions/Regulatory.aspx



Virginia Department of Environmental Quality (DEQ)

Virginia Water Protection Permit Program Post Office Box 1105 Richmond, Virginia 23218 Phone: (804) 698-4000

Website: http://www.deq.virginia.gov/



LOCAL WETLANDS BOARD (LWB) CONTACT INFORMATION:

Links to LWB information on the Web can be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html
In addition, the phone numbers listed below can be used to contact the LWB. Please be advised that these phone numbers are subject to change at any time.

Accomack County (757) 787-5721, Cape Charles (757) 331-3259, Charles City County (804) 829-9296, Chesapeake (757) 382-6248, Colonial Heights (804) 520-9275, Essex County (804) 443-4951, Fairfax County (703) 324-1364, Fredericksburg (540) 372-1179, Gloucester County (804) 693-2744, Hampton (757) 727-6140, Hopewell (804) 541-2267, Isle of Wight County (757) 365-6211, James City County (757) 253-6673, King and Queen County (804) 769-4978, King George County (540) 775-7111, King William County (804) 769-4927, Lancaster County (804) 462-5220, Mathews County (804) 725-5025, Middlesex County (804) 758-0500, New Kent County (804) 966-9690, Newport News (757) 247-8437, Norfolk (757) 664-4368, Northampton County (757) 678-0442, Northumberland County (804) 580-8910, Poquoson (757) 868-3040, Portsmouth (757) 393-8836, Prince William County (703) 792-6984, Richmond County (804) 333-3415, Stafford County (540) 658-8668, Suffolk (757) 923-3650, Virginia Beach (757) 427-8246, Westmoreland County (804) 493-0120, West Point (804) 843-3330, Williamsburg (757) 220-6130, York County (757) 890-3538

Tidewater Joint Permit Application (JPA) For Projects Involving Tidal Waters, Tidal Wetlands and/or Dunes and Beaches in Virginia

This application may be used for most commercial and noncommercial projects involving **tidal waters**, **tidal wetlands and/or dunes and beaches in Virginia** which require review and/or authorization by Local Wetlands Boards (LWB), the Virginia Marine Resources Commission (VMRC), the Department of Environmental Quality (DEQ), and/or the U. S. Army Corps of Engineers (USACE). This application can be used for:

- <u>Access-related activities</u>, including piers, boathouses, boat ramps (without associated dredging or excavation*), moorings, marinas.
- <u>Shoreline stabilization projects</u> including living shorelines, riprap revetments, marsh toe stabilization, bulkheads, breakwaters, beach nourishment, groins, and jetties. It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1).
- <u>Crossings</u> over or under tidal waters and wetlands including bridges and utility lines (water, sewer, electric).
- Aquaculture structures, including cages and floats except "oyster gardening"**

*Note: for all dredging, excavation, or surface water withdrawal projects you <u>MUST</u> use the Standard JPA form; for noncommercial, riparian shellfish aquaculture projects (i.e., "oyster gardening") you must use the abbreviated JPA found at https://mrc.virginia.gov/forms/2019/
VGP3 Aquaculture form 2019.pdf or call VMRC for a form.

The DEQ and the USACE use this form to determine whether projects qualify for certain General, Regional, and/or Nationwide permits. If your project does not qualify for these permits and you need a DEQ Virginia Water Protection permit or an individual USACE permit, you must submit the Standard Joint Permit application form. You can find this application at

http://www.nao.usace.army.mil/Missions/Regulatory/JPA.aspx. Please note that some health departments and local agencies, such as local building officials and erosion and sediment control authorities, do not use the Joint Permit Application process or forms and may have different informational requirements. The applicant is responsible for contacting these agencies for information regarding those permitting requirements.

HOW TO APPLY

Submit one (1) completed copy of the Tidewater JPA to VMRC:

- 1. If by mail or courier, use the VMRC address provided on page 1.
- 2. If by electronic mail, address the package to: <u>JPA.permits@mrc.virginia.gov</u>. The application must be provided in the .pdf format and should not exceed 10 MB. If larger than 10 MB you may provide a file transfer protocol (ftp) site for download purposes.

The Tidewater JPA should include the following:

- 1. **Part 1** General Information
- 2. **Part 2** Signatures
- 3. Part 3 Appendices (A, B, C, and/or D as applicable to your project)
- 4. **Part 4** Project Drawings.

The drawings shall include the following for ALL projects:

- Vicinity Map (USGS topographic map, road map or similar showing project location)
- Plan View Drawing (overhead, to scale or with dimensions clearly marked)
- Section View Drawing (side-view, to scale or with dimensions clearly marked)

Sample drawings are included at the end of Part 4 of this application to show examples of the information needed to consider your application complete and allow for the timely processing.

When completing this form, use the legal name of the applicant, agent, and/or property owner. For DEQ application purposes, *legal name* means the full legal name of an individual, business, or other organization. For an individual, the legal name is the first name, middle initial, last name, and suffix. For an entity authorized to do business in Virginia, the legal name is the exact name set forth in the entity's articles of incorporation, organization or trust, or formation agreement, as applicable. Also provide the name registered with the State Corporation Commission, if required to register. DEQ issues a permit or grants coverage to the so-named individual or business, who becomes the 'permittee'. Correspondence from some agencies, including permits, authorizations, and/or coverage, may be provided via electronic mail. If the applicant and/or agent wishes to receive their permit via electronic mail, please remember to include an e-mail address at the requested place in the application.

In order for projects requiring LWB authorization to be considered complete (Virginia Code § 28.2-1302); "The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances of facilities, including those on the adjacent uplands; a description of the type of equipment to be used and the means of access to the activity site; the names and addresses of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; and secondary purpose of the proposed project; a complete description of measures to be taken during and after alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require."

You may include signed Adjacent Property Owner (APO) Acknowledgement Forms found at the end of this Short Form. You must provide these addresses in Part 1 whether or not you use the APO forms. VMRC will request comments from APOs for projects that require permits for encroachment over state-owned submerged lands. VMRC or your local wetlands board must notify all APO's of public hearings required for all proposals involving tidal wetlands and dunes/beaches that are not authorized by statute. This information will not be used by DEQ to meet the requirements of notifying riparian land owners.

Regional Permit 17 (RP-17), authorizes the installation and/or construction of open-pile piers, mooring structures/devices, fender piles, covered boathouses/boatslips, boatlifts, osprey pilings/platforms, accessory pier structures, and certain devices associated with shellfish gardening, for private use, subject to strict compliance with all conditions and limitations further set out in the RP-17 enclosure located at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/. In addition to the information required in this JPA, prospective permittees seeking authorization under RP-17 must complete and submit the 'Regional Permit 17 Checklist' with their JPA. A copy of the 'Regional Permit 17 Checklist' is found on pages 13 and 14 of this application package. If the prospective permittee answers "yes" (or "N/A", where applicable) to all of the questions on the 'Regional Permit 17 Checklist', the permittee is in compliance with RP-17 and will not receive any other written authorization from the Corps but may not proceed with construction until they have obtained all necessary state and local permits. Note: If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work.

Note: Land disturbance (grading, filling, etc.) or removal of vegetation associated with projects located in Chesapeake Bay Preservation Areas will require approval from local governments. Certain localities utilize this application during their Bay Act review. Part 5 of this application is included to provide assistance for the applicant to comply with Bay Act /or Erosion and Sediment Control requirements concurrent with this application.

WHAT HAPPENS NEXT

Upon receipt of an application, VMRC will assign a permit application number to the JPA and will then distribute a copy of the application and any original plan copies submitted to the other regulatory agencies that are involved in the JPA process. All agencies will conduct separate but concurrent reviews of your project. Please be aware that each agency must issue a separate permit (or a notification that no permit is required). Note that in some cases, DEQ may be taking an action on behalf of the USACE, such as when the State Program General Permit (SPGP) applies. Make sure that you have received all necessary authorizations, or documentation that no permit is required, from each agency prior to beginning the proposed work.

During the JPA review process, site inspections may be necessary to evaluate a proposed project. Failure to allow an authorized representative of a regulatory agency to enter the property, or to take photographs of conditions at the project site, may result in either the withdrawal or denial of your permit application.

For certain federal and state permit applications, a public notice is published in a newspaper having circulation in the project area, is mailed to adjacent and/or riparian property owners, and/or is posted on the agency's web page. The public may comment on the project during a designated comment period, if applicable, which varies depending upon the type of permit being applied for and the issuing agency. In certain circumstances, the project may be heard by a governing board, such as a Local Wetlands Board, the State Water Control Board, or VMRC in cases where a locality does not have a wetlands board and with certain subaqueous cases. You may be responsible for bearing the costs for advertisement of public notices.

Public hearings that are held by VMRC occur at their regularly scheduled monthly commission meetings under the following situations: Protested applications for VMRC permits which cannot be resolved; projects costing over \$500,000 involving encroachment over state-owned subaqueous land; and all projects affecting tidal wetlands and dunes/beaches in localities without a LWB. All interested parties will be officially notified regarding the date and time of the hearing and Commission meeting procedures. The Commission will usually make a decision on the project at the meeting unless a decision for continuance is made. If a proposed project is approved, a permit or similar agency correspondence is sent to the applicant. In some cases, notarized signatures, as well as processing fees and royalties, are required before the permit is validated. If the project is denied, the applicant will be notified in writing.

PERMIT APPLICATION OR OTHER FEES

Do not send any fees with the JPA. VMRC is not responsible for accounting for fees required by other agencies. Please consult agency websites or contact agencies directly for current fee information and submittal instructions.

❖ USACE: Permit application fees are required for USACE Individual (Standard) permits. A USACE project manager will contact you regarding the proper fee and submittal requirements.

- ❖ DEQ: Permit application fees required for Virginia Water Protection permits while detailed in 9VAC25-20 are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- ❖ VMRC: An application fee of \$300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are \$25.00 for projects costing \$10,000 or less and \$100 for projects costing more than \$10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- ❖ LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits web/guidance/local wetlands boards.html.

FOR AGENCY USE ONLY		
	Notes:	
	JPA#	

APPLICANTS Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

Clarity all that are all.				
		Check all that apply		
NWP # (For Nation	uction Notification (PCN) unwide Permits ONLY - No DEQ-it writer will be assigned	Regional Permit 17 (RP-17)□	VMRC	Subaqueous Permit
County or City in which the project is located: Mathews and Middlesex County Waterway at project site: Piankatank River and Urbanna Creek				
PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)				
Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html				
Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial
USACE	Pre-Application Request	NAO-2020-02102	10/30/2020	N/A

Part 1 - General Information (continued)

1.	Applicant's legal name* and complete mailing address:	Contac	t Information:
	Edward Henifin, HRSD Project Manager 1434 Air Rail Avenue	Home Work	
		Fax	
	Virginia Beach, VA 23445	Cell	(757) 460-2261
		e-mail	ehenifin@hrsd.com
	State Corporation Commission Name and ID Number (if applic	eable)
2. 1	Property owner(s) legal name* and complete address, if of	different	from applicant: Contact Information:
		Home	
		Work	
		Fax	
		Cell	
		e-mail	
	State Corporation Commission Name and ID Number (if applic	cable)
3.	Authorized agent name* and complete mailing address (if applicable):	Contac	t Information:
	Tetra Tech c/o Emily Foster	Work	
5700	5700 Lake Wright Dr.	Fax	
	Norfolk VA, 23502	Cell	(540)841-4752
	,	e-mail	
	State Corporation Commission Name and ID Number (if applic	cable)

* If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.

4. Provide a <u>detailed</u> description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

On behalf of HRSD, Tetra Tech, Inc. is submitting this Joint Permit Application in support of planned project to design and construct a sewage conveyance system to serve Middlesex County, Virginia (the Project).

Middlesex Interceptor System Program Phase II – Urbanna to Mathews Transmission Force Main project (MISPPII) includes the design and construction of a sewage conveyance system to serve Middlesex County. A small diameter transmission force main will serve as the system backbone and extend 3.2 miles from Urbanna to Cook's Corner and approximately 13 miles along Route 33 from Cook's Corner to the connection to HRSD's Mathews Transmission force main near the intersection of Twiggs Ferry Road and Buckley Hall Road (Route 3/198). The Project will consist of a new force main to convey wastewater from Middlesex County to HRSD's York River Treatment Plant and enable decommissioning of both the HRSD Urbanna and Central Middlesex Treatment Plants. The Project also includes installation of pump stations and equalizer tanks.

Because the Project includes crossings under the Piankatank River and Urbanna Creek via Horizontal Direction Drill (HDD) with no proposed impacts to adjacent delineated wetlands, Tetra Tech is anticipating the need for a subaqueous permit from VMRC and requests concurrence from USACE and VADEQ that no Section 401/404 permits are required. This Joint Permit Application pertains specifically to the proposed crossings at the Piankatank River and Urbanna Creek, as the design of these Project components are less likely to be significantly altered as the planning and design phase moves forward.

Part 1 - General Information (continued)

5.	Have you obtained a contractor for the project? Yes* No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)			
	Contractor's name* and complete mailing address	: Contact Information:		
	N/A	Home ()		
		Work ()		
		Fax () Cell ()		
	State Corporation Commission Name and ID Num			
* I:	f multiple contractors, each must be listed and each must s	sign the applicant signature page.		
6.	List the name, address and telephone number of the of the project. Failure to complete this question may be a supplemental to the project.			
	Name and complete mailing address:	Telephone number		
	N/A	()		
7.	Street Address (911 address if available) Lot/Block/Parcel# Subdivision City / County Latitude and Longitude at Center Point of Project — / - If the project is located in a rural area, please prov best and nearest visible landmarks or major interse subdivision or property, clearly stake and identify	ZIP Code Site (Decimal Degrees): (Example: 36.41600/-76.30733) ide driving directions giving distances from the ections. Note: if the project is in an undeveloped property lines and location of the proposed		
	project. A supplemental map showing how the pro	operty is to be subdivided should also be provided.		
	N/A - linear project			
8.	What are the <i>primary and secondary purposes of a</i> primary purpose <u>may</u> be "to protect property from purpose <u>may</u> be "to provide safer access to a pier."	erosion due to boat wakes" and the secondary		
	See attached property owner information			

Part 1 - General Information (continued)

9.	Proposed use (check one): Single user (private, non-commercial, residential) Multi-user (community, commercial, industrial, govern	nment)
10.	Describe alternatives considered and the measures that will be to the maximum extent practicable, to wetlands, surface waters associated with any disturbance (clearing, grading, excavating) Please be advised that unavoidable losses of tidal wetlands and compensatory mitigation.	, submerged lands, and buffer areas during and after project construction
	Piankatank River, Urbanna Creek	
11.	Is this application being submitted for after-the-fact authorization been completed?Yes ×_No. If yes, be sure to clearly dare already complete in the project drawings.	
12.	Approximate cost of the entire project (materials, labor, etc.): \$	27,000,000
	Approximate cost of that portion of the project that is channely \$900,000	
13.	Completion date of the proposed work: January	_ 2025
14.	Adjacent Property Owner Information: List the name and comcode, of each adjacent property owner to the project. (NOTE: the requested information for the first adjacent parcel beyond y this information may result in a delay in the processing of your	If you own the adjacent lot, provide our property line.) Failure to provide
	See attached property owner information	

See attached property owner information.

Part 2 - Signatures

1. Applicants and property owners (if different from applicant). NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

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

Edward Henifin, HRSD Project Manager	
Applicant's Legal Name (printed/typed)	(Use if more than one applicant)
Applicant's Signature	(Use if more than one applicant)
Date	
Property Owner's Legal Name (printed/typed) (If different from Applicant)	(Use if more than one owner)
Property Owner's Signature	(Use if more than one owner)
Date	

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION		
I (we), Edward Henifin: HRSD , hereby certify	that I (we) have authorized Emily M Foster: Tetra Tech	
(Applicant's legal name(s))	(Agent's name(s))	
to act on my behalf and take all actions necessary	y to the processing, issuance and acceptance of this permit and a	ny and all
standard and special conditions attached.		•
We hereby certify that the information submitted	I in this application is true and accurate to the best of our knowle	edge.
(1)	(T. 10)	
(Agent's Signature)	(Use if more than one agent)	
(Data)		
(Date)		
(Applicant's Signature)	(Use if more than one applicant)	
(Applicant 3 Signature)	(Ose if more than one approant)	
(Date)		
(=)		
3. Applicant's having contractors (if applicable	?)	
	,	
CONTRACTOR ACKNOWLEDGEMENT		
I (we),, have contra (Applicant's legal name(s))	.cted	
to perform the work described in this Joint Perm	it Application, signed and dated	
•	n in all Federal, State and Local permits as required for this proje	
	of the permits may constitute a violation of applicable Federal, st	
	ivil and/or criminal penalties imposed by these statutes. In addit	
	any regulatory representative visiting the project to ensure permi	
	permit upon request, we understand that the representative will h	
	determined that we have a properly signed and executed permit	and are
in full compliance with all terms and conditions.		
Contractor's name or name of firm		
Contractor's name or name or min	Contractor's or firms address	
	Contractor's or minis address	
Contractor's signature and title	Contractor's License Number	
Contractor 5 Signature and title	Contractor & Electise Pullioer	
Applicant's signature	(use if more than one applicant)	
	(and it make that one approved)	
Date		

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we),	_, own land next to (across the water
(Print adjacent/nearby property owner's nam	e)
from/on the same cove as) the land of(Print appli	<u> </u>
(Print appli	cant's name(s))
I have reviewed the applicant's project drawings dat	ed
	(Date)
to be submitted for all necessary federal, state and lo	ocal permits.
I HAVE NO COMMENT ABOUT THE PR	ROJECT.
I DO NOT OBJECT TO THE PROJECT.	
OBJECT TO THE PROJECT.	
The applicant has agreed to contact me for prior to construction of the project.	r additional comments if the proposal changes
(Before signing this form be sure you have cl	hecked the appropriate option above).
Adjacent/nearby property owner's signature(s)	
Date	

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we),	, own land next to (across the water
(Print adjacent/nearby property ow	ner's name), own land next to (across the water
from/on the same cove as) the land of	(Print applicant's name(s))
	(Print applicant's name(s))
I have reviewed the applicant's project di	rawings dated(Date)
	(Date)
to be submitted for all necessary federal,	state and local permits.
I HAVE NO COMMENTABO	UT THE PROJECT.
I DO NOT OBJECT TO THE PR	ROJECT.
I OBJECT TO THE PROJECT.	
The applicant has agreed to conta prior to construction of the proje	act me for additional comments if the proposal changes
(Before signing this form, be sure y	you have checked the appropriate option above).
Adjacent/nearby property owner's signat	ure(s)
Date	<u></u>

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 3 – Appendices (continued)

Appendix C: Crossings in, on, over, or under, waters, submerged lands, tidal wetlands and/or dunes and beaches, including but not limited to, bridges, walkways, pipelines and utility lines.

				· ·		
1.	What is th	ne purpose and method of installation of the	crossing?			
	Purpose: To	o install a new transmission force main to provide sanit	ary sewer serv	rice to Middlesex Coun	ty, using HD	D methods to
2		iankatank River and Urbanna Creek.	ha arassad			
۷.	what is th	ne width of the waterway and/or wetlands to from mean high water to mean high water		s)? 1,140/1,893 fee	t Urbanna C	reek/Piankatank Rive
		from mean low water to mean low water (t	`	/		reek/Piankatank Rive
		from ordinary high water to ordinary high			N/A	_ feet.
3.		es (footbridges, golf cart bridges, roadway brands, dunes/beaches and/or submerged lands			of the str	ucture over the
4.	For overh	ead crossings:				
		What will be the height above mean high w	vater? N/A	feet.		
		If there are other overhead crossings in the				
	c.	If the proposed crossing is an electrical line circuits: N/A	e, please coi	ntirm the total nur	nber of ele	ectrical
5.	For buried	d crossings, what will be the depth below the	substrate?	30/58 <u>feet.</u>	Will the p	proposed utility
	provide en X No.	mpty conduits for any additional utilities tha Urbanna		ose to co-locate at ak River (minimum depth		
6.		be any excavation or fill required for placer on State-owned submerged lands, tidal wetl		•		-
	If yes, ple	ase provide the following:				
	a.	Amount of excavation in wetlands	0	cubic yards		
			0	square feet		
	h	Amount of excavation in submerged land	0	cubic yards		
	0.	Amount of excavation in submerged land	0	square feet		
				= = = = = = = = = = = = = = = = = =		
	c.	Amount of excavation in dune/beach	0	cubic yards		
			0	square feet		
	d.	Amount of fill in wetlands	0	cubic yards		
			0	square feet		
	e.	Amount of fill in submerged lands	0	cubic yards		
		Č	0	square feet		
	f.	Amount of fill in dune/beach	0	cubic yards		
			0	_ square feet		

Part 4 - Project Drawings

Plan view and cross-sectional view drawings are required for all projects. Application drawings do not need to be prepared by a professional draftsman, but they must be clear, accurate, and should be to an appropriate scale. If a scale is not used, all dimensions must be clearly depicted in the drawings. If available, a plat of the property should be included, with the existing and proposed structures clearly indicated. Distances from the proposed structure(s) to fixed points of reference (benchmarks) and to the adjacent property lines must be shown. A vicinity map (County road map, USGS Topographic map, etc.) must also be provided to show the location of the property. **NOTE:** The sample drawings have been included at the end of this section to provide guidance on the information required for different types of projects. Clear and accurate drawings are essential for project review and compliance determination. Incomplete or unclear drawings may cause delays in the processing of your application.

The following items must be included on <u>ALL</u> project drawings: (plan and cross-sectional, as appropriate)

- name of project
- north arrow
- scale
- waterway name
- existing and proposed structures, labeled as such
- dimensions of proposed structures
- mean high water and mean low water lines
- all delineated wetlands and all surface waters on the site, including the Cowardin classification (i.e., emergent, scrub-shrub, or forested) for those surface waters (if applicable)
- limits of proposed impacts to surface waters, such as fill areas, riprap scour protection placement, and dredged areas, and the amount of such impacts in square feet and acres
- ebb/flood direction
- adjacent property lines and owner's name
- distances from proposed structures to fixed points of reference (benchmarks) and adjacent property lines

Part 5 - Chesapeake Bay Preservation Act Information

All proposed development, redevelopment, land disturbance, clearing or grading related to this Tidewater JPA must comply with the Chesapeake Bay Preservation Area Designation and Management Regulations, which are enforced through locally adopted Chesapeake Bay Preservation Area (CBPA) ordinances. Compliance with state and local CBPA requirements mandates the submission of a Water Quality Impact Assessment (WQIA) for the review and approval of the local government. Contact the appropriate local government office to determine if a WQIA is required for the proposed activity(ies).

Because the 84 local governments within Tidewater Virginia are responsible for enforcing the CBPA Regulations, the completion of the JPA process does not constitute compliance with the Bay Act Regulations nor does it guarantee that the local government will approve encroachments into the RPA that may result from this project. Applicants should contact their local government as early in the design process as possible to ensure that the final design and construction of the proposed project meets all applicable CBPA requirements. Early cooperation with local government staff can help applicants avoid unnecessary and costly delays to construction. Applicants should provide local government staff with information regarding existing vegetation within the Resource Protection Area (RPA) as well as a description and site drawings of any proposed land disturbance, construction, or vegetation clearing. As part of their review and approval processes, local government staff will evaluate the proposed project and determine whether or not approval can be granted. Once the locality has made a decision on the project, they will advise the Local Wetlands Boards and other appropriate parties of applicable CBPA concerns or issues.

Resource Protection Areas (RPAs) are composed of the following features:

- 1. Tidal wetlands;
- 2. Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;
- 3. Tidal shores;
- 4. Other lands considered by the local government to meet the provisions of subsection A of 9VAC25-830-80 and to be necessary to protect the quality of state waters; and
- 5. A buffer area not less than 100 feet in width located adjacent to and landward of the components listed in subdivisions 1 through 4 above, and along both sides of any water body with perennial flow.

Notes for all projects in RPAs

Development, redevelopment, construction, land disturbance, or placement of fill within the RPA features listed above requires the approval of the locality and may require an exception or variance from the local Bay Act ordinance. Please contact the appropriate local government to determine the types of development or land uses that are permitted within RPAs.

Pursuant to 9VAC25-830-110, on-site delineation of the RPA is required for all projects in CBPAs. Because USGS maps are not always indicative of actual "in-field" conditions, they may not be used to determine the site-specific boundaries of the RPA.

Notes for shoreline erosion control projects in RPAs

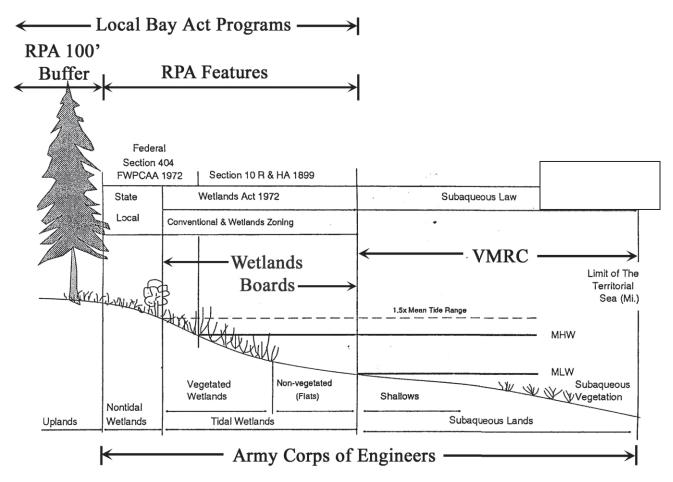
Re-establishment of woody vegetation in the buffer will be required by the locality to mitigate for the removal or disturbance of buffer vegetation associated with your proposed project. Please contact the local government to determine the mitigation requirements for impacts to the 100-foot RPA buffer.

Part 5 - Chesapeake Bay Preservation Act Information (continued)

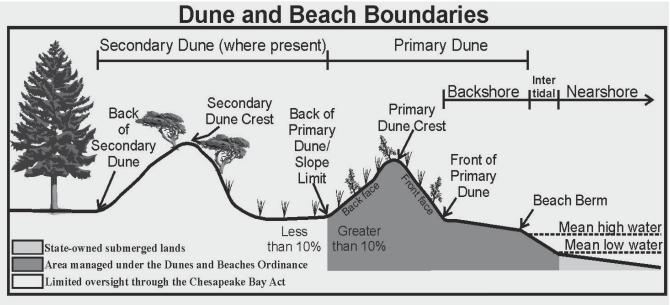
Pursuant to 9VAC25-830-140 5 a (4) of the Virginia Administrative Code, shoreline erosion projects are a permitted modification to RPAs provided that the project is based on the "best technical advice" and complies with applicable permit conditions. In accordance with 9VAC25-830-140 1 of the Virginia Administrative Code, the locality will use the information provided in this Part V, in the project drawings, in this permit application, and as required by the locality, to make a determination that:

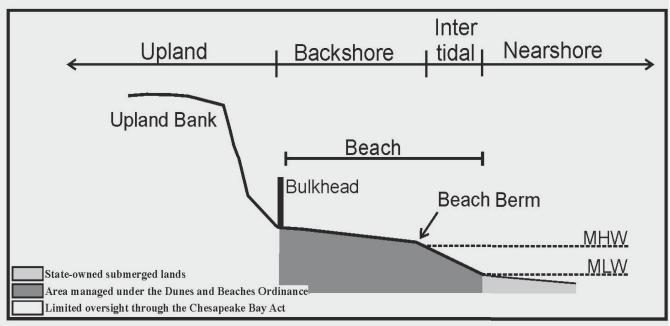
- 1. Any proposed shoreline erosion control measure is necessary and consistent with the nature of the erosion occurring on the site, and the measures have employed the "best available technical advice"
- 2. Indigenous vegetation will be preserved to the maximum extent practicable
- 3. Proposed land disturbance has been minimized
- 4. Appropriate mitigation plantings will provide the required water quality functions of the buffer (9VAC25-830-140 3)
- 5. The project is consistent with the locality's comprehensive plan
- 6. Access to the project will be provided with the minimum disturbance necessary.

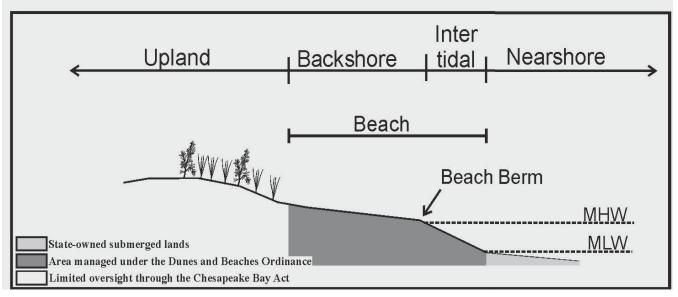
JURISDICTIONAL BOUNDARIES



and DEQ (including isolated wetlands)







ATTACHMENT 2: PROPERTY OWNER INFORMATION

TETRA TECH

#	Parcel ID	Property Owner/Mailing Address	Property Address	Phone #	Crossing
1	3-1-D	Mary H. Casassa 116 Wainwright Manor, Summerville, SC 29485	NA	843-817-0711; mhcwccln4@aol.com	Piankatank River
2	3-A-19	Mary H. Casassa 116 Wainwright Manor, Summerville, SC 29485	157 Twiggs Ferry Rd., Dutton, VA 23050	843-817-0711; mhcwccln4@aol.com	Piankatank River
3	A-1-8	Gaylia K. Hudgins & Hubert Bland Hudgins, Co- Trustees, under the Gaylia K. Hudgins Trust PO BOX 36 Mathews, VA 23109-0039	145 & 147 Twiggs Ferry Rd., Dutton, VA 23050	804-725-8475 (good #); gaylialee@gmail.com	Piankatank River
4	20B-6-3	Judith A. & James D. Pitts, Trustees PO BOX 365 Urbanna, VA 23175-0365	103 Nimcock Rd. Urbanna, VA 23175	804-758-2616 (Home) (804) 815-8964 (Mrs. Pitts' Cell)	Urbanna Creek
5	27-10-1	Rosegill Development LLC 2071 Chain Bridge Road #510 Vienna, VA 22182	1818 Urbanna Rd. Saluda, VA 23149	Diane Basheer (703) 849-8700	Urbanna Creek
9	43-6-3	Carolyn A. Walton 65 Drum Point Ln. Hartfield, VA 23071	65 Drum Point Ln. Hartfield, VA 23071	804-815-1438	Piankatank River
7	Unknown	**The Heirs of A. J. Chewning, Jr.	Vacant	Unknown	Urbanna Creek

*HRSD is currently negotiating with the property owners for the easements adjacent to the HDD crossings – this is expected to be finalized by the end of 2021.
**There is no available/existing information on the property owner. HRSD will be going through condemnation for acquisition of this easement.





NORFOLK DISTRICT REGULATORY OFFICE PRE-APPLICATION AND/OR JURISDICTIONAL WATERS DETERMINATION REQUEST FORM

This form is used when you want to determine if areas on your property fall under regulatory requirements of the U.S. Army Corps of Engineers (USACE). Please supply the following information and supporting documents described below. This form can be filled out online and/or printed and then mailed, faxed, or e-mailed to the Norfolk District. Submitting this request authorizes the US Army Corps of Engineers to field inspect the property site, if necessary, to help in the determination process. THIS FORM MUST BE SIGNED BY THE PROPERTY OWNER TO BE CONSIDERED A FORMAL REQUEST.

The printed form and supporting documents should be mailed to:

U.S. Army Corps of Engineers, Norfolk District Regulatory Branch 803 Front Street Norfolk, Virginia 23510-1096

Or faxed to (757) 201-7678

Or sent via e-mail to: CENAO.REG ROD@usace.army.mil

Additional information on the Regulatory Program is available on our website at:

http://www.nao.usace.army.mil/

Please contact us at 757-201-7652 if you need any assistance with filling out this form.

Location and Information about Property to be subject to a Jurisdictional Determination:

1. Date of Request:

Tetra Tech c/o Emily Foster

2. Project Name: 5700 Lake Wright Dr.

Norfolk VA, 23502

- 3. City or County where property located: On behalf of HRSD, Tetra Tech, Inc. is submitting this Joint Permit Application in support of planned project to design and construct a sewage conveyance system to serve Middlesex County, Virginia (the Project).
- 4. Address of property and directions (attach a map of the property location and a copy of the property plat): N/A
- 5. Coordinates of property (if known): N/A
- 6. Size of property in acres: N/A linear project
- 7. Tax Parcel Number / GPIN (if available): See attached property owner information
- 8. Name of Nearest Waterway: Piankatank River, Urbanna Creek

Revised: November 2013

9. Brief Description of Proposed Activity, Reason for Preapplication Request, and/or Reason fo Jurisdictional Waters Determination Request: See attached property owner information.	r
10. Has a wetland delineation/determination been completed by a consultant or the Corps on the property previously? ☐ YES ☒ NO ☐UNKNOWN	
If yes, please provide the name of the consultant and/or Corps staff and Corps permit number available:	; if
Property Owner Contact Information:	
Property Owner Name: See JPA Attachment 2: Property Owner Information Mailing Address: City: State: Zip: Daytime Telephone: E-mail Address:	
If the person requesting the Jurisdictional Determination is NOT the Property Owner, please also sup the Requestor's contact information here:	pply
Requestor Name: Edward Henifin, HRSD Project Manager Mailing Address: 1434 Air Rail Avenue City: State: Zip: Virginia Beach, VA 23445 Daytime Telephone: (757) 460-2261; ehenifin@HRSD.com E-mail Address:	
Additionally, if you have any of the following information, please include it with your request: wetla delineation map, other relevant maps, drain tile survey, topographic survey, and/or site photographs.	
CERTIFICATION: I am hereby requesting a preapplication consultation or jurisdictional waters and/or wetlands determination from the U.S. Army Corps of Engineers, for the property(ies) I have described herein. I agree to allow the authorized representatives of the Norfolk District Corps of Engineers and other regulatory or advisory agencies to enter the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enthe property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as "no trespassing" this consent specifically supercedes and waives that prohibition and grants permiss to enter the property despite such posting. I hereby certify that the information contained in the Request for a Jurisdictio Determination is accurate and complete:	upon ter
Property Owner's Signature Date	

Revised: November 2013

	Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)
To:	Norfolk District
•	I am requesting a JD on property located at: multiple: see attached information
	City/Township/Parish: County: Middlesex State: VA Acreage of Parcel/Review Area for JD: Section: Township: Range: State: VA
	Acreage of Parcel/Review Area for JD:
	Section: Township: Range: Latitude (decimal degrees): _37.510152° Longitude (decimal degrees):76.420342°
	(For linear projects, please include the center point of the proposed alignment.)
	Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
	I currently own this property.
	I am an agent/consultant acting on behalf of the requestor.
	Other (please explain):
•	Reason for request: (check as many as applicable)
	I intend to construct/develop a project or perform activities on this parcel which would be designed to
	avoid all aquatic resources. I intend to construct/develop a project or perform activities on this parcel which would be designed to
	avoid all jurisdictional aquatic resources under Corps authority.
	I intend to construct/develop a project or perform activities on this parcel which may require
	authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional
	aguatic resources and as an initial step in a future permitting process.
	I intend to construct/develop a project or perform activities on this parcel which may require authorization from
	the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is
	included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
	A Corps JD is required in order to obtain my local/state authorization.
	I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that
	iurisdiction does/does not exist over the aquatic resource on the parcel.
	I believe that the site may be comprised entirely of dry land. Other:
	Type of determination being requested:
	I am requesting an approved JD.
	✓ I am requesting a preliminary JD.
	I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
	I am unclear as to which JD I would like to request and require additional information to inform my decision.
persite	signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a son or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property to to request a JD on the subject property.
*Siç	nature: Date:
	Typed or printed name: Emily Foster
	Company name: Tetra Tech
	Address: 5700 Lake Wright Drive
	Norfolk, VA 23502
	Daytime phone no.: (540) 841-4752
	Email address: emily.foster@tetratech.com

*Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.

Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Aquatic Resource Report for the HRSD Middlesex Interceptor System Program Phase II

Hampton Roads Sanitation District

Mathews and Middlesex Counties, Virginia

November 2021

Prepared for:

Hampton Roads Sanitation District (HRSD)

1434 Air Rail Avenue Virginia Beach, VA 23455

Prepared by:

Tetra Tech, Inc.

5700 Lake Wright Drive Norfolk, VA 23502 Phone: (757) 461-4148

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APPENDICES

Appendix A: Stream Data Forms

Appendix B: Wetland Data Forms

Appendix C: NRCS Soils Report

ACRONYMS AND ABBREVIATIONS

Acronyms/Abbreviations	Definition							
1987 Manual	Corps of Engineers Wetland Delineation Manual							
FAC	Facultative							
FACU	Facultative Upland							
FACW	Facultative Wetland							
GIS	Geographic Information Systems							
GPS	Global Positioning System							
HGM	Hydrogeomorphic							
HUC	Hydrologic Unit Code							
NHD	National Hydrography Dataset							
NJD	Non-Jurisdictional							
NRCS	Natural Resources Conservation Service							
NRPW	Non-Relatively Permanent Waters							
NRPWW	Wetlands adjacent to Non-Relatively Permanent Waters that flow directly or indirectly into Traditionally Navigable Waters							
NWI	National Wetlands Inventory							
OBL	Obligate							
OHWM	Ordinary High-Water Mark							
PEM	Palustrine Emergent							
PFO	Palustrine Forested							
MISPPII	Middlesex Interceptor System Program Phase II							
PSS	Palustrine Scrub-Shrub							
PUB	Palustrine Unconsolidated Bottom							
Regional Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0 (2010)							
RPW	Relatively Permanent Waters							
RPWWD	Wetlands directly abutting Relatively Permanent Waters that flow directly or indirectly into Traditionally Navigable Waters							
RPWWN	Wetlands adjacent to but not directly abutting Relatively Permanent Waters that flow directly or indirectly into Traditionally Navigable Waters							
Tetra Tech	Tetra Tech, Inc.							
TNW	Traditionally Navigable Water							
TNWW	Wetlands Adjacent to Traditionally Navigable Waters							
UNT	Unnamed Tributary							
UPL	Upland							

Acronyms/Abbreviations	Definition
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

Hampton Roads Sanitation District (HRSD) proposes to design and construct a sewage conveyance system to serve Middlesex County, referred to as the Middlesex Interceptor System Program Phase II; Urbanna to Mathews Transmission Force Main Project (MISPPII Project). The MISPPII Project is located in Middlesex and Mathews Counties in Virginia (VA), as shown on the United States Geological Survey (USGS) Project Location Map (Figure 1). The Project is in the Great Wicomico-Piankatank and the Lower Rappahannock (Hydrologic Unit Code [HUC] 02080102, 02080104) Watersheds (USGS 2019).

Tetra Tech, Inc. (Tetra Tech), on behalf of HRSD, prepared this Aquatic Resource Report summarizing the results of a field survey of the Project study area for the presence of wetlands and surface water features. Tetra Tech applied the methods detailed in the United States Army Corps of Engineers' (USACE) Wetland Delineation Manual (1987 Manual; Environmental Laboratory 1987), as amended by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0 (Regional Supplement; USACE 2012).

2.0 METHODS

The primary objective of the aquatic resource field survey is to identify and map potentially jurisdictional streams and wetlands for avoidance and MISPPII Project permitting.

2.1 FIELD SURVEY

Prior to the start of field surveys, an initial desktop analysis of the Project study area is conducted through a review of available Geographic Information Systems (GIS) resources. Information reviewed includes the following:

- USGS topographic mapping (Figure 1; National Geographic Society, i-cubed 2013).
- Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2017) mapping and data.
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (Figure 2; USFWS 2018).
- National Hydrography Dataset (NHD) Streams mapping (Figure 2; USGS 2021).

All features identified in the field, including stream reaches, wetlands, and wetland upland points, are given unique identification names (i.e. S-ID, W-ID, and W-ID-UPL, respectively). In addition, the NHD stream name (USGS 2021) for field identified streams is recorded on the stream data form (Appendix A) and listed in Table 1. Identified streams without an NHD stream name are named, "Unnamed Tributary (UNT)" of the first named receiving waterbody.

Identified stream reaches are mapped along their entire course within the study area by use of a Global Positioning System (GPS) receiver with sub-meter accuracy or better. The identified streams are shown on the Aquatic Resource Location Map (Figures 3A to 3J). Stream data forms detailing stream characteristics are provided in Appendix A. Photographs and photograph location maps of each identified stream reach are included immediately following each features' respective stream data form.

Wetland delineation involves the establishment of the wetland/upland boundary based on the identification of hydrophytic vegetation, hydric soils, and wetland hydrology indicators. This delineated wetland boundary is mapped in the field by use of a GPS receiver. Delineated wetlands are identified as closed or open boundary systems on the Identified Streams Table (Table 1). Wetlands that continue beyond the delineated boundary shown on the Aquatic Resource Location Map are identified as open boundary wetland systems. Wetlands that do not continue beyond the delineated boundary shown on the Aquatic Resource Location Map are identified as closed boundary wetland systems. Data collected on vegetation, soils, and hydrology for identified wetlands and their associated upland points are recorded on USACE Wetland Determination Data Forms (Appendix B). Photographs and photograph location maps of each identified wetland are included immediately following each features' respective USACE Wetland Determination Data Form.

2.2 STREAM IDENTIFICATION

Potentially jurisdictional streams are identified in the field by the presence of a continuous channel that exhibits evidence of frequent or reoccurring water flow such as a defined bed, bank, and an ordinary high-water mark (OHWM; USACE and United States Environmental Protection Agency [USEPA] 2007).

Physical and biological characteristics of the identified streams are evaluated to determine Flow Regime (82 FR 1860, January 6, 2017), USACE Waters Type (USACE and USEPA 2007), and Cowardin classifications (Cowardin et al. 1979). Physical characteristics evaluated include, but are not limited to: channel morphology, substrate size and type, and base flow conditions. Biological characteristics evaluated include, but are not limited to: the presence of fish, aquatic macroinvertebrates, and vegetation rooted within the OHWM. USACE Water Types (USACE and USEPA 2007) include:

- Traditional Navigable Water (TNW) All "navigable waters of the U.S.," defined in 33 CFR Part 329 and by numerous decisions of the federal courts, plus all other waters that are navigable-in-fact.
- Relatively Permanent Waters (RPW) Streams that flow directly or indirectly into TNWs and where the flow
 of water is continuous year-round or at least seasonally.
- Non-RPW (NRPW) Streams that flow directly or indirectly into TNWs where the flow of water is not
 continuous at least seasonally.

Flow Regimes (82 FR 1860, January 6, 2017) include:

- Perennial Streams that typically have flow year-round. Most of the hydrology for perennial streams is
 derived from smaller upstream waters and/or groundwater sources with precipitation as a
 supplemental hydrologic contributor. Perennial streams are classified as RPW or TNW USACE
 Waters Types (USACE and USEPA 2007).
- Intermittent Streams with seasonal flow, typically during the wet season (winter through spring). At least
 a portion of the hydrology for intermittent streams is derived from groundwater sources with
 precipitation as a supplemental hydrologic contributor. Intermittent streams are classified as an
 RPW USACE Waters Type (USACE and USEPA 2007).
- Ephemeral Rain-dependent streams flowing only after precipitation event. Precipitation driven run-off
 from the localized surrounding landscape is the primary source of hydrology. Ephemeral streams
 are different from non-jurisdictional ditches and drainages due to the presence of an observable
 OHWM. Ephemeral streams are classified as an NRPW USACE Waters Type (USACE and USEPA
 2007).

2.3 WETLAND DELINEATION

Wetland delineations are conducted in accordance with the procedures specified in the 1987 Manual (Environmental Laboratory 1987) and the Regional Supplement (USACE 2012). According to the 1987 Manual (Environmental Laboratory 1987), an area is defined as a wetland if, under normal circumstances, it meets all three of the following criteria: predominance of hydrophytic vegetation (plants adapted for life in saturated soil conditions); hydric soils (soils formed under water, or in saturated conditions); and wetland hydrology (current or recent inundation or saturated soils at some time during the growing season).

2.3.1 Hydrophytic Vegetation

Hydrophytic vegetation is identified in the field based on protocol outlined in the *Regional Supplement* (USACE 2012). Plant species representative of the habitats within the Project study area are identified to the species taxonomic level and the indicator status for each plant species is identified using *The National Wetland Plant List:* 2020 Wetland Ratings (USACE 2020). Wetland indicator statuses are described below (Reed 1988):

- Obligate (OBL) almost always occurs in wetlands; estimated probability of occurrence in a wetland is greater than 99 percent.
- Facultative Wetland (FACW) usually occurs in wetlands but may occur in non-wetlands; estimated probability of occurrence in a wetland is 67 to 99 percent.
- Facultative (FAC) equally likely to occur in wetlands and non-wetlands; estimated probability of occurrence in a wetland is 34 to 66 percent.
- Facultative Upland (FACU) usually occurs in non-wetlands but may occur in wetlands; estimated probability of occurrence in a wetland is 1 to 33 percent.
- Upland (UPL) rarely occurs in wetlands; estimated probability of occurrence in a wetland is less than 1
 percent.

Hydrophytic vegetation includes species with an indicator status of OBL, FACW, or FAC. Hydrophytic vegetation decisions are based on the plant community typically present during the wet portion of the growing season during a normal rainfall year. In areas where human practices or natural events have influenced vegetation, procedures for difficult or problematic situations outlined in the *Regional Supplement* (USACE 2012) are followed.

Wetlands habitat types are based on vegetation strata composition and are classified in accordance with the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979):

- Palustrine emergent (PEM) contain emergent, herbaceous (non-woody) plants which are the tallest life form with at least 30 percent aerial coverage.
- Palustrine scrub-shrub (PSS) contain woody plants less than six meters (20 feet) in height which are the
 tallest life form with at least 30 percent aerial coverage, or, when trees or shrubs alone cover less
 than 30 percent of an area but in combination cover 30 percent or more. Trees are defined as
 woody plants at least six meters (20 feet) in height, and shrubs are defined as woody plants less
 than six meters (20 feet) in height.
- Palustrine forested (PFO) contain woody plants at least six meters (20 feet) in height which are the tallest life form with at least 30 percent aerial coverage.
- Palustrine unconsolidated bottom (PUB) contain all wetland and deepwater habitats with at least 25 percent cover of particles smaller than stones, and a vegetative cover of less than 30 percent.

2.3.2 Hydric Soils

Hydric soils are identified in the field based on protocol outlined in the 1987 Manual (Environmental Laboratory 1987), Regional Supplement (USACE 2012), and Field Indicators of Hydric Soils in the United States (United States Department of Agriculture [USDA] 2010). Based on prior experience, the presence of field-identified hydric soils does not always align with NRCS mapped hydric soils units. The NRCS soil units represent a large geographic area and are based on broad geologic and historic conditions. The methods used in the Field Indicators of Hydric Soils in the United States (USDA 2010) are used to determine hydric soil conditions on a localized scale. A review of the NRCS mapped hydric soils units is used to initially identify areas that have the potential to contain wetlands (See Section 3.2); however, the wetland delineation boundaries are based on the presence of field identified hydric soils. In cases where soils are found to be disturbed or problematic, determinations may rely on the NRCS mapped hydric soil units (USACE 2012).

2.3.3 Wetland Hydrology

Wetland hydrology indicators are identified in the field based on protocol outlined in the 1987 Manual (Environmental Laboratory 1987) and Regional Supplement (USACE 2012). Hydrogeomorphic (HGM) and Water Type classifications are assigned to wetlands based on their hydrologic source and connectivity to streams. HGM classifications are based on A Hydrogeomorphic Classification for Wetlands (Brinson 1993); a summary of HGM classifications commonly used in the Project region is described below:

- Riverine Wetlands occur in floodplains and riparian corridors in association with stream channels.
- Depressional Wetlands occur in topographic depressions. Dominant water sources are precipitation ground water discharge, and both interflow and overland flow from adjacent uplands.
- Slope Wetlands normally are found where there is a discharge of ground water to the land surface. They
 normally occur on sloping land; elevation gradients may range from steep hillsides to slight slopes.

Wetland USACE Water Types (USACE and USEPA 2007) include:

TNWW – Wetlands adjacent to TNWs.

- RPWWD Wetlands directly abutting RPWs that flow directly or indirectly into TNWs.
- RPWWN Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs.
- NRPWW Wetlands adjacent to NRPWs that flow directly or indirectly into TNWs.
- Isolate Isolated (interstate or intrastate) waters, including isolated wetlands.

Current wetland hydrology indicators, inundation/saturation visible on aerial imagery, and estimates of the effects of ditches and subsurface drainage systems are all considered when making decisions regarding wetland hydrology in areas where human practices or natural events may have altered wetland hydrology.

3.0 RESULTS

Tetra Tech performed field surveys for the MISPPII Project between March and July, 2021. Surveys were limited to the Project study area illustrated on Figures 1 through 3. The field surveys identified 10 stream reaches and 16 wetlands within the Project study area. The Aquatic Resource Location Map (Figures 3A to 3J) illustrates the wetland and stream feature locations in relation to the Project study area. Tables 1 and 2 summarize stream and wetland information for all identified streams reaches and wetlands. Stream data forms are included in Appendix A and Wetland Determination Data Forms for wetlands and their associated upland points are included in Appendix B.

This Aquatic Resource Report represents our best professional judgment and is based on site conditions at the time of the field survey. However, final authority over determinations made during these surveys rests with the Virginia Department of Environmental Quality (VADEQ) and USACE.

3.1 STREAM IDENTIFICATION

Ten stream reaches were identified in the Project study area based on our review of available GIS mapping data, evidence collected during field surveys, and best professional judgment. A summary of the data for each identified stream reach is provided in Table 1. Table 1 shows the stream reach field identification name, the NHD stream name, stream location, Flow Regime classification, Water Type classification, Cowardin classification, flow direction, top of bank width, and Figure 3 sheet location. Stream data forms are provided for each stream reach in Appendix A. Photographs and photograph location maps of each identified stream reach are included immediately following each features' respective stream data form.

3.2 WETLAND DELINEATION

NRCS and USFWS NWI mapping were reviewed for the initial desktop analysis of the Project study area to identify areas that may have the potential to contain wetlands. Appendix C provides the NRCS web soil survey for Middlesex and Mathews Counties. The NRCS soil survey mapping units are shown on Figure 2. A review of the USFWS NWI mapping indicates that 16 NWI wetlands are mapped in the Project study area (Figure 3 Index). One wetland, W5, is correlated with an NWI listed wetland as shown in Figure 2-A.

Sixteen wetlands are located within the Project study area based on our review of available GIS mapping data, evidence collected during field surveys, and best professional judgment.

A summary of each wetland identified and delineated within the Project study area is provided in Table 2. Table 2 shows the wetland identification name, location, Cowardin classification, HGM classification, Waters Type classification, the identity of any associated (i.e. abutting or adjacent) waterbodies, wetland size within the Project study area (in acres and square feet), and whether the wetland boundary is open or closed (see Section 2.1) and Figure 4 sheet location. Wetlands with multiple Cowardin types (e.g. PEM and PSS) are considered a single wetland system and are counted as one wetland. The wetland size provided in Table 2 represents the size of the delineated wetland boundary shown on Figures 4A to 4J. Open boundary wetlands continue beyond the delineated wetland boundary shown on Figures 4A to 4J; therefore, the total wetland size of open boundary wetlands may be larger than the size provided in Table 2.

USACE Wetland Determination Data Forms detailing the existing vegetation, soil characteristics, and hydrology for each wetland and its associated upland point are provided in Appendix B. Photographs and photograph location maps of each identified wetland are included immediately following each features' respective USACE Wetland Determination Data Form.

4.0 CONCLUSION

During the field survey of the MISPPII Project, 10 stream reaches, and 16 wetlands were identified within the Project study area. A summary of the identified stream reach and wetland data is provided in Tables 1 and 2, respectively, and locations of all streams and wetlands are shown on the Aquatic Resource Location Map (Figures 3A to 3J).

This Aquatic Resource Report represents our best professional judgment and is based on site conditions at the time of the field survey. However, final authority over the determinations made during this survey rests with the VADEQ and the USACE.

5.0 REFERENCES

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- USGS (United States Geological Survey). 2019. National Hydrography Dataset Best Resolution for Virginia. https://viewer.nationalmap.gov/basic/?basemap=b1&category=nhd&title=NHD%20View

FIGURES

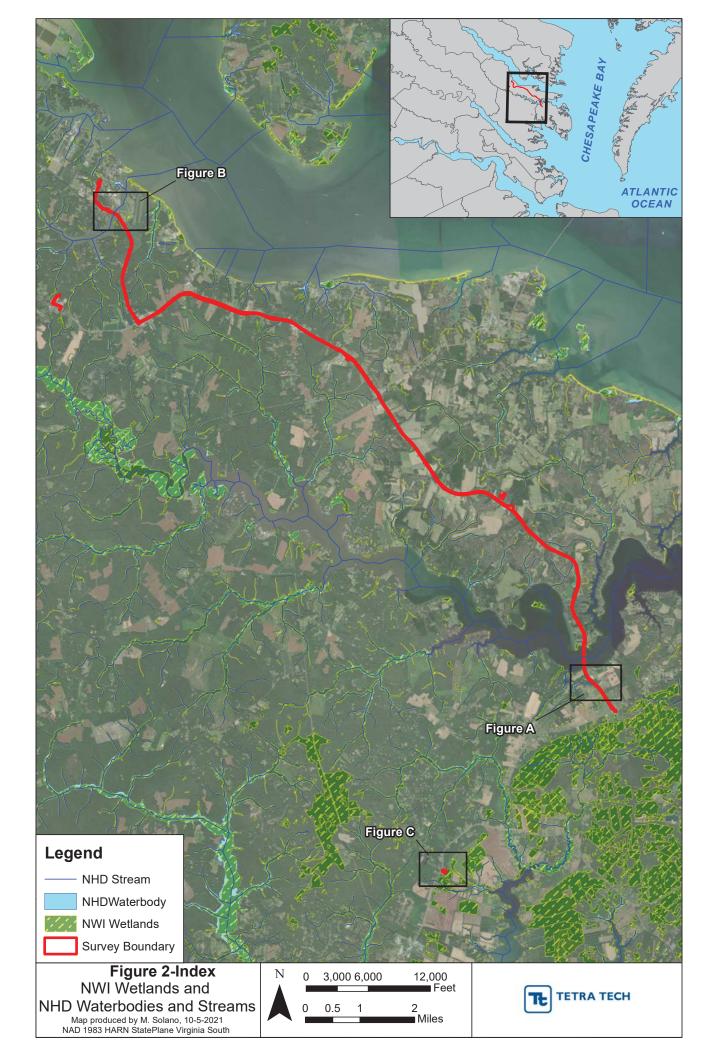
Figure 1: USGS Project Location Map

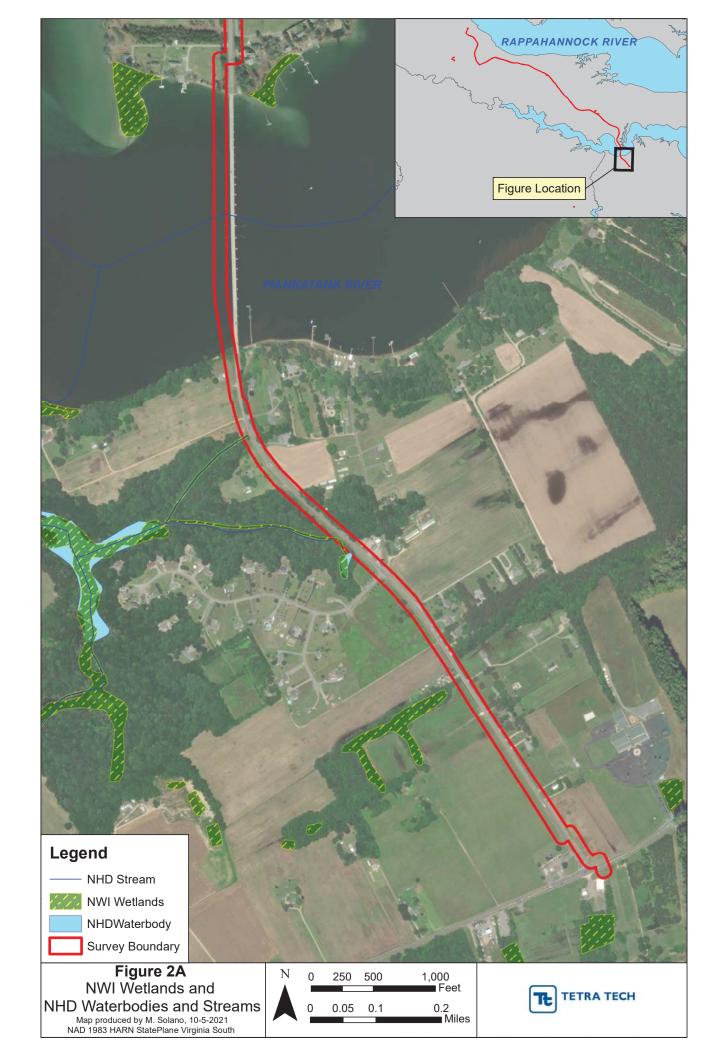
Figure 2-Index: NWI Wetlands and NHD Streams Map Figures 2A-2C: NWI Wetlands and NHD Streams Map

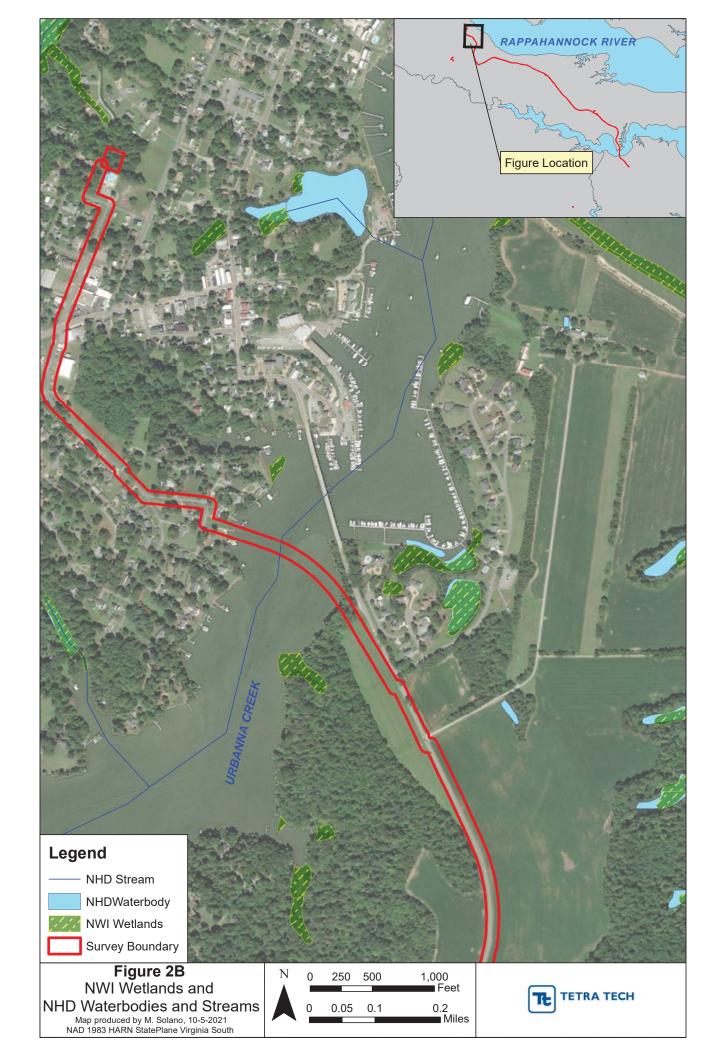
Figure 3-Index: Aquatic Resource Location Index Map

Figures 3A-3J: Aquatic Resource Location Map



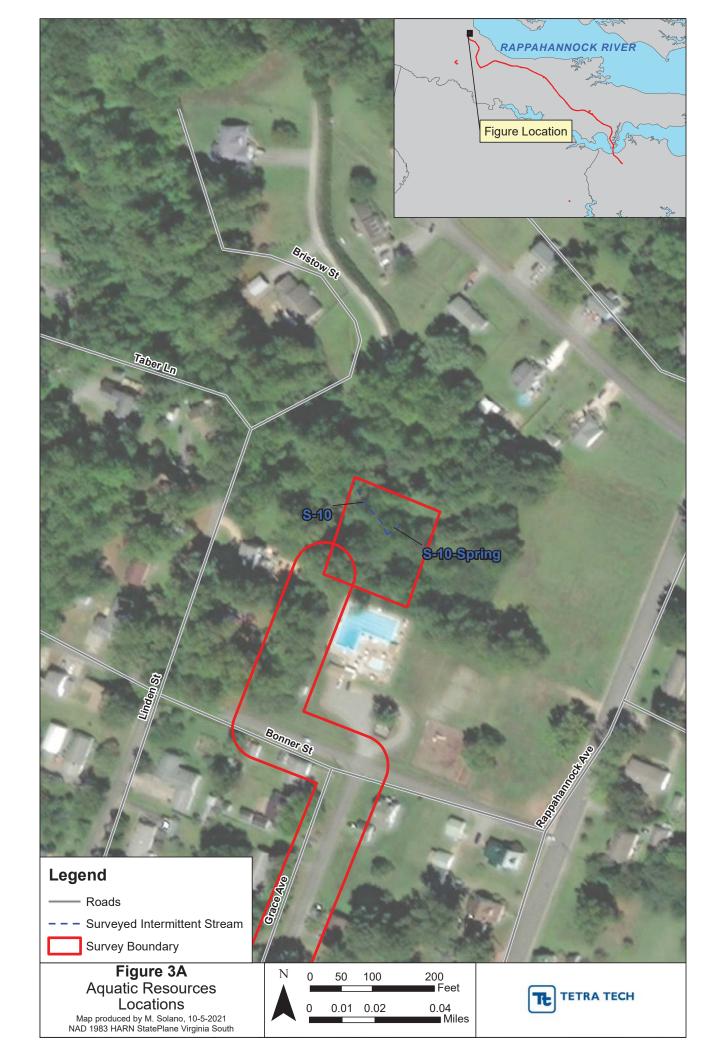


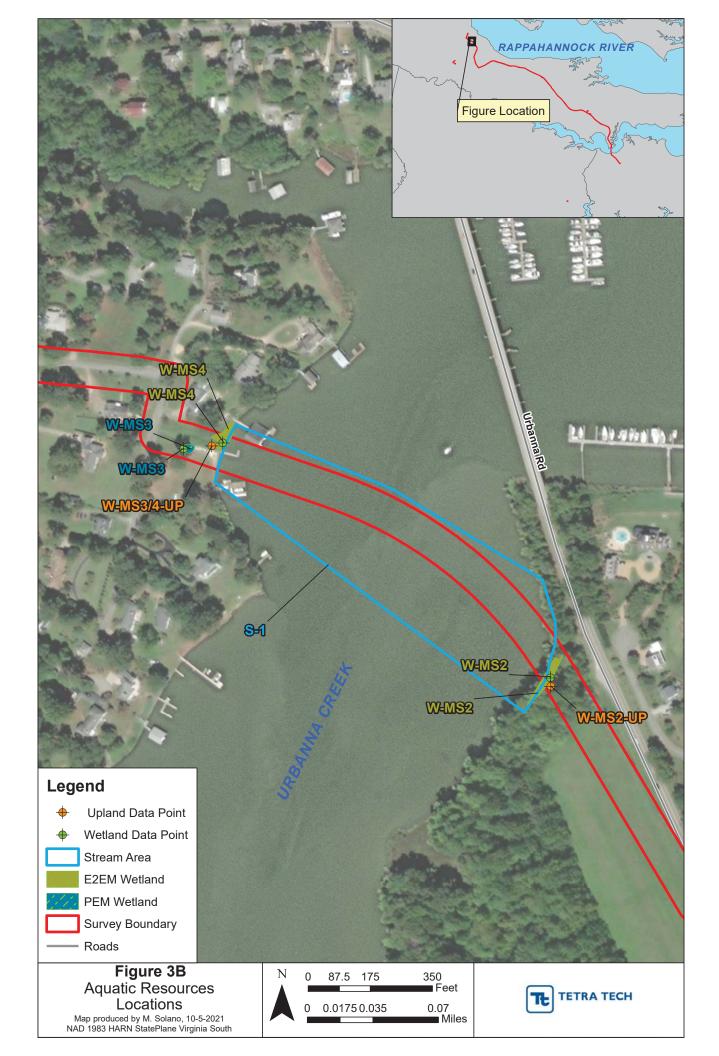


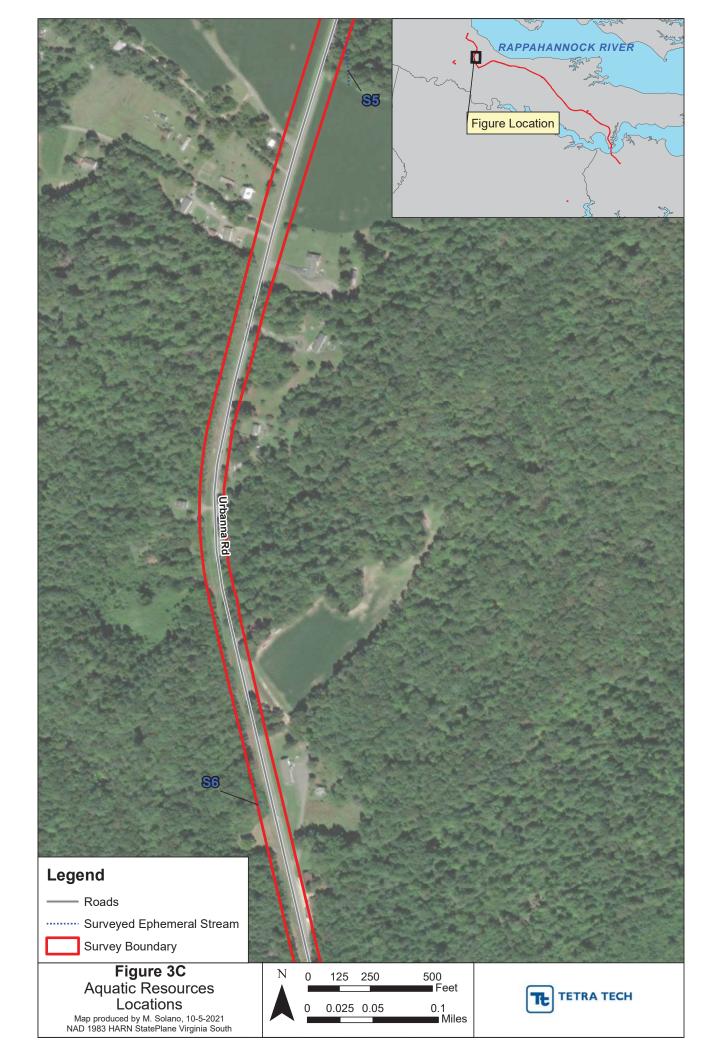




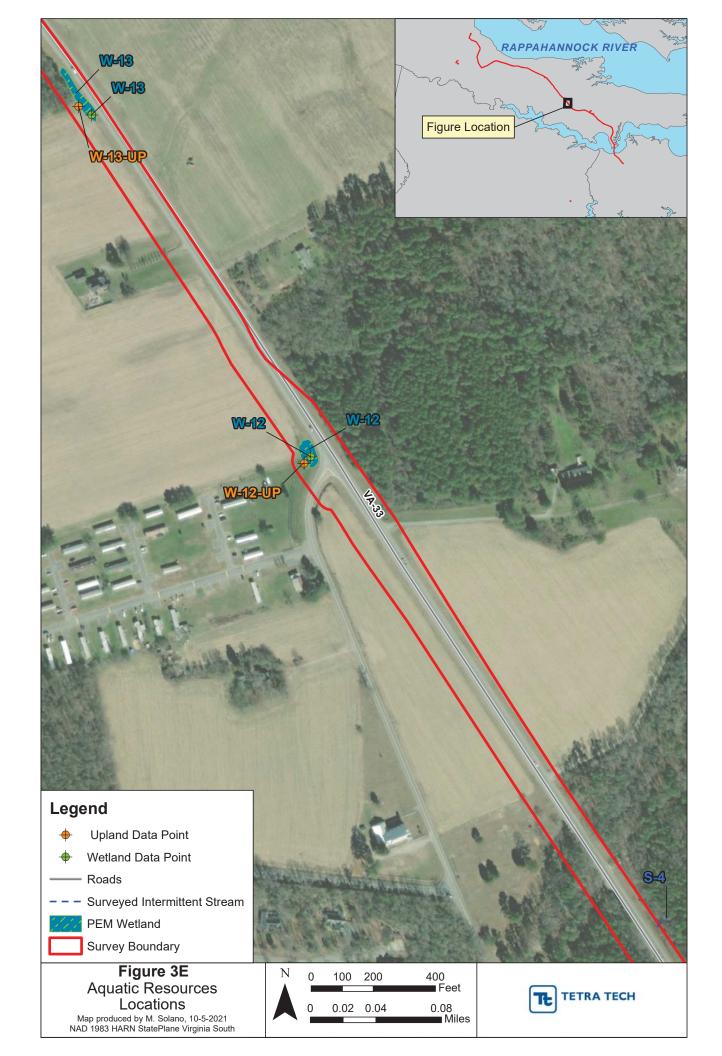


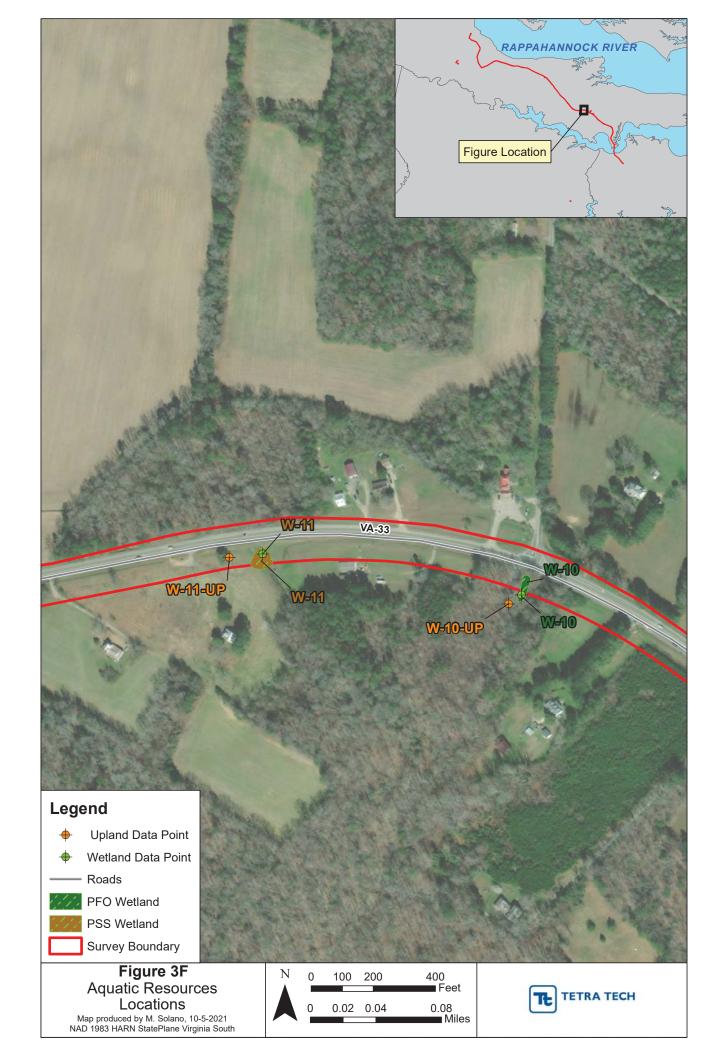


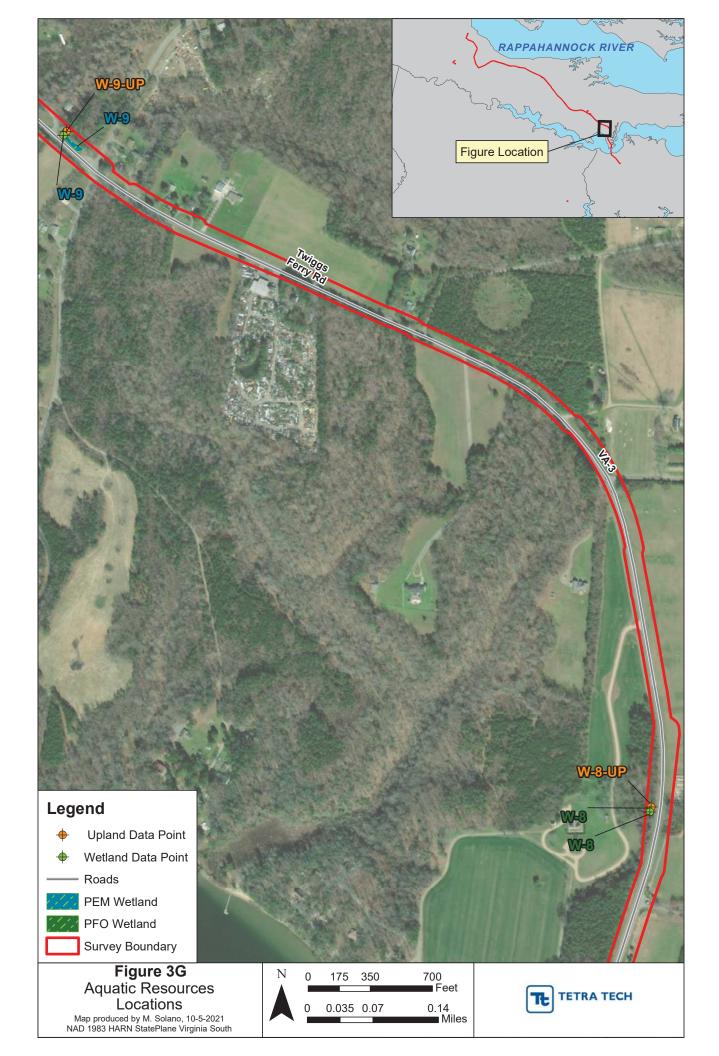




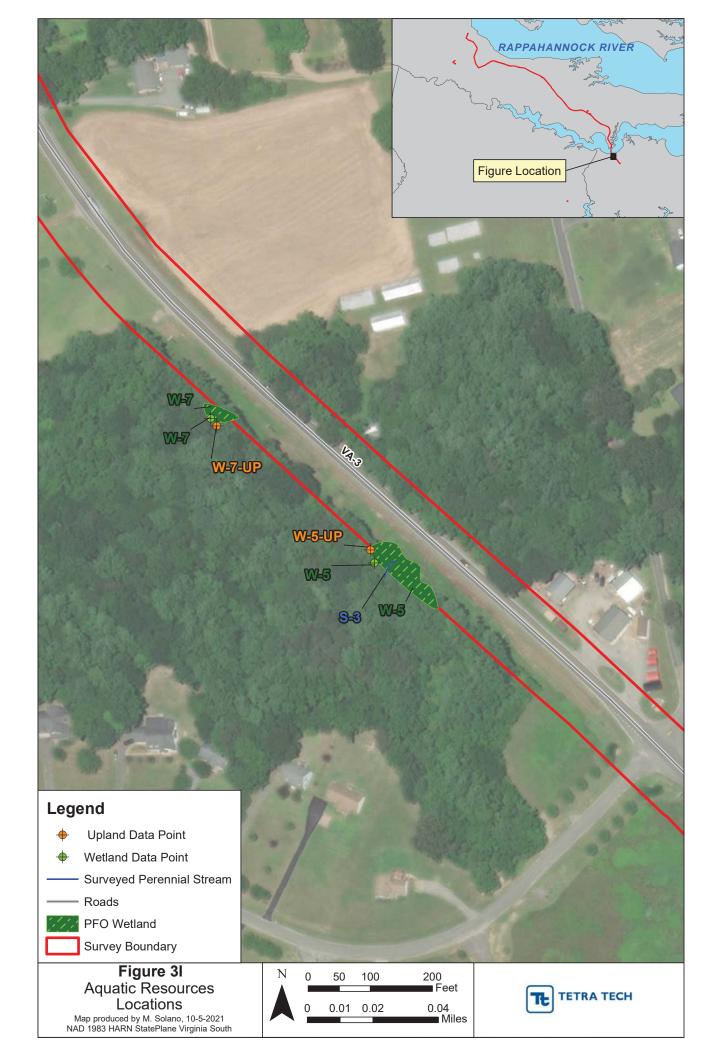


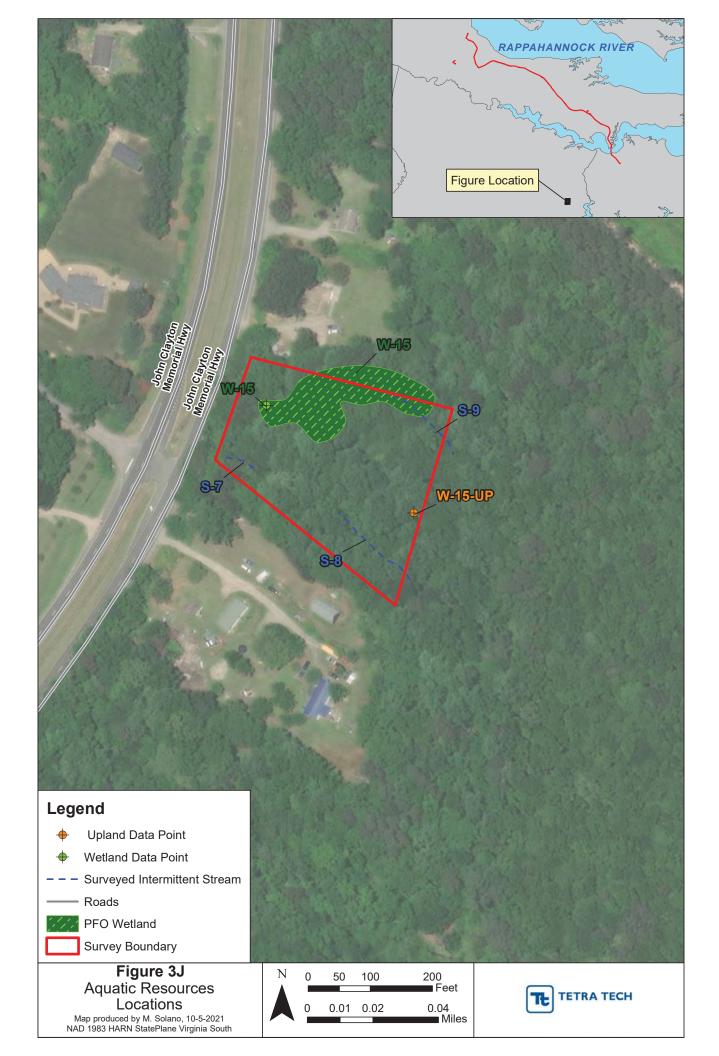












TABLES

Table 1: Identified Streams

Table 2: Identified Wetlands

Table 1.

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				Identifiec	Identified Streams						
Stream Number ¹	Stream Reach ID	NHD Stream Name ²	County	Latitude ³	Longitude ³	Flow Regime	Water Type ⁴	Cowardin Class ⁵	Flow Direction	Top of Bank Width (feet)	Figure
_	S1	Piankatank River	Middlesex	37.513154	37.513154 -76.419896	Perennial	MNT	R3	Northeast	2050.00	3B
2	S2	Urbanna Creek	Middlesex	37.629513	37.629513 -76.572037	Perennial	MNL	R3	Northeast	1230.00	3H
8	S3	UNT to Wadinger Creek	Matthews	37.503280	-76.417500	Perennial	RPW	R3	South	4.00	31
4	S4	UNT to Mill Creek	Middlesex	37.558893	-76.468024	Intermittent	RPW	R4	Northeast	2.00	3E
2	S5	UNT to Rosegill Lake	Middlesex	37.618307	-76.569336	Ephemeral	MANN	R6	East	10.00	3C
9	9S	UNT to Urbanna Creek	Middlesex	37.609903	37.609903 -76.570838	Ephemeral	MAAN	R6	West	12.00	3C
7	S7	UNT to North River	Gloucester	37.454353	-76.468993	Intermittent	MANN	R4	Southeast	4.00	31
8	S8	UNT to North River	Gloucester	37.453852	-76.468088	Ephemeral	MANN	R6	Southeast	4.50	31
6	88	UNT to North River	Gloucester	37.454461	-76.467861	Intermittent	MAN	R4	Southwest	10.00	31
10	S10	UNT to Perkins Creek	Middlesex	37.639412	37.639412 -76.578079	Intermittent	RPW	R4	West	13.00	3A

Notes:

- Streams with braided channels, streams that have different flow regimes (e.g. ephemeral and intermittent) within the surveyed reach, and NHD named streams with different field stream reach identification names are counted as single streams.

- From NHD (USGS 2021); see References. For identified streams without an NHD stream name, the identified stream was given the name, "Unnamed Tributary (UNT)", of the first named receiving waterbody.

- In decimal degrees.

- RPW Relatively Permanent Waters

- NRPW = Non-Relatively Permanent Waters

- TNW = Traditional Navigable Waters

- TNW = Traditional Navigable Waters

- From Cowardin et al. 1979; see References.

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Table 2.

Identified Wetlands

ſ	۵			П	П	П		П									П
ļ	Figure	3H	3B	3B	3B	31	3H	31	36	36	3F	3F	3E	3E	3D	33	3D
	Open/Closed Boundary	Closed	Closed	Closed	Closed	Open	Open	Open	Open	Closed	Open	Open	Closed	Closed	Open	Closed	Open
	Size (square feet) ⁶	2,518	2,859	721	2,508	4,517	1,804	1,090	992	3,895	1,895	3,130	3,892	4,789	3,216	18,259	3,686
	Size (Acres) ⁶	0.05780	0.06564	0.01655	0.05758	0.10369	0.04142	0.02501	0.02277	0.08941	0.04350	0.07185	0.08936	0.10993	0.07384	0.41918	0.08461
	Associated Waterbodies	Piankatank river	Urbanna Creek	Urbanna Creek	Urbanna Creek	UNT to Wadinger Creek	N/A	N/A	N/A	N/A	N/A	Unknown	N/A	N/A	N/A	N/A	N/A
	Water Type ⁵	WWNL	TNWW	TNWW	TNWW	NRPWW	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	NRPWW	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE
	HGM⁴	Riverine	Riverine	Slope	Depressional	Slope	Depressional	Depressional	Depressional	Depressional	Depressional	Slope	Depressional	Depressional	Depressional	Depressional	Slope
	Cowardin Class ³	PEM	PEM	PEM	PEM	PFO	PEM	PFO	PEM	PEM	PFO	PSS	PEM	PEM	PEM	PFO	PEM
	Latitude ² Longitude ²	-76.420069	-76.571996	-76.575514	-76.419963	-76.417549	-76.423043	-76.418445	-76.421768	-76.432867	-76.451741	-76.454609	-76.471869	-76.474214	-76.486446	-76.468726	-76.490421
	Latitude ²	37.513581	37.629363	37.631185	37.507359	37.503319	37.521623	37.503972	37.529907	37.540568	37.554191	37.554596	37.560321	37.566080	37.579991	37.454564	37.584816
	County	Middlesex	Middlesex	Middlesex	Middlesex	Mathews	Middlesex	Middlesex	Middlesex	Middlesex	Middlesex	Middlesex	Middlesex	Middlesex	Middlesex	Gloucester	Middlesex
	Wetland ID	W-MS1	W-MS2	W-MS3	W-MS4	W5-PFO	W6-PEM	W7-PFO	W8-PEM	W9-PEM	W10-PFO	W11-PSS	W12-PEM	W13-PEM	W14-PEM	W15-PFO	W16-PEM
	Wetland Number ¹	_	2	3	4	2	9	7	8	6	10	11	12	13	14	15	16

Notes: 1 2 3

- Wetlands with multiple contiguous Cowardin types (e.g. PEM and PSS) are considered a single wetland system and are counted as one wetland. In decimal degrees. Coordinates show wetland test pit locations.

- PEM = Palustrine Emergent - PFO = Palustrine Forested

- PSS = Palustrine Scrub-Shrub - PUB = Palustrine Unconsolidated Bottom - HGM = Hydrogeomorphic

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- RPWWD = Wetlands directly abutting Relatively Permanent Waters (RPWs) that flow directly or indirectly into Traditional Navigable Waterways (TNWs) - RPWWN = Wetlands adjacent but not directly abutting RPWs that flow directly or indirectly into TNWs - NRPWW = Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

- Isolate = Isolated (interstate or intrastate) waters, including isolated wetlands
- Size of wetland delineated and illustrated on Aquatic Resource Location Map.



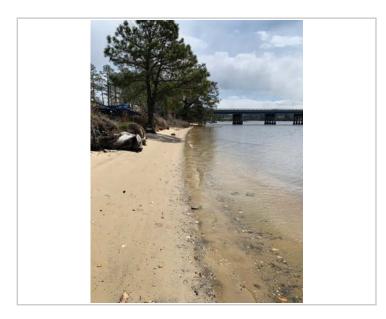
STREAM ID S1 STREAM NAME P					E Piankatank River			
CLIENT HRSD PROJECT N				ECT N	NAME Middlesex HRD TFM			
		ONG -76.41989					COUNTY Middlesex	
INVESTIGATO	ORS Emily	/ Foster, James	Cook				DATE 07/09/2021	
WATER TYPE TNW 🗸	RPW	NRPW	FLOW Perenni	/ REG ial ✓		nittent [Ephemeral	
		1						
CHANNEL FE	ATURES	Top of Bank F LB2.0ft Water Depth: Water Width:_ Ordinary High	Vidth: 2,050 Height: RB 3 ft ft Water Mark (V	.0 Vidth):	<u>2,050</u> ft	Streated Artiff	am Erosion _ None _ ✓ Moderate icial, Modified or Chand . Yes No in Roadside Ditch . Yes _ ✓ No ert Present Yes	derate Severe /100 ft) (10 ft/100 ft) Heavy nelized
							ert Material:	
							ert Size:in	
FLOW CHARACTER	ISTICS	Water Preser No water, s Stream bec Standing w Flowing wa Velocity Fast Slow	tream bed dry I moist vater ter			Morp Riffle Pool Turb	portion of Reach Representation of Reach Representatio	er if water present) 0 %
INOR		UBSTRATE CO					ANIC SUBSTRATE CON a not necessarily add u	
Substrate Type	Dia	meter	% Composit Sampling R		Substra Type		Characteristic	% Composition in Sampling Area
Bedrock					Detritus		sticks, wood, coarse	
Boulder		56 mm (10")			Dountao		plant materials (CPOM)	
Cobble		mm (2.5"-10")	5		Muck-Mu	ıd	black, very fine organic	10
Gravel		nm (0.1"-2.5")					(FPOM)	10
Sand		-2mm (gritty)	90					
Silt		4-0.06 mm	5		Marl		grey, shell fragments	
Clay < 0.004 mm (slick) Predominant Surrounding Landuse					 ate 15-30ft			
MAC	ROINVER	TEBRATES/OT	HER WILDLIF	E OBS	SERVED OF	R OTHE	ER NOTES AND OBSEF	RVATIONS
Estimated usin								

Stream ID <u>S1</u> Date <u>07/09/202</u>1



Photograph	Number _	1
Photograph	Direction	North

Comments:



Photograph Number 2

Photograph Direction SE

Comments:

Photograph Number 3

Photograph Direction _____

Comments:

Photograph Number ___4

Photograph Direction _____

Comments:

STREAM ID	S2			STREAM NAME Urbanna Creek			
CLIENT HRSD			PROJECT N	PROJECT NAME Middlesex HRD TFM			
		ONG -76.57203			COUNTY Middlesex		
INVESTIGATO	ORS Emily	/ Foster, James (Cook		DATE 07/09/2021		
WATER TYPE TNW 🗸	RPW [NRPW	FLOW REG Perennial ✓		nittent Ephemeral]	
		l =		1			
		Top of Bank H	/idth:1,230 ft	ft	Sinuosity ✓ Low M Gradient ✓ Flat M (0.5/100 ft) (2 Stream Erosion		
		Water Depth:			None _ <u>✓</u> Moderate	Heavy	
CHANNEL FE	ATUDES	Water Width:			Artificial, Modified or Char	nnelized	
CHANNEL FE	AIURES	_	Water Mark (Width):	1200 ft	<u>√</u> Yes N	0	
		, ,	Water Mark (Height)		Within Roadside Ditch		
		Flow Direction			Yes <u>✓</u> N	0	
				-	Culvert Present Yes	No	
					Culvert Material:		
					Culvert Size:in		
Water Present No water, stream Stream bed mois Standing water			tream bed dry moist rater		Proportion of Reach Repre Morphology Types (Only en Riffle % Run 10 Pool %	ter if water present)	
CHARACTER	CHARACTERISTICS —— Flowing water				Turbidity		
		Velocity			Clear Slightly turbid Turbid		
		— Fast ✓	Moderate		Other		
INOR	GANIC SI	Slow UBSTRATE COM	MPONENTS		ORGANIC SUBSTRATE CO	MPONENTS	
ino.		ld add up to 100			(does not necessarily add		
Substrate Type	Dia	meter	% Composition in Sampling Reach	Substra Type	l (Tharacteristic	% Composition in Sampling Area	
Bedrock		(1011)		Detritus	sticks, wood, coarse plant materials (CPOM	\ \	
Boulder		56 mm (10")			` ` ` ` `	<u>'</u>	
Cobble		6 mm (2.5"-10")		Muck-Mu	black, very fine organic (FPOM)	10	
Gravel		nm (0.1"-2.5")	90		(i i oivi)	1 1	
Sand Silt		-2mm (gritty) 04-0.06 mm		Marl	grey, shell fragments		
Clay		04-0.06 mm 04 mm (slick)	10	IVIAII	grey, shell flagifiertis		
Predominant Surrounding Landuse ✓ Forest ✓ Commercial ✓ Field/Pasture — Industrial — Agricultural ✓ Residential — ROW — Other: Canopy Cover ✓ Open — Partly shaded — Shaded Predominant Surrounding Landuse ✓ Wide > 30ft — Moderate 15-30ft — Narrow <15ft Floodplain Width ✓ Wide > 30ft — Moderate 15-30ft — Narrow <15ft					rate 15-30ft		
MAC	ROINVER	TEBRATES/OTI	HER WILDLIFE OBS	SERVED OF	R OTHER NOTES AND OBSE	RVATIONS	
Estimated usin	g photos/c	online data					

Stream ID S2 Date <u>07/09/202</u>1



Photograph Number __1

Photograph Direction NE

Comments: Southeast bank



Photograph Number __2

Photograph Direction SW

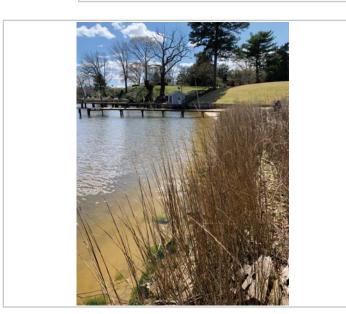
Comments: Southeast bank



Photograph Number 3

Photograph Direction North

Comments: Northwest bank



Photograph Number ___4

Photograph Direction South

Comments: Northwest bank

STREAM ID S3 STREAM NAME							
CLIENT HRSD PROJECT NAME Mid				IAME Middle			
LAT LONG STATE Virginia				inia	COUNTY Mathews		
INVESTIGATORS Emily Foster, James Cook					DATE 7/9/21		
TNW	/ NRPW	FLOW REG Perennial		ittent Ephemeral			
CHANNEL FEATURES Estimate Measurements Top of Bank Width:4.5 ft Top of Bank Height:				: <u>4</u> ft): <u>4</u> in	Sinuosity Low Mo Gradient Flat	derate Severe /100 ft)	
FLOW CHARACTERISTICS Water Present No water, stream bed dry Stream bed moist Standing water ✓ Flowing water Velocity Fast ✓ Moderate Slow					Proportion of Reach Repres Morphology Types (Only ente Riffle 45 % Run 50 Pool 5 % Turbidity Clear Slightly to Other	er if water present) %	
INOR		UBSTRATE COM			ORGANIC SUBSTRATE COM (does not necessarily add u		
Substrate Type	Dia	meter	% Composition in Sampling Reach	Substrat Type	te Characteristic	% Composition in Sampling Area	
Bedrock	_			Detritus	sticks, wood, coarse		
Boulder	!	56 mm (10")			plant materials (CPOM)		
Cobble	 	6 mm (2.5"-10")		Muck-Muck	black, very fine organic (FPOM)		
Gravel Sand	 	mm (0.1"-2.5") -2mm (gritty)	100		(1.1.0101)		
Sand		-2mm (gmy) 04-0.06 mm	100	Marl	grey, shell fragments		
Clay		04 mm (slick)		- ''''	groj, chon nagmonto		
Predominant Surrounding Landuse ✓ Forest — Commercial — Field/Pasture — Industrial — Agricultural — Residential — ROW — Other: Canopy Cover — Open — Partly shaded ✓ Shaded				al I	Floodplain Width Wide > 30ft Modera Narrow <15ft	ate 15-30ft	
		<u> </u>					
MAC	ROINVER	TEBRATES/OTI	HER WILDLIFE OR	SERVED OR	OTHER NOTES AND ORSE	RVATIONS	
MACROINVERTEBRATES/OTHER WILDLIFE OBSERVED OR OTHER NOTES AND OBSERVATIONS Flows approx. south southwest. Small minnows and macroinverts.							

Stream ID _S	53	Date <u>7/9/21</u>		
Photograph N	Number _	1	Photograph Nur	mber <u>2</u>
Photograph [Direction <u>I</u>	NE	Photograph Dire	ection
Comments:	Photograp	oh facing into culvert.	Comments:	
Photograph N	Number _	3	Photograph Nur	mber4
Photograph [Photograph Dire	
Comments:			Comments:	

STREAM ID S4 STREAM NAME UNT						to Mill Creek		
CLIENT HRSD PROJECT NAME HRS					D Middlesex TFM			
LAT 37.558893 LONG -76.468024 STATE Virginia						COUNTY Middlesex		
INVESTIGATO	ORS Emily	y Foster, Katelyr	n Hoisir	ngton			DATE 7/15/21	
WATER TYPE TNW RPW NRPW Perennial Inte				IME Interm	nittent 🗸	Ephemeral		
CHANNEL FE	ATURES	Water Depth: Water Width:_ Ordinary High	Width: _ Height: t2 n Water	BB 3 ft RB 3 ft in ft Mark (Width):	ft	Stream Stream Artific Within Culve	ent \(\frac{1}{2} \) Flat \(\left(0.5/100 \) ft) \(derate Severe (100 ft) (10 ft/100 ft) Heavy nelized No
FLOW CHARACTERISTICS Water Present No water, stream bed dry Stream bed moist ✓ Standing water Flowing water Velocity Fast Moderate Slow					Propo Morph Riffle Pool Turbi	100 %		
INOR		UBSTRATE CO					NIC SUBSTRATE COM	
Substrate Type	Dia	meter		Composition in mpling Reach	Substra Type		Characteristic	% Composition in Sampling Area
Bedrock					Detritus		sticks, wood, coarse	
Boulder		56 mm (10")				─	lant materials (CPOM)	
Cobble		6 mm (2.5"-10")			Muck-Mu	ıd b	plack, very fine organic (FPOM)	
Gravel Sand		nm (0.1"-2.5") -2mm (gritty)	90	1)		_	(1 1 OWI)	
Sand		-2mm (gritty) 04-0.06 mm	10		Marl		grey, shell fragments	
Clay		04 mm (slick)	10	U	IVICIT		groy, snon nagments	
Predominant Surrounding Landuse ✓ Forest — Commercial — Field/Pasture — Industrial — Agricultural — Residential ✓ ROW — Other: Canopy Cover — Open — Partly shaded ✓ Shaded					I	W	plain Width ide > 30ft Modera arrow <15ft	ate 15-30ft
BA A C	POINVED	TERDATES/OT	HED IV	VII DI IEE OBS	EDVED OF	о Отиг	R NOTES AND OBSER	PVATIONS
								CHIOHS
Recent timber harvest adjacent to roadside, stream bed disturbed from heavy machinery.								

Stream ID <u>S4</u> Date <u>7/15/21</u>



Photograph Number __1__

Photograph Direction North

Comments:



Photograph Number 2

Photograph Direction South

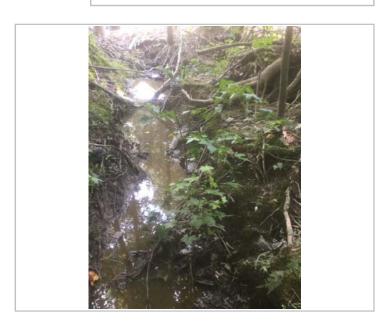
Comments:



Photograph Number 3

Photograph Direction East

Comments:



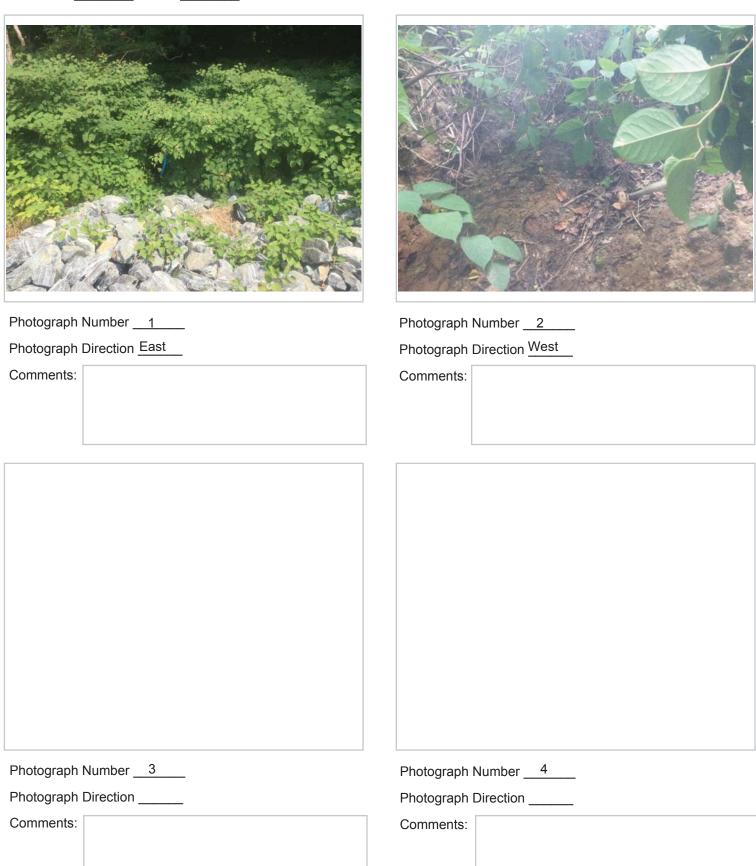
Photograph Number <u>4</u>

Photograph Direction West

Comments:

STREAM ID	S5				Rosegill Lake		
CLIENT HR	SD		PROJECT N	PROJECT NAME MISPII			
LAT 37.6183	07 <u>L</u>	ONG -76.569336		STATE Virginia COUNTY Middlesex			
INVESTIGATO	ORS Emily	/ Foster			DATE 07/	29/2021	
WATER TYPE TNW	RPW	NRPW ✓	FLOW REG Perennial	IME Intermit	tent Eph	nemeral 🗸	
CHANNEL FEATURES Water Depth: 0.00 Water Width: 0.0 Ordinary High Wate Ordinary High Wate Flow Direction: Eas			idth:ft eight: RB	ft	Sinuosity ✓ Low Medium High Gradient Flat Moderate ✓ Severe (2 ft/100 ft) (10 ft/100 ft) Stream Erosion None ✓ Moderate Heavy Artificial, Modified or Channelized Yes ✓ No Within Roadside Ditch Yes ✓ No Culvert Present ✓ Yes No Culvert Material: Concrete Culvert Size: 12 in Proportion of Reach Represented by Stream Morphology Types (Only enter if water present)		
Water Present ✓ No water, stream — Stream bed mois — Standing water — Flowing water Velocity — Fast — Mod — Slow			ream bed dry moist ater er		Morphology Typ Riffle % Pool % Turbidity	es (Only enter Run Slightly tu	
INOR	RGANIC SI	JBSTRATE COM	IPONENTS	(ORGANIC SUBS	TRATE COM	PONENTS
	(shou	ld add up to 100%	%) 0	!	(does not neces:		
Substrate Type	<u> </u>	neter	%)	Substrate Type	·	sarily add up	o to 100%)
Substrate Type Bedrock	Dia	meter	% Composition in	Substrate	Characteri	sarily add up stic od, coarse	% Composition in
Substrate Type Bedrock Boulder	Dia	meter 56 mm (10")	% Composition in	Substrate Type	Characteri	sarily add up	% Composition in
Substrate Type Bedrock Boulder Cobble	Dia > 29 64-256	meter 56 mm (10") 5 mm (2.5"-10")	% Composition in	Substrate Type	Characteri sticks, woo plant materi	sarily add up stic od, coarse als (CPOM) fine organic	% Composition in
Substrate Type Bedrock Boulder Cobble Gravel	Dia > 25 64-256 2-64 r	meter 56 mm (10") 56 mm (2.5"-10") nm (0.1"-2.5")	% Composition in	Substrate Type Detritus	Characteri sticks, woo plant materi	sarily add up stic od, coarse als (CPOM) fine organic	% Composition in
Substrate Type Bedrock Boulder Cobble Gravel Sand	> 25 64-256 2-64 r	meter (10") 56 mm (10") 5 mm (2.5"-10") mm (0.1"-2.5") -2mm (gritty)	% Composition in	Substrate Type Detritus Muck-Mud	Characteri sticks, woo plant materi black, very	sarily add up stic od, coarse als (CPOM) fine organic OM)	% Composition in
Substrate Type Bedrock Boulder Cobble Gravel Sand Silt	> 29 64-256 2-64 r 0.06	meter 56 mm (10") 5 mm (2.5"-10") nm (0.1"-2.5") -2mm (gritty) 14-0.06 mm	% Composition in	Substrate Type Detritus	Characteri sticks, woo plant materi	sarily add up stic od, coarse als (CPOM) fine organic OM)	% Composition in
Substrate Type Bedrock Boulder Cobble Gravel Sand	> 29 64-256 2-64 r 0.06 0.00 < 0.00	meter 56 mm (10") 5 mm (2.5"-10") nm (0.1"-2.5") -2mm (gritty) 4-0.06 mm 04 mm (slick) Predominant S Forest	% Composition in Sampling Reach Surrounding Landu Commercia Industrial Residential Other:	Substrate Type Detritus Muck-Mud Marl	Characteri sticks, woo plant materi black, very	sarily add up stic od, coarse als (CPOM) fine organic OM) fragments th Moderat	% Composition in Sampling Area
Substrate Type Bedrock Boulder Cobble Gravel Sand Silt Clay WATERSHED FEATURES	Dia > 29 64-256 2-64 r 0.06 0.00 < 0.00	meter 56 mm (10") 5 mm (2.5"-10") nm (0.1"-2.5") -2mm (gritty) 4-0.06 mm 04 mm (slick) Predominant S Forest Field/Pastur Agricultural ROW Canopy Cover Open Shaded	% Composition in Sampling Reach Surrounding Landu — Commercia — Industrial — Residential — Other:	Substrate Type Detritus Muck-Mud Marl Jse al	Sticks, woo plant materi black, very to (FPC) grey, shell Floodplain Widt Wide > 30ft Narrow <15ft	sarily add up stic od, coarse als (CPOM) fine organic OM) fragments h Moderati	% Composition in Sampling Area

Stream ID <u>S5</u> Date <u>07/29/202</u>1



STREAM ID S6 STREAM NAME UNT				ME UNT to	o Urbann	a Creek	
CLIENT HR	SD		PROJECT N				
		ONG -76.57083		STATE Virginia COUNTY Middledex			
INVESTIGATO	ORS Emily	/ Foster, Kristen	Walls			DATE 7/29/21	
WATER TYPE TNW	RPW	NRPW _	FLOW REG Perennial	IME Intermi	ittent	Ephemeral 🗸	
		Estimato Mos	euromonte	1	Sinuos	sity / Low	Modium High
CHANNEL FEATURES Water Depth: 0 Water Width: 0 Ordinary High Water			Vidth:ft Height: t	1ft	Stream Artifici Within	n Erosion None Moderate al, Modified or Chan /es No Roadside Ditch Yes No	Department Severe (10 ft/100 ft) Heavy nelized
						t Present Yes _	
						Material:	
Water Present ✓ No water, stream bed dry Stream bed moist — Standing water Flow Flowing water Flowing water			tream bed dry d moist vater		Propor		
CHARACTERISTICS Velocity Fast Modera Slow						ity ear <u> Slightly t</u> her	urbid Turbid
INOR		UBSTRATE COI ld add up to 100				IC SUBSTRATE COM ot necessarily add u	
Substrate Type	Dia	meter	% Composition in Sampling Reach	Substrat Type	te	Characteristic	% Composition in Sampling Area
Bedrock				Detritus		sticks, wood, coarse	
Boulder		56 mm (10")			pla	ant materials (CPOM)	
Cobble		6 mm (2.5"-10")	_	Muck-Muck	d bla	ack, very fine organic	
Gravel		mm (0.1"-2.5")	5			(FPOM)	
Sand		-2mm (gritty)	75				
Silt		04-0.06 mm	00	Marl	g	rey, shell fragments	
Clay < 0.004 mm (slick) 20 Predominant Surrounding Landuse					Late 15-30ft		
MAC	ROINVER	TEBRATES/OTI	HER WILDLIFE OBS	SERVED OR	OTHER	NOTES AND OBSE	RVATIONS
	MACROINVERTEBRATES/OTHER WILDLIFE OBSERVED OR OTHER NOTES AND OBSERVATIONS						

Stream ID <u>S6</u> Date <u>7/29/21</u>

<u></u>	
Photograph Number1	Photograph Number2
Photograph Direction East	Photograph Direction West
Comments:	Comments:
Photograph Number3	Photograph Number <u>4</u>
Photograph Direction	Photograph Direction
Comments:	Comments:

T	>=				N # D:	1	
	STREAM ID S7 STREAM NAME UNT to North River						
CLIENT HR:					lesex Interconnector Phase II		
LAT 37.4543	53 <u>L</u>	ONG -76.46899	3 STATE Virgi	inia	COUNTY Gloucester		
INVESTIGATO	ORS K. Ho	oisington, D. Pair	nter		DATE 09/03/2021		
TNW	WATER TYPE TNW RPW NRPW Perennial Intermittent Ephemeral Ephemeral						
		Estimate Mea			Sinuosity ✓ Low N	Medium High	
		Top of Bank V	Vidth: <u>3.0</u> ft leight:		Gradient Flat Mo (0.5/100 ft) (2 ft/	derate Severe /100 ft) (10 ft/100 ft)	
		LB <u>2.0</u> ft	RB <u>2.0</u>	ft	Stream Erosion	, , ,	
		Water Depth:	in		None✓ Moderate	Heavy	
CHANNEL FE	ATURES	Water Width:_	2.0 ft		Artificial, Modified or Chann		
OHARRE I E	ATORLO	Ordinary High	Water Mark (Width)	: <u>4.0</u> ft	<u>✓</u> Yes No		
		Ordinary High	Water Mark (Height	:): <u>4.0</u> in	Within Roadside Ditch		
		Flow Direction	n: Southeast		Yes <u>✓</u> No		
				_	Culvert Present Yes _		
					Culvert Material:Concrete		
					Culvert Size: 24in		
		Water Presen	tream bed dry		Proportion of Reach Repres Morphology Types (Only ente	er if water present)	
		Stream bed Standing w			Riffle % Run % Pool 10 ⊡ %		
FLOW	OTIOO	Standing w			7001 104 70		
CHARACTER	CHARACTERISTICS				Turbidity	+	
		Velocity			Clear Slightly to Other	pidru bidru	
		Fast Slow	Moderate		Other		
		_					
		UBSTRATE COI)%) 100		ORGANIC SUBSTRATE COM (does not necessarily add up	p to 100%)	
Substrate Type	Dia	meter	% Composition in Sampling Reach		te Characteristic	% Composition in Sampling Area	
Bedrock				Detritus	sticks, wood, coarse		
Boulder		56 mm (10")			plant materials (CPOM)	10 💌	
Cobble		6 mm (2.5"-10")	—	Muck-Mu	d black, very fine organic		
Gravel		mm (0.1"-2.5")	10		(FPOM)		
Sand		-2mm (gritty)	70 🔲	NAI			
Silt)4-0.06 mm	20 💌	Marl	grey, shell fragments		
Clay	< 0.00	04 mm (slick)	Common dim and a med		Floodplain Width		
		Predominant ✓ Forest	Surrounding Land Commercia		Wide > 30ft Modera	ate 15-30ft	
			ure Industrial	a.	✓ Narrow <15ft		
WATEROUER		Agricultura	al 🗸 Residentia	ıl			
WATERSHED FEATURES		ROW	Other:				
Company Comm							
Canopy Cover — Open — Partly shaded							
<u>✓</u> Shaded							
MAC	POIN/EP	TERPATES/OT	HER WILDLIEE OR	SEBVED OF	R OTHER NOTES AND OBSER	PVATIONS	
Weak evidence			wei bed willi balik. S	шеат арреа	ars to go under the surface betw	reen 37 and 36.	
	,						
Flare complete	ly separat	ed from pipe.					

Stream ID <u>S7</u> Date <u>09/03/202</u>1



Photograph Number __1___ Photograph Direction West

Comments:



Photograph Number 2 Photograph Direction East

Comments:



Photograph Number 3

Photograph Direction West

Comments:

Photograph Number ___4 Photograph Direction _____

	20		1		N # D	1	
	STREAM ID S8 STREAM NAME UNT to North River						
CLIENT HR					lesex Interconnector Phase II		
LAT 37.4538		ONG -76.46808		nia	COUNTY Gloucester		
INVESTIGATO	ORS K. Ho	isington, D. Pair	nter		DATE 09/03/2021		
TNW	WATER TYPE TNW RPW NRPW INTERPRETATION INTERPRETATION REGIME Perennial Intermittent FLOW REGIME Perennial Intermittent FLOW REGIME Perennial Intermittent FLOW REGIME Perennial Intermittent FLOW REGIME						
CHANNEL FE	ATURES	Top of Bank H LB 3.0 ft Water Depth: Water Width: Ordinary High Ordinary High	Vidth: <u>3.0</u> ft leight: RB <u>2.0</u> ft 6.00 in	<u>1.0</u> ft : <u>4.0</u> in	Stream Erosion None Moderate Artificial, Modified or Chang Yes Mo Within Roadside Ditch Yes Mo Culvert Present Yes	derate Severe (100 ft) — Heavy nelized	
					Culvert Material:		
Water Present No water, stream bed dry Stream bed moist Standing water Flowing water Velocity Fast					Culvert Size:in Proportion of Reach Represented by Stream Morphology Types (Only enter if water present) Riffle 0 % Run 75 % Pool 25 % Turbidity Clear Slightly turbid Turbid Other		
INOR		UBSTRATE COI		•	ORGANIC SUBSTRATE COM (does not necessarily add up		
Substrate Type	Dia	meter	% Composition in Sampling Reach	Substrat Type	te Characteristic	% Composition in Sampling Area	
Bedrock				Detritus	sticks, wood, coarse		
Boulder	> 25	56 mm (10")		Boundo	plant materials (CPOM)	5 💌	
Cobble	64-256	6 mm (2.5"-10")		Muck-Muc	black, very fine organic		
Gravel		nm (0.1"-2.5")			(FPOM)		
Sand		-2mm (gritty)	90 🗖				
Silt		4-0.06 mm	10	Marl	grey, shell fragments		
Clay WATERSHED FEATURES	Predominant Surrounding Landuse ✓ Forest — Commercial — Wide > 30ft — Moderate 15-30ft ✓ Field/Pasture — Industrial — Narrow <15ft WATERSHED POW Other:					l nte 15-30ft	
		·					
MAC	ROINVER	TEBRATES/OT	HER WILDI IFF ORS	ERVED OR	OTHER NOTES AND OBSER	RVATIONS	
				LINVED OR	CHIER HOTES AND OBSER	TATIONO	
	Moderate presence of macroinvertebrates (dragonfly nymph). Stream goes under the surface (upstream) between S7 and S8.						

Stream ID <u>S8</u> Date <u>09/03/202</u>1



Photograph Number __1___

Photograph Direction East

Comments:



Photograph Number 2

Photograph Direction West

Comments:

Photograph Number 3

Photograph Direction _____

Comments:

Photograph Number ___4

Photograph Direction _____

Comments:

		T	UNIT 4	a Namb Diver				
STREAM ID S9	T		o North River					
CLIENT HRSD				llesex Interconnector Phase II				
	LONG -76.467861	STATE Virgin	lla					
	K. Hoisington, D. Painter	T 51 OW DEC		DATE 09/03/2021				
WATER TYPE TNW RPW NRPW Intermittent FLOW REGIME Perennial Intermittent FLOW REGIME Perennial Intermittent FLOW REGIME								
	Estimate Measure	ments		Sinuosity Low N	Medium ✓ High			
	Top of Bank Width: Top of Bank Height LB <u>2.0</u> ft Water Depth: <u>7.00</u>	t: RB <u>2.0</u> f	ft	Gradient ✓ Flat Mor (0.5/100 ft) (2 ft/ Stream Erosion None ✓ Moderate	derate Severe 100 ft) (10 ft/100 ft)			
CHANNEL FEATURES Water Width: 2.0 ft Ordinary High Water Mark (Width): 1.0 ft				Artificial, Modified or Chann				
				Yes _ <u>✓</u> No				
	Ordinary High Wate			Within Roadside Ditch				
	Flow Direction: Sou	utheast	-	Yes✓ No				
				Culvert Meterials				
				Culvert Material:				
	Markey Breezent			Culvert Size:in	1.11			
Water Present No water, stream bed dry Stream bed moist Standing water FLOW CHARACTERISTICS Water Present No water, stream bed dry Stream bed moist Standing water				Proportion of Reach Represented by Stream Morphology Types (Only enter if water present) Riffle 10 % Run 80 % Pool 10 %				
Velocity — Fast ✓ Moderate _ Slow				Turbidity ✓ Clear Slightly tu Other	ırbid Turbid			
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)				ORGANIC SUBSTRATE COM (does not necessarily add up				
Substrate Type		% Composition in Substr		Characteristic	% Composition in Sampling Area			
Bedrock			Detritus	sticks, wood, coarse				
Boulder	> 256 mm (10")		Dounted	plant materials (CPOM)	10 🗷			
	1-256 mm (2.5"-10")		Muck-Mu	d black, very fine organic				
	2-64 mm (0.1"-2.5")			(FPOM)				
		90 🔲	NA-wi					
Silt	-	0	Marl	grey, shell fragments				
Clay < 0.004 mm (slick) Predominant Surrounding Landuse ✓ Forest — Commercial — Field/Pasture — Industrial — Agricultural ✓ Residential — ROW — Other: Canopy Cover — Open — Partly shaded ✓ Shaded				Floodplain Width Wide > 30ft Modera ✓ Narrow <15ft	te 15-30ft			
,	· ·							
MACROIN	VERTEBRATES/OTHER	WILDLIFE OBS	ERVED OF	R OTHER NOTES AND OBSER	VATIONS			
A square concrete st		m is on a concre	ete platform	in the stream. Possibly a "soak				
Many macroinverteb	rates.							
Iron oxidized bacteria.								

Stream ID <u>S9</u> Date <u>09/03/202</u>1



Photograph Number __1___

Photograph Direction East





Photograph Number 2

Photograph Direction West

Comments:

Photograph Number	3	

Photograph Number ___4

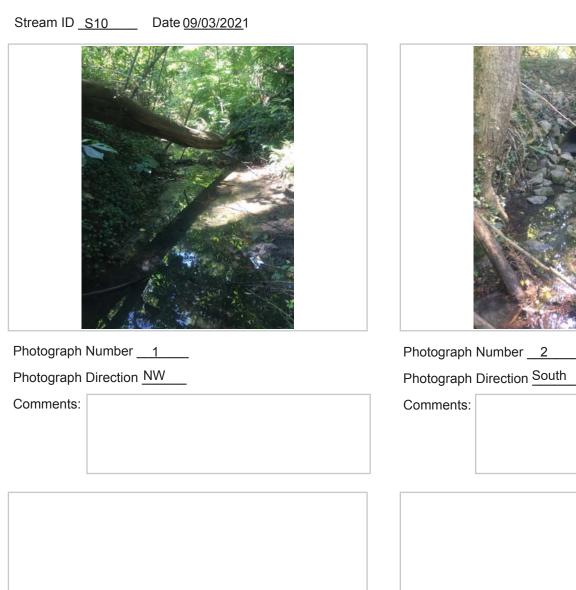
Photograph Direction _____

Comments:

Photograph Direction _____

Comments:

1								
STREAM ID S10 STREAM NAME UNT to Perkins Creek								
CLIENT HRSD		AME Midd	lesex Interconnector Phase II					
LAT 37.639412	LONG -76.578079	nia	COUNTY Middlesex					
INVESTIGATORS K. Hoisington, D. Painter DATE 09/03/2021								
WATER TYPE TNW RPW	✓ NRPW	FLOW REG Perennial		nittent Fphemeral				
CHANNEL FEATURE	Estimate Measure Top of Bank Width: Top of Bank Heigh LB18.0 ft Water Depth:10.0 Water Width:5.0 Ordinary High Wate Ordinary High Wate Flow Direction: We	: _13.0 _ ft t: RB _ 12.0 00 _ in ft er Mark (Width): er Mark (Height)	Within Roadside Ditch Yes No Culvert Present Yes No Culvert Material:Concrete Culvert Size: 36in					
FLOW CHARACTERISTICS	Water Present No water, stream Stream bed mois Standing water Flowing water Velocity Fast Mod Slow	Proportion of Reach Represented by Stream Morphology Types (Only enter if water present) Riffle 0 % Run 20 % Pool 80 % Turbidity Clear Slightly turbid Turbid Other						
	SUBSTRATE COMPO		ORGANIC SUBSTRATE COM (does not necessarily add u					
Substrate Type		% Composition in Substr		l ('haracteristic	% Composition in Sampling Area			
Bedrock			Detritus	sticks, wood, coarse				
	256 mm (10")		Dountas	plant materials (CPOM)	10 🔽			
Cobble 64-2	56 mm (2.5"-10")		Muck-Mu	black, very fine organic				
<u> </u>	4 mm (0.1"-2.5")			(FPOM)				
		00 🔲	Marit					
	004-0.06 mm		Marl	grey, shell fragments				
Clay < 0.004 mm (slick) Predominant Surrounding Landuse ✓ Forest Commercial — Field/Pasture Industrial — Agricultural Residential — ROW Other: Recreational Canopy Cover — Open Partly shaded ✓ Shaded				Floodplain Width Wide > 30ft Modera ✓ Narrow <15ft	I ate 15-30ft			
MACROINVI	ERTEBRATES/OTHER	WILDLIFE OBS	ERVED OI	R OTHER NOTES AND OBSER	RVATIONS			
Oxidizing bacteria.								
	Jrbanna Pump Station.							
Riprap placed atop cor	•							



Photograph Number 3

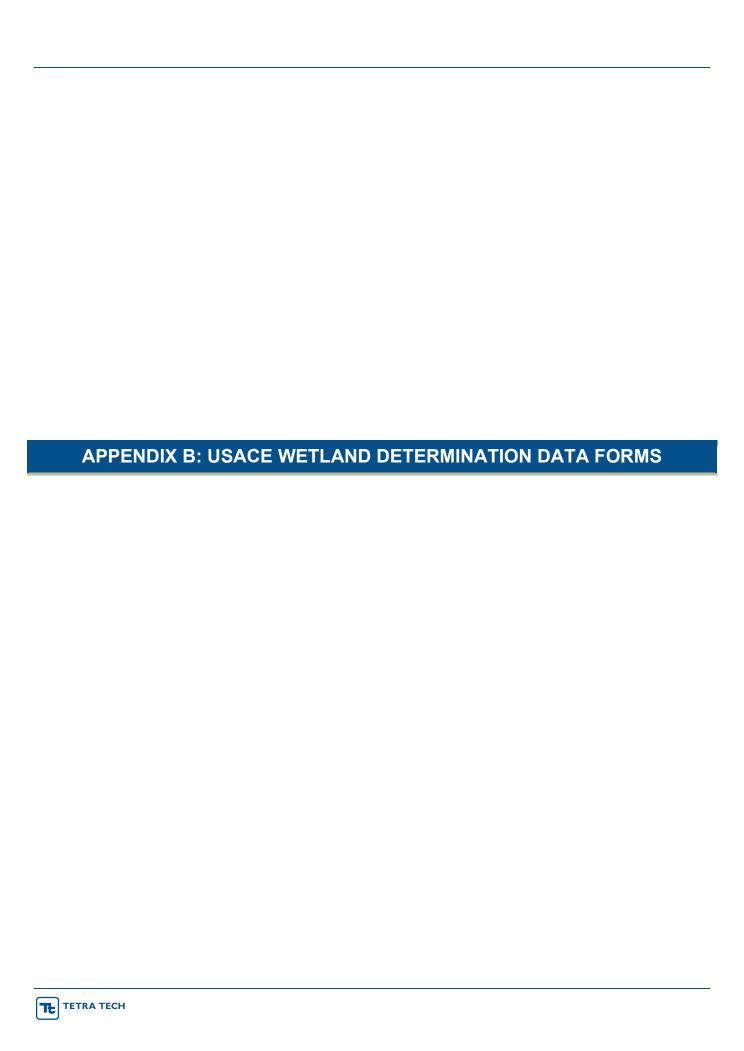
Photograph Direction _____

Comments:

Photograph Number ___4___

Photograph Number __4 ___
Photograph Direction _____

Comments:



WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	City/County: Middl	esex	Sampling Date: 04/02/2021
Applicant/Owner: HRSD	- , , <u></u>	State: V	Sampling Date: 04/02/2021 A Sampling Point: W1 PEM
Investigator(s): Emily Foster, James Cook	Section, Township.	Range:	
			Concave Slope (%): 5
Subregion (LRR or MLRA): MLRA 153B of LRR Lat: 37.5	13581	Long: -76.4200	69 Datum: WGS84
Soil Map Unit Name: Eunola Ioam		NW	I classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of y			
Are Vegetation, Soil, or Hydrology significantl			
Are Vegetation, Soil, or Hydrology naturally p			ny answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showin			
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks:	within a We	tland?	/es X No
Linear emergent drainage/PEM at north side of side of Piankatank due to steep cliff. Will have			
HYDROLOGY			
Wetland Hydrology Indicators:			ary Indicators (minimum of two required)
Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	13) 5) (LRR U) Odor (C1) heres along Living Rocced Iron (C4) ction in Tilled Soils (Ce (C7)	Spa Dra Dra Mos Dry Cra Cf6 Sat Geo Sha FAC	face Soil Cracks (B6) ursely Vegetated Concave Surface (B8) inage Patterns (B10) ss Trim Lines (B16) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) ullow Aquitard (D3) C-Neutral Test (D5) nagnum moss (D8) (LRR T, U)
Field Observations:	. 1		
Surface Water Present? Yes X No Depth (inche Water Table Present? Yes No Depth (inche Saturation Present? Yes No Depth (inche (includes capillary fringe)	s):	Wetland Hydrolog	y Present? Yes X No
Describe Recorded Data (stream gauge, monitoring well, aerial pho	tos, previous inspecti	ons), if available:	
Remarks:			

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

EGETATION (Four Strat	a) – Use scientific r	names of pl	ants.		Sampling Point: W 1 PEM
			Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:	,		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
1					That Are OBL, FACW, or FAC: 1 (A)
2					Total Number of Dominant
3					Species Across All Strata: 2 (B)
4					Percent of Dominant Species
5					That Are OBL, FACW, or FAC: 50 (A/B)
6					Prevalence Index worksheet:
7					Total % Cover of: Multiply by:
8					OBL species 80 $x 1 = 80$
			= Total Cov		FACW species x 2 =
	50% of total cover:	20% of	total cover	·	FAC species x 3 =
Sapling/Shrub Stratum (Plot siz	e:)				FACU species 20 x 4 = 80
1					UPL species x 5 =
2					Column Totals: 100 (A) 160 (B)
3					Column Totals: 100 (A) 100 (B)
4					Prevalence Index = B/A = 1.6
5					Hydrophytic Vegetation Indicators:
6					1 - Rapid Test for Hydrophytic Vegetation
7					2 - Dominance Test is >50%
8				-	3 - Prevalence Index is ≤3.0 ¹
		:	= Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
	50% of total cover:	20% of	total cover		
Herb Stratum (Plot size:)				¹ Indicators of hydric soil and wetland hydrology must
1. Juncus effusus Soft rush		80	Yes	OBL	be present, unless disturbed or problematic.
2. Poa pratensis Kentucky blueg	rass	20	Yes	FACU	Definitions of Four Vegetation Strata:
3					Tree Meady plants evaluding vines 2 in (7.6 cm) or
4					Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
5.					height.
6.					Sapling/Shrub – Woody plants, excluding vines, less
7.					than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8.					Hank All hank account (ran woods) plants no condition
9.					Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
10.				-	
11				-	Woody vine – All woody vines greater than 3.28 ft in height.
12.				-	noight.
12.			= Total Cov	or	
	50% of total cover:				
Woody Vine Stratum (Plot size:			total oover		
1				-	
2				-	
3					
4				-	
5					Hydrophytic Vegetation
	500/ / · · · ·		= Total Cov		Present? Yes X No No
	50% of total cover:		total cover		
Remarks: (If observed, list morp	ohological adaptations be	elow).			

SOIL Sampling Point: W 1 PEM

		e to the dep	th needed to docu			or confirn	n the absence	of indicate	ors.)	
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	SType ¹	Loc ²	Texture		Remarks	
0-3	10YR 2/1	100			. ,,,,,		sepsis	high orga		
3-18	10YR 4/2	98	10YR 5/6	2			sandy loam			
0.10	1011(4/2		10111 0/0				- Janay Ioani	-		
				_						
1Typo: C-C	oncontration D_Da	nlotion PM		S-Maska	d Sand Gr		² Location:	DI -Poro I	ining, M=Matr	
			LRRs, unless othe			all is.			matic Hydric	
☐ Histosol			Polyvalue Be		•	RR S. T. U		Muck (A9) (I	-	
	oipedon (A2)		Thin Dark S		. , .		. —	Muck (A10)	•	
	stic (A3)		Loamy Muck			R O)				MLRA 150A,B)
	en Sulfide (A4)		Loamy Gley		(F2)) (LRR P, S, T)
	d Layers (A5)	D T II)	Depleted Ma		-0)			_	Loamy Soils	(F20)
	Bodies (A6) (LRR lucky Mineral (A7) (L		Redox Dark Depleted Da		,		1 1 '	RA 153B) arent Mater	ial (TE2)	
	esence (A8) (LRR		Redox Depr						k Surface (TF	12)
	uck (A9) (LRR P, T)		Marl (F10) (I		0)			(Explain in I	•	/
	d Below Dark Surfa		Depleted Oc	hric (F11)	(MLRA 1	51)	_	` '	,	
l '=	ark Surface (A12)		Iron-Mangar						drophytic vege	
	rairie Redox (A16)	•	· =			', U)			ogy must be p	
_	Mucky Mineral (S1) Bleyed Matrix (S4)	(LRR O, S)	Delta Ochric			OA 150B)		ess disturbe	ed or problema	atic.
_	Redox (S5)		Reduced Ve							
	Matrix (S6)						RA 149A, 153C	i, 153D)		
_	rface (S7) (LRR P,	S, T, U)	_	Ü	`	, ,	•	. ,		
Restrictive I	Layer (if observed):								
Type:										
Depth (in	ches):						Hydric Soil	Present?	Yes X	No
Remarks:										

Photograph Log

Date: ___ Feature Name: W1 PEM Photograph Direction North Photograph Direction South Comments: Comments: Photograph Direction _____ Photograph Direction _____ Comments: Comments:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	ex TFM	City/Co	ounty: Middlesex		Sampling Date: 04/02/2021		
Applicant/Owner: HRSD			State: VA	Sampling Date: 04/02/2021 Sampling Point: W1UP			
Investigator(s): Emily Foster,			n, Township, Range: _				
Landform (hillslope, terrace, etc					Slope (%): 5		
Subregion (LRP or MLPA): MI	LRA 153B of LRR	1 at: 37.507361	Long:	-76.419958	Datum: WGS84		
Soil Map Unit Name: Steep sa	andy land	_ Lat	Long	NWI classific	cation: N/A		
Are climatic / hydrologic conditi	ons on the site typical for	this time of year? Ye					
Are Vegetation, Soil	, or Hydrology	significantly disturb	ed? Are "Norma	al Circumstances"	present? Yes X No		
Are Vegetation, Soil				explain any answe			
					s, important features, etc.		
Hydrophytic Vegetation Prese	ont? Voc	No X					
Hydric Soil Present?		No X	Is the Sampled Area		V		
Wetland Hydrology Present?			within a Wetland?	Yes	No X		
HYDROLOGY							
Wetland Hydrology Indicate	ore:			Secondary Indica	ators (minimum of two required)		
Primary Indicators (minimum		all that annly)		Surface Soil			
Surface Water (A1)		atic Fauna (B13)			getated Concave Surface (B8)		
High Water Table (A2)		Deposits (B15) (LRR	U)	Drainage Pa			
Saturation (A3)							
Water Marks (B1)	Oxid	lized Rhizospheres ald	ong Living Roots (C3)	Dry-Season	Water Table (C2)		
Sediment Deposits (B2)	Pres	ence of Reduced Iron	(C4)	Crayfish Bur	rows (C8)		
Drift Deposits (B3)		ent Iron Reduction in	Tilled Soils (C6)		isible on Aerial Imagery (C9)		
Algal Mat or Crust (B4)		Muck Surface (C7)		= '	Position (D2)		
Iron Deposits (B5)		er (Explain in Remarks	5)	Shallow Aqu	` '		
Inundation Visible on Aer Water-Stained Leaves (B	o , , ,			FAC-Neutral	moss (D8) (LRR T, U)		
Field Observations:	9)			Opinagrium i	11033 (D0) (ERR 1, 0)		
Surface Water Present?	Yes No _X	Depth (inches):					
Water Table Present?	Yes No X						
Saturation Present?	Yes No			Hydrology Presei	nt? Yes No_X		
(includes capillary fringe) Describe Recorded Data (stre				ailabla:			
Describe Recorded Data (stre	am gauge, monitoring we	eii, aeriai pnotos, prev	rious inspections), if av	allable:			
Remarks:							
Nomano.							
1							

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

Cover cover: FACU FACU FACU FACU	Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/ Prevalence Index worksheet:
Cover Cover FACU FACU FACU FACU	That Are OBL, FACW, or FAC: 0 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/ Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (E) Prevalence Index = B/A = Hydrophytic Vegetation 1 - Rapid Test for Hydrophytic Vegetation 1 - Problematic Hydrophytic Vegetation 1 (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover Inver: FACU FACU FACU FACU	Total Number of Dominant Species Across All Strata: Percent of Dominant Species That Are OBL, FACW, or FAC: O Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species X 1 = FACW species X 2 = FAC species X 3 = FACU species X 4 = UPL species Column Totals: An improve April (A) Prevalence Index = B/A = Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover Cover FACU FACU FACU FACU	Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/ Prevalence Index worksheet:
Cover Cover FACU FACU FACU FACU	Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/ Prevalence Index worksheet:
Cover Cover Cover FACU FACU FACU	That Are OBL, FACW, or FAC: 0 (A/ Prevalence Index worksheet:
Cover Cover PACU FACU FACU FACU	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (E Prevalence Index = B/A = Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover Cover FACU FACU FACU FACU	Total % Cover of: Multiply by:
Cover Cover FACU FACU FACU FACU	OBL species
Cover Cover PACU FACU FACU FACU	FACW species
Cover ver: FACU FACU FACU	FAC species
Cover iver: FACU FACU FACU	FACU species x 4 =
Cover iver: FACU FACU FACU	UPL species x 5 =
Cover iver: FACU FACU FACU	Column Totals:
Cover over: FACU FACU FACU	Prevalence Index = B/A =
Cover over: FACU FACU FACU	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover over: FACU FACU FACU	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover over: FACU FACU FACU FACU	1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover over: FACU FACU FACU	2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
Cover over: FACU FACU FACU	3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
FACU FACU FACU	Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
FACU FACU FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
FACU FACU	be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
FACU FACU	be present, unless disturbed or problematic. Definitions of Four Vegetation Strata:
FACU FACU	Definitions of Four Vegetation Strata:
FACU	
_	- \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	Tree – Woody plants, excluding vines, 3 in. (7.6 cm)
	 more in diameter at breast height (DBH), regardless height.
	·
	than 3 in. DBH and greater than 3.28 ft (1 m) tall.
	Herb – All herbaceous (non-woody) plants, regardles
	of size, and woody plants less than 3.28 ft tall.
	Woody vine - All woody vines greater than 3.28 ft in
	height.
Cover	
ver:	
	Hydrophytic
Cover	Vegetation
ver:	Present?
(Cover ver:

SOIL Sampling Point: W1 - UP

Profile Desc	cription: (Describe	to the depth	needed to docu	ment the in	dicator	or confirm	the absence o	f indicato	rs.)	
Depth	Matrix			x Features			_			
(inches)	Color (moist)		Color (moist)		Type ¹	Loc ²	<u>Texture</u>		Remarks	
0-18	10YR 3/3						sandy loam			
-										
<u> </u>	-									
¹Type: C=C	oncentration, D=De	nletion RM-R	educed Matrix M	S-Masked S	Sand Gr	ains	² Location: F	PI =Pore Li	ning, M=Matri	Υ
	Indicators: (Appli					unio.			natic Hydric	
☐ Histosol			Polyvalue Be		•	RRSTI			-	
	pipedon (A2)		Thin Dark Su					ick (A10) (•	
	istic (A3)		Loamy Muck							MLRA 150A,B)
	en Sulfide (A4)		Loamy Gley	ed Matrix (F	2)	•				(LRR P, S, T)
Stratifie	d Layers (A5)		Depleted Ma	trix (F3)			Anomalo	ous Bright	Loamy Soils (F20)
	Bodies (A6) (LRR I		Redox Dark				1 1 '	A 153B)		
	ucky Mineral (A7) (L		Depleted Da					ent Materi	, ,	
	resence (A8) (LRR		Redox Depre)				Surface (TF1	2)
	uck (A9) (LRR P, T)		Marl (F10) (I	,	MI DA 4	F4\	U Other (E	xplain in F	Remarks)	
	d Below Dark Surfa ark Surface (A12)	ce (ATT)	Depleted Oc				T) ³ Indicat	tore of hyd	rophytic vege	tation and
	rairie Redox (A16) (MI RA 150A)	=		. , .		•	-	ngy must be p	
	/lucky Mineral (S1)		Delta Ochric			, 0,		-	d or problema	
	Gleyed Matrix (S4)	,,	Reduced Ve			0A, 150B)				
	Redox (S5)		Piedmont Flo							
Stripped	Matrix (S6)		Anomalous I	Bright Loam	y Soils (l	F20) (MLR	A 149A, 153C, 1	153D)		
	rface (S7) (LRR P,									
Restrictive	Layer (if observed)):								
Type:										
Depth (in	ches):						Hydric Soil P	resent?	Yes	No X
Remarks:										

Photograph Log

Date: ___ Feature Name: W1 - UP Photograph Direction North Photograph Direction NW Comments: Comments: Photograph Direction _____ Photograph Direction _____ Comments: Comments:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	ex TFM	City/Co	ounty: Middlesex		Sampling Date: 04/02/2021
Applicant/Owner: HRSD		,	State: VA	Sampling Date: 04/02/2021 Sampling Point: W2 UP	
Investigator(s): Emily Foster,			n, Township, Range: _		
Landform (hillslope, terrace, etc					Slope (%): 10
		Lat: 37.629293	Long:	-76.571993	Datum: WGS84
Soil Map Unit Name: Emporia	a-Nevarc complex, 15	to 45 percent slope	es	NWI classific	Datum: WGS84
Are climatic / hydrologic condition	ons on the site typical for	this time of year? Ye	es X No	(If no, explain in R	Remarks.)
Are Vegetation, Soil	, or Hydrology	significantly disturb	ed? Are "Norma	al Circumstances"	present? Yes X No
Are Vegetation, Soil	, or Hydrology	naturally problemate	tic? (If needed,	explain any answe	ers in Remarks.)
					s, important features, etc
Hydrophytic Vegetation Prese	ant? Yes	No X			
Hydric Soil Present?		No X	Is the Sampled Area		Y
Wetland Hydrology Present?	Yes		within a Wetland?	Yes	No <u>X</u>
LIVEROLOGY.					
HYDROLOGY				0	-1
Wetland Hydrology Indicato		all that apply)		_	ators (minimum of two required)
Primary Indicators (minimum of Surface Water (A1)					Cracks (B6) getated Concave Surface (B8)
High Water Table (A2)		atic Fauna (B13) Deposits (B15) (LRR	U)	Drainage Pa	
Saturation (A3)		rogen Sulfide Odor (C		Moss Trim L	
Water Marks (B1)		•	ong Living Roots (C3)	_	Water Table (C2)
Sediment Deposits (B2)	Pres	ence of Reduced Iron	(C4)	Crayfish Bur	rrows (C8)
Drift Deposits (B3)	Rece	ent Iron Reduction in	Tilled Soils (C6)	Saturation V	isible on Aerial Imagery (C9)
Algal Mat or Crust (B4)		Muck Surface (C7)		= '	Position (D2)
Iron Deposits (B5)		er (Explain in Remarks	s)	Shallow Aqu	, ,
Inundation Visible on Aer Water-Stained Leaves (B	0, ()			FAC-Neutral	moss (D8) (LRR T, U)
Field Observations:	9)		<u> </u>	<u> </u>	11033 (D0) (ERR 1, 0)
Surface Water Present?	Yes No _X	Depth (inches):			
Water Table Present?	Yes No x				
Saturation Present?	Yes No X			Hydrology Presei	nt? Yes No_X
(includes capillary fringe) Describe Recorded Data (stre	aam gauge monitoring we	all aerial photos prev	ious inspections) if av	ailahle:	
Describe Recorded Data (Sile	am gauge, monitoring we	eli, aeriai priotos, prev	ious irispections), ii av	allable.	
Remarks:					

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

EGETATION (Four Strata) – Use scientific n	ames of pl	ants.		Sampling Point: W 2 UP
Tree Stratum (Plot size: 30)		Dominant Species?	Status	Dominance Test worksheet: Number of Dominant Species
1. Liriodendron tulipifera Tulip Poplar	60	Yes	FACU	That Are OBL, FACW, or FAC: 1 (A)
2. Acer rubrum Red maple	30	Yes	FAC	Total Number of Dominant
3. Platanus occidentalis Sycamore	4	No	FACW	Species Across All Strata: 2 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 50 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species x 1 =
		= Total Cov		FACW species 4
50% of total cover:	20% of	total cover:	·	FAC species $\frac{30}{30}$ $\times 3 = \frac{90}{30}$
Sapling/Shrub Stratum (Plot size:)				FACU species 66 x 4 = 264
1				UPL species x 5 =
2				Column Totals: 100 (A) 362 (B)
3				Column Totals (A) (B)
4				Prevalence Index = $B/A = \frac{3.6}{}$
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0 ¹
		= Total Cov	er er	Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% of	total cover	:	
Herb Stratum (Plot size:)				¹ Indicators of hydric soil and wetland hydrology must
1				be present, unless disturbed or problematic.
2				Definitions of Four Vegetation Strata:
3				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of
5				height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
		= Total Cov	er er	
50% of total cover:	20% of	total cover	:	
Woody Vine Stratum (Plot size: 30)				
1. Hedera helix English Ivy	6	No	FACU	
2				
3				
4				
5				Hydrophytic
	6	= Total Cov	er er	Vegetation
50% of total cover:		total cover:	:	Present? Yes No X
Remarks: (If observed, list morphological adaptations be	elow).			1
, , , , , , , , , , , , , , , , , , , ,	,			

SOIL Sampling Point: W 2 UP

Profile Description: (Describe to the depth	needed to docu	ment the indicato	r or confirm	n the absence of inc	dicators.)
Depth Matrix		ox Features	. 2		
(inches) Color (moist) %	Color (moist)	% Type ¹	Loc ²	Texture	Remarks
0-6 10YR 4/4 100				very fine sand	
6-18 10YR 4/4 100				very fine sand	
1				3	
¹ Type: C=Concentration, D=Depletion, RM=F Hydric Soil Indicators: (Applicable to all L			Grains.		Pore Lining, M=Matrix. roblematic Hydric Soils ³ :
Histosol (A1)		elow Surface (S8)	(IDD S T I		•
Histic Epipedon (A2)		urface (S9) (LRR \$		· —	(A10) (LRR S)
Black Histic (A3)		ky Mineral (F1) (LF			ertic (F18) (outside MLRA 150A,B)
Hydrogen Sulfide (A4)		ed Matrix (F2)	,		oodplain Soils (F19) (LRR P, S, T)
Stratified Layers (A5)	Depleted Ma			Anomalous I	Bright Loamy Soils (F20)
Organic Bodies (A6) (LRR P, T, U)		Surface (F6)		(MLRA 15	•
5 cm Mucky Mineral (A7) (LRR P, T, U) Muck Presence (A8) (LRR U)	Depleted Da	rk Surface (F7)			Material (TF2) v Dark Surface (TF12)
1 cm Muck (A9) (LRR P, T)	Marl (F10) (I	, ,			ain in Remarks)
Depleted Below Dark Surface (A11)	_ ` '`	chric (F11) (MLRA	151)	Outlot (Explo	an in Romano,
Thick Dark Surface (A12)	Iron-Mangar	nese Masses (F12)	(LRR O, P,	T) ³ Indicators	of hydrophytic vegetation and
Coast Prairie Redox (A16) (MLRA 150A)	_	ace (F13) (LRR P,			nydrology must be present,
Sandy Mucky Mineral (S1) (LRR O, S)		(F17) (MLRA 151			sturbed or problematic.
Sandy Gleyed Matrix (S4) Sandy Redox (S5)		rtic (F18) (MLRA 1 oodplain Soils (F19			
Stripped Matrix (S6)				RA 149A, 153C, 153[D)
Dark Surface (S7) (LRR P, S, T, U)		- · · g · · · - · · · · · · · · · · ·	()	,,	-,
Restrictive Layer (if observed):					
Type:					
Depth (inches):				Hydric Soil Pres	ent? Yes No X
Remarks:				•	

Photograph Log

Date: ___ Feature Name: W2 UP Photograph Direction SE Photograph Direction SW Comments: Comments: Photograph Direction _____ Photograph Direction _____ Comments: Comments:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM		City/C	ounty: Middlesex		Sampling Date: (04/02/2021
Applicant/Owner: HRSD			ounty: Middlesex	State: VA	Sampling Point:	W2 PEM
Investigator(s): Emily Foster, James 0	Cook		on, Township, Range:			
Landform (hillslone terrace etc.). Tidal	shoreline	Local	relief (concave, convey	none). Convex	Slope	e (%): 10
Subregion (LRR or MLRA): MLRA 1538	3 of LRR	Lat: 37.629363	Long: -	76.571996	Datu	_{Im} . WGS84
Soil Map Unit Name: Emporia-Nevarc co			2511g			
Are climatic / hydrologic conditions on the						
						No
Are Vegetation, Soil, or H						140
Are Vegetation, Soil, or H						oturos oto
SUMMARY OF FINDINGS – Att	ach site r	nap snowing sam	ipling point location	ons, transects	s, important re	atures, etc.
		No	Is the Sampled Area			
Hydric Soil Present?	Yes x	No	within a Wetland?	Yes X	No	
Wetland Hydrology Present?	Yes x	No				
Remarks:						
HYDROLOGY						
Wetland Hydrology Indicators:				Secondary Indica	ators (minimum of t	wo required)
Primary Indicators (minimum of one is n	equired; chea	ck all that apply)		Surface Soil	-	<u></u>
Surface Water (A1)		quatic Fauna (B13)		_	getated Concave S	surface (B8)
High Water Table (A2)	<u>П</u> ма	arl Deposits (B15) (LRF	R U)	☐ Drainage Pa	-	,
Saturation (A3)	<u>x</u> Hy	drogen Sulfide Odor (C	C1)	Moss Trim L	ines (B16)	
Water Marks (B1)		kidized Rhizospheres a	long Living Roots (C3)	Dry-Season	Water Table (C2)	
Sediment Deposits (B2)	∐ Pr	esence of Reduced Iro	n (C4)	Crayfish Bur	rows (C8)	
Drift Deposits (B3)		ecent Iron Reduction in	Tilled Soils (C6)		isible on Aerial Ima	igery (C9)
	<u></u> ⊢ Th	nin Muck Surface (C7)		Geomorphic	Position (D2)	
Algal Mat or Crust (B4)			A CONTRACTOR OF THE CONTRACTOR			
Iron Deposits (B5)		her (Explain in Remark	as)	Shallow Aqu	itard (D3)	
Iron Deposits (B5) Inundation Visible on Aerial Imager		her (Explain in Remark	rs)	FAC-Neutral	itard (D3) Test (D5)	11)
☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imager ☐ Water-Stained Leaves (B9)		her (Explain in Remark	(s)	FAC-Neutral	itard (D3)	U)
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations:	y (B7)		es)	FAC-Neutral	itard (D3) Test (D5)	U)
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X	y (B7)	_ Depth (inches): 1		FAC-Neutral	itard (D3) Test (D5)	U)
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Water Table Present? Yes	y (B7) No No	_ Depth (inches): 1 _ Depth (inches):		FAC-Neutral Sphagnum r	itard (D3) Test (D5)	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Water Table Present? Yes Saturation Present? Yes X (includes capillary fringe)	y (B7) No No No	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	·
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Water Table Present? Yes Saturation Present? Yes X	y (B7) No No No	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge	y (B7) No No No	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•
Iron Deposits (B5) Inundation Visible on Aerial Imager Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes X Water Table Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge) Remarks:	y (B7) No No No , monitoring	Depth (inches): 1 Depth (inches): 0 Depth (inches): 0	Wetland I	FAC-Neutral Sphagnum r	itard (D3) Test (D5) noss (D8) (LRR T,	•

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

		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC: 4 (A)
2				Total Number of Dominant
3				Species Across All Strata: 4 (B)
4.				
5.				Percent of Dominant Species That Are OBL FACW or FAC: 100 (A/B)
				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species 20 x 1 = 20
		= Total Co	ver	FACW species $\frac{55}{}$ x 2 = $\frac{110}{}$
50% of total cover:	20% of	total cover	:	
Sapling/Shrub Stratum (Plot size: 30)				1 AC species X 3 =
1. Baccharis halimifolia Eastern baccharis	25	Yes	FAC	FACU species x 4 =
2.				UPL species x 5 =
				Column Totals: 100 (A) 205 (B)
3				
4				Prevalence Index = B/A = $\frac{2.5}{}$
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7	_			2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0 ¹
	0.5	= Total Co	ver	I
50% of total cover:	cover: 20% of total cover:			Problematic Hydrophytic Vegetation ¹ (Explain)
	20 /0 01	lotal covel	•	
Herb Stratum (Plot size: 30)	40	Vac	EA C\A/	¹ Indicators of hydric soil and wetland hydrology must
1. Phragmites australis Common reed	_ 40	Yes	FACW	be present, unless disturbed or problematic.
2. Peltandra virginica Green arrow arum		Yes	OBL	Definitions of Four Vegetation Strata:
3. Impatiens capensis	15	Yes	FACW	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of
5.				height.
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
7				than 3 in. Don and greater than 3.20 it (1 iii) tail.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10	_			Woody vine – All woody vines greater than 3.28 ft in
11				height.
12.				
12.	75	= Total Co	vor	
50% of total cover:	20% 01	total cover	•	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4.				
5				
5				Hydrophytic Vegetation
		= Total Co		Present? Yes X No
50% of total cover:	20% of	total cover	·:	100 100
Remarks: (If observed, list morphological adaptations be	low).			

Sampling Point: W 2 PEM

SOIL Sampling Point: W 2 PEM

Depth	cription: (Describe Matrix	to the depth		ment the ii ox Features		or contirm	i the absence of H	านเซสเบรร.)	
_(inches)	Color (moist)	%	Color (moist)	% reatures	Type ¹	Loc ²	Texture	Remarks	i
0-18	10YR 5/2	100			.,,,,,		very fine sand		
	10111072								
1							2		
	oncentration, D=De					ains.		Problematic Hadri	
	Indicators: (Applie	cable to all Li						Problematic Hydric	c Solls :
Histoso	. ,		Polyvalue B		. , .		· -	(A9) (LRR O)	
	pipedon (A2)		Thin Dark S					(A10) (LRR S)	
	istic (A3)		Loamy Muck	-		R O)		/ertic (F18) (outside	
	en Sulfide (A4)		Loamy Gley		F2)			Floodplain Soils (F1	
_	d Layers (A5)		Depleted Ma	, ,				s Bright Loamy Soils	s (F20)
	Bodies (A6) (LRR F		Redox Dark				(MLRA 1	•	
	ucky Mineral (A7) (L		Depleted Da					t Material (TF2)	
	resence (A8) (LRR I	J)	Redox Depr		3)			ow Dark Surface (TI	-12)
	uck (A9) (LRR P, T)	(8.4.4)	Marl (F10) (I	,	(B.E.)	= 4\	U Other (Exp	olain in Remarks)	
_	d Below Dark Surfac	ce (A11)	Depleted Oc				- 3		
=	ark Surface (A12)		Iron-Mangar					s of hydrophytic veg	
	rairie Redox (A16) (, U)		hydrology must be	
	Mucky Mineral (S1) (LRR O, S)	Delta Ochric			OA 450D)		disturbed or problem	natic.
	Gleyed Matrix (S4)		Reduced Ve						
	Redox (S5)		Piedmont FI					201	
	d Matrix (S6)	O T II)	Anomalous	Bright Loan	ny Soils (F20) (MLR	A 149A, 153C, 15	3D)	
	irface (S7) (LRR P,						_		
	Layer (if observed)	i.							
Type:			_					· · · · · · · · · · · · · · · · · ·	
Depth (ir	ches):		<u> </u>				Hydric Soil Pre	sent? Yes X	No
Remarks:									

Date: ^{4/2/21}	Feature Name: W2 PEM
Jaie.	





Photograph Direction East	Photograph	Direction	East
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Comments:



Photograph Direction SW

Comments:



Photograph Direction _____

Comments:

Photograph Direction NE

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	ex TFM	City/Co	ounty: Middlesex		Sampling Date: 04/02	2/2021
Applicant/Owner: HRSD			,	State: VA	Sampling Date: 04/02 Sampling Point: W3 t	JP
Investigator(s): Emily Foster,			n, Township, Range: _			
Landform (hillslope, terrace, etc		Local r	relief (concave, convex	, none): Convex	Slope (%):	. 10
Subregion (LRR or MLRA): ML					Datum:	
Soil Map Unit Name: Suffolk-I	Remlik complex, 15 to	45 percent slopes		NWI classific	cation: N/A	
Are climatic / hydrologic condition	ons on the site typical for	this time of year? Ye	es X No	(If no, explain in F	Remarks.)	
Are Vegetation, Soil	, or Hydrology	significantly disturb	ed? Are "Norma	al Circumstances"	present? Yes X	No
Are Vegetation, Soil				explain any answe		
SUMMARY OF FINDING						es, etc.
Lludraphytic Vegetation Prese	unt? Von	No X				
Hydrophytic Vegetation Prese Hydric Soil Present?		No ×	Is the Sampled Area		V	
Wetland Hydrology Present?	Yes		within a Wetland?	Yes	No X	
Remarks:						
Upland point associa						
HYDROLOGY				Canadam India		:d)
Wetland Hydrology Indicato		all that apply		_	ators (minimum of two re	<u>equirea)</u>
Primary Indicators (minimum o				Surface Soil		o (D0)
Surface Water (A1) High Water Table (A2)		atic Fauna (B13) Deposits (B15) (LRR	· IIV	Drainage Pa	getated Concave Surfac	,е (Бо)
Saturation (A3)		ogen Sulfide Odor (C		Moss Trim L		
Water Marks (B1)		•	ong Living Roots (C3)		Water Table (C2)	
Sediment Deposits (B2)		ence of Reduced Iron		Crayfish Bur		
Drift Deposits (B3)		ent Iron Reduction in	, ,	= '	isible on Aerial Imagery	(C9)
Algal Mat or Crust (B4)		Muck Surface (C7)			Position (D2)	, ,
Iron Deposits (B5)	Othe	r (Explain in Remarks	s)	Shallow Aqu	itard (D3)	
Inundation Visible on Aer	ial Imagery (B7)			FAC-Neutra	Test (D5)	
Water-Stained Leaves (B	9)			Sphagnum r	noss (D8) (LRR T, U)	
Field Observations:						
Surface Water Present?	Yes No X					
Water Table Present?	Yes No _x					
Saturation Present? (includes capillary fringe)	Yes No _X	Depth (inches):	Wetland	Hydrology Presei	nt? Yes No	<u>x</u>
Describe Recorded Data (stre	am gauge, monitoring we	ell, aerial photos, prev	vious inspections), if av	ailable:		
Remarks:						

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

/EGETATION (Four Strata) –	Use scientific na	ames of pl	ants.		Sampling Point: W 3 UP)
			Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size:		% Cover			Number of Dominant Species That Are OBL, FACW, or FAC: (A)	Δ١
1					That Ale OBL, I ACW, OI I AC.	^)
2					Total Number of Dominant Species Across All Strata: 1 (I	D)
3 4					Species Across All Strata: 1 (I	B)
				-	Percent of Dominant Species	
5					That Are OBL, FACW, or FAC: 0 (A	A/B)
6					Prevalence Index worksheet:	
7					Total % Cover of: Multiply by:	
8					OBL species x 1 =	
500/	of total account	200/ -f			FACW species x 2 =	
	of total cover:	20% 01	total cover	:	FAC species x 3 =	
Sapling/Shrub Stratum (Plot size:					FACU species 100 x 4 = 400	
1				-	UPL species x 5 =	
2					Column Totals: 100 (A) 400	(B)
3.					(,	` '
4					Prevalence Index = $B/A = 4.0$	
5					Hydrophytic Vegetation Indicators:	
6					1 - Rapid Test for Hydrophytic Vegetation	
7					2 - Dominance Test is >50%	
8					3 - Prevalence Index is ≤3.0 ¹	
			= Total Co		Problematic Hydrophytic Vegetation ¹ (Explain)	
	of total cover:	20% of	total cover	:		
Herb Stratum (Plot size: 30)				¹ Indicators of hydric soil and wetland hydrology mu	st
1. Poa pratensis Kentucky bluegrass		75	Yes	FACU	be present, unless disturbed or problematic.	
2. Taraxacum officinale dandelion		15	No	FACU	Definitions of Four Vegetation Strata:	
3. Plantago lanceolata Narrow leaf pla	antain	10	No	FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm	n) or
4					more in diameter at breast height (DBH), regardles	s of
5					height.	
6					Sapling/Shrub - Woody plants, excluding vines, le	ess
7					than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
8					Herb – All herbaceous (non-woody) plants, regardl	ess
9					of size, and woody plants less than 3.28 ft tall.	
10					Woody vine – All woody vines greater than 3.28 ft	in
11					height.	
12						
		100	= Total Co	ver		
50%	of total cover: 50	20% of	total cover	·: <u>20</u>		
Woody Vine Stratum (Plot size:)					
1						
2						
3						
4						
5					Hydrophytic	
		:		ver	Vegetation	
50%	of total cover:	20% of	total cover	:	Present? Yes No _X	
Remarks: (If observed, list morpholo	gical adaptations bel	low).				

SOIL Sampling Point: W 3 UP

Depth	cription: (Describe Matrix	to the depth		x Features		01 0011111111		indicators.,	
(inches)	Color (moist)	%	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks	
0-18	10YR 4/3	100							
				-					
									_
									
-									
¹ Type: C=C	oncentration, D=De	pletion. RM=R	educed Matrix. M	S=Masked	Sand Gr	ains.	² Location: PL:	=Pore Lining, M=Ma	trix.
	Indicators: (Appli							Problematic Hydric	
Histoso			Polyvalue Be		•	RRSTU		k (A9) (LRR O)	
_	pipedon (A2)		Thin Dark S					k (A10) (LRR S)	
=	istic (A3)		Loamy Muck					√ertic (F18) (outside	MLRA 150A.B)
_	en Sulfide (A4)		Loamy Gley			-,		Floodplain Soils (F19	
	d Layers (A5)		Depleted Ma		,			s Bright Loamy Soils	
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		3)		(MLRA 1		, ,
	ucky Mineral (A7) (L		Depleted Da	,	,		1 1 '	nt Material (TF2)	
	resence (A8) (LRR I		Redox Depr		. ,			ow Dark Surface (TF	⁻ 12)
1 cm M	uck (A9) (LRR P, T)			_RR U)			Other (Exp	olain in Remarks)	
Deplete	d Below Dark Surfac	ce (A11)	Depleted Oc						
☐ Thick D	ark Surface (A12)		Iron-Mangar				T) ³ Indicator	rs of hydrophytic veg	etation and
	rairie Redox (A16) (', U)		d hydrology must be	•
	Mucky Mineral (S1) ((LRR O, S)	Delta Ochric				unless	disturbed or problem	atic.
	Gleyed Matrix (S4)		Reduced Ve						
	Redox (S5)		Piedmont Fl						
	d Matrix (S6)		Anomalous I	Bright Loam	ny Soils (F20) (MLR	A 149A, 153C, 15	3D)	
	ırface (S7) (LRR P,								
	Layer (if observed)):							
Туре:			_						.,
Depth (ir	ches):						Hydric Soil Pre	esent? Yes	No <u>X</u>
Remarks:							•		

Date: 4/2/21







Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	City/County: Mic	Idlesex	Sampling Date: 04/02/2021
Applicant/Owner: HRSD		State: VA	Sampling Date: 04/02/2021 Sampling Point: W3 PEM
E " E '	Section, Townsh		
		eave, convex, none): Convex	Slope (%): 10
Subregion (LRR or MLRA): MLRA 153B of LRR	37.631185	Long: -76.575514	Datum: WGS84
Subregion (LRR or MLRA): MLRA 153B of LRR Soil Map Unit Name: Suffolk-Remlik complex, 15 to 4	5 percent slopes	Long	cation: N/A
Are climatic / hydrologic conditions on the site typical for th			
Are Vegetation, Soil, or Hydrology			
			present? Yes X No
Are Vegetation, Soil, or Hydrology		(If needed, explain any answe	
SUMMARY OF FINDINGS – Attach site map	showing sampling po	int locations, transects	s, important features, etc.
Hydrophytic Vegetation Present? Yes X	NO Is the Sa	mpled Area	
Hydric Soil Present? Yes X	No within a l	Netland? Yes X	No
Wetland Hydrology Present? Yes X	10		
Remarks:			
Emergent slope wetland abutting shore	eline of the Piankata	ank River.	
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indic	ators (minimum of two required)
Primary Indicators (minimum of one is required; check all	that apply)	Surface Soil	Cracks (B6)
Surface Water (A1)	Fauna (B13)	Sparsely Ve	egetated Concave Surface (B8)
High Water Table (A2) Marl De	eposits (B15) (LRR U)	Drainage Pa	atterns (B10)
Saturation (A3)	en Sulfide Odor (C1)	Moss Trim L	ines (B16)
☐ Water Marks (B1) ☐ Oxidize	ed Rhizospheres along Living	Roots (C3) Dry-Season	Water Table (C2)
	ce of Reduced Iron (C4)	Crayfish Bu	
	Iron Reduction in Tilled Soils	_	/isible on Aerial Imagery (C9)
	uck Surface (C7)	_	Position (D2)
	Explain in Remarks)	☐ Shallow Aqu ☐ FAC-Neutra	* ,
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)			moss (D8) (LRR T, U)
Field Observations:		opnagnam i	1000 (20) (211111)
	epth (inches):		
	epth (inches): 4		
Saturation Present? Yes X No De	epth (inches): 1	Wetland Hydrology Prese	nt? Yes X No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well,	aerial photos, previous inspe	ctions), if available:	
2000/100 Nood 2did (offodin gauge, memoring weil,	donal priotoc, proviodo mopo	onono), ii availabio.	
Remarks:			
Small areas of ponded water.			
·			

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

EGETATION (Four Strata) – Use scientific na	ames of pl	ants.		Sampling Point: W 3 PEM
		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:) 1		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2				Total Number of Dominant
3				Species Across All Strata: 2 (B)
4				Percent of Deminent Charles
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)
6				, ,
7				Prevalence Index worksheet:
8				Total % Cover of: Multiply by:
		= Total Cov		OBL species 65 x 1 = 65
50% of total cover:	20% of	total cover	:	FACW species 35 $x = 70$
Sapling/Shrub Stratum (Plot size:)				FAC species x 3 =
1				FACU species x 4 =
2				UPL species x 5 =
3				Column Totals: (A) (B)
4				Prevalence Index = B/A = 1.35
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0 ¹
		= Total Cov	ver	Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% of	total cover	:	
Herb Stratum (Plot size: 30)				¹ Indicators of hydric soil and wetland hydrology must
1. Juncus effusus Soft rush	25	Yes	OBL	be present, unless disturbed or problematic.
2. Rumex verticillatus Swamp dock	15	Yes	FACW	Definitions of Four Vegetation Strata:
3. Phragmites australis Common reed		Yes	FACW	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4. Carex lurida Shallow sedge		Yes	OBL	more in diameter at breast height (DBH), regardless of
5. Ludwigia alterniflora Seedbox		No	OBL	height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	100	= Total Cov	ver	
50% of total cover:	20% of	total cover	:	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4				
5				Hydrophytic
		= Total Cov		Vegetation Present? Yes X No
50% of total cover:	20% of	total cover	:	riesent: resNo
Remarks: (If observed, list morphological adaptations be	low).			

SOIL Sampling Point: W 3 PEM

Depth	cription: (Describe Matrix	e to the depth		ment the i		or confirn	n the absence	of indicate	ors.)	
(inches)	Color (moist)	%	Color (moist)	% realures	Type ¹	Loc ²	Texture		Remarks	
0-2	10YR 2/1	100					mucky mineral	High org	anics	
2-18	10YR 4/2	100					coarse sand			
							-	-		
								-		
								-		
¹ Type: C=C	oncentration, D=De	pletion. RM=F	Reduced Matrix, M	S=Masked	Sand Gr	ains.	² Location:	PL=Pore L	ining, M=Mat	rix.
	Indicators: (Appli								matic Hydric	
☐ Histosol	(A1)		Polyvalue B	elow Surfa	ce (S8) (L	.RR S, T, L	J) 🔲 1 cm N	Muck (A9) (I	LRR O)	
Histic E	oipedon (A2)		Thin Dark S	urface (S9)	(LRR S,	T, U)	2 cm N	Muck (A10)	(LRR S)	
	stic (A3)		Loamy Muck			(O)				MLRA 150A,B)
	en Sulfide (A4)		Loamy Gley		F2)				•) (LRR P, S, T)
_	d Layers (A5)	D T II\	Depleted Ma		-c)			_	t Loamy Soils	(F20)
	Bodies (A6) (LRR ucky Mineral (A7) (I		Redox Dark Depleted Da	,			,	RA 153B) arent Mater	rial (TF2)	
=	esence (A8) (LRR		Redox Depr						k Surface (TF	12)
	uck (A9) (LRR P, T)		Marl (F10) (I	•	,			(Explain in	•	•
Depleted	d Below Dark Surfa	ce (A11)	Depleted Oc							
=	ark Surface (A12)		Iron-Mangar		. , ,		•		drophytic vege	
_	rairie Redox (A16)		=			, U)		-	logy must be p	
	Mucky Mineral (S1) Bleyed Matrix (S4)	(LKK U, S)	Delta Ochric			0Δ 150R)		ess disturbe	ed or problem	alic.
	Redox (S5)		Piedmont FI							
	Matrix (S6)						A 149A, 153C	, 153D)		
	rface (S7) (LRR P,									
Restrictive	Layer (if observed):								
Type:			<u> </u>						.,	
Depth (in	ches):						Hydric Soil	Present?	Yes X	No
Remarks:										
1										
1										
ı										

Photograph Log

Date: 4/2/21 Feature Name: W3 PEM Photograph Direction South Photograph Direction North Comments: Comments: Photograph Direction _____ Photograph Direction _____ Comments: Comments:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	x TFM	City/C	ounty: Middlesex		Sampling Date: 04/02/2021
Applicant/Owner: HRSD			,	State: VA	Sampling Date: 04/02/2021 Sampling Point: W4
Investigator(s): Emily Foster,			on, Township, Range: _		
Landform (hillslope, terrace, etc		Local	relief (concave, convex	. none): Concave	Slope (%): 10
Subregion (LRR or MLRA): ML			00 Long:	-76.41996283	Datum: WGS84
Soil Map Unit Name: Suffolk-F			2311g	NWI classific	cation: N/A
Are climatic / hydrologic condition	ons on the site typical for	this time of year? Y	es X No	(If no, explain in R	Remarks.)
Are Vegetation, Soil	, or Hydrology	significantly disturb	bed? Are "Norma	al Circumstances" ¡	present? Yes X No
Are Vegetation, Soil	, or Hydrology	naturally problema	atic? (If needed,	explain any answe	ers in Remarks.)
SUMMARY OF FINDING	S – Attach site ma	np showing sam	pling point locati	ons, transects	s, important features, etc.
Hydrophytic Vegetation Prese	nt? Yes X	No			
Hydric Soil Present?	Yes <u>x</u>	No	Is the Sampled Area		
Wetland Hydrology Present?			within a Wetland?	Yes <u>^</u>	No
HYDROLOGY					
Wetland Hydrology Indicato	rs:			Secondary Indica	ators (minimum of two required)
Primary Indicators (minimum o		all that apply)		Surface Soil	Cracks (B6)
Surface Water (A1)	Aqua	atic Fauna (B13)	_		getated Concave Surface (B8)
High Water Table (A2)	Marl	Deposits (B15) (LRF	R U)	Drainage Pa	itterns (B10)
Saturation (A3)		ogen Sulfide Odor (C	•	Moss Trim L	` ,
Water Marks (B1)			long Living Roots (C3)		Water Table (C2)
Sediment Deposits (B2)		ence of Reduced Iron	, ,	Crayfish Bur	* *
Drift Deposits (B3)		ent Iron Reduction in	Tilled Soils (C6)		isible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Iron Deposits (B5)		Muck Surface (C7) r (Explain in Remark	·e)	Shallow Aqu	Position (D2)
Inundation Visible on Aeri		(Explain in Roman		FAC-Neutral	` '
Water-Stained Leaves (B9	o , (,			=	moss (D8) (LRR T, U)
Field Observations:					
Surface Water Present?	Yes No X	Depth (inches):			
Water Table Present?	Yes No _x				V
Saturation Present? (includes capillary fringe)	Yes <u>x</u> No	Depth (inches): 1	Wetland	Hydrology Preser	nt? Yes X No
Describe Recorded Data (stre	am gauge, monitoring we	ell, aerial photos, pre	vious inspections), if av	ailable:	
Remarks:					
Thick dark surface.					
THICK GAIN SUITAGE.					

Sampling	Point:	W	4
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= Total Cc f total cove	over FAC	Total Number of Dominant Species Across All Strata: Percent of Dominant Species	- - -
= Total Co f total cove	over FAC	Total Number of Dominant Species Across All Strata: 2 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 Prevalence Index worksheet:	(A/B) - - -
= Total Cc f total cove	over er:	Percent of Dominant Species 100 Prevalence Index worksheet: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 =	(A/B) - - -
= Total Co f total cove	over pr:	That Are OBL, FACW, or FAC: 100 Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species	- - - -
= Total Co f total cove Yes	over er:	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 =	- - - -
= Total Co	pver er:	Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 =	- - -
= Total Co f total cove	FAC	OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 =	- - -
= Total Co f total cove	FAC	FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 =	- - -
Yes	FAC	FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 =	- - -
Yes	FAC	FAC species x 3 = FACU species x 4 = UPL species x 5 =	-
		UPL species x 5 =	
		UPL species x 5 =	
			(B)
		Prevalence Index = B/A =	
		Hydrophytic Vegetation Indicators:	
		1 - Rapid Test for Hydrophytic Vegetation	
		x 2 - Dominance Test is >50%	
			
		Problematic Hydrophytic Vegetation¹ (Explain	1)
i lotal cove	il. <u> </u>		
Yes	FACW	'Indicators of hydric soil and wetland hydrology m be present, unless disturbed or problematic.	ust
No	FACW	Definitions of Four Vegetation Strata:	
No	OBL	Tree Woody plants evaluding vines 2 in (7.6 a	m) or
		height.	
		Sapling/Shrub – Woody plants, excluding vines.	less
		than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
		Herb – All herbaceous (non-woody) plants, regard	lless
		of size, and woody plants less than 3.28 ft tall.	
		Woody vine – All woody vines greater than 3.28 i	ít in
		height.	
= Total Co	over		
f total cove	r: <u>16</u>		
		Hydrophytic	
= Total Co	over	Vegetation	
f total cove	r:	riesent! fes NO	
total cove	er:		
	= Total Co f total cove Yes No No = Total Co f total cove = Total Co f total cove = Total Co	No FACW	Problematic Hydrophytic Vegetation¹ (Explain Problematic Hydrophytic Vegetation¹ (Explain Problematic Hydrophytic Vegetation¹ (Explain Problematic Hydrophytic Vegetation¹ (Explain Indicators of hydric soil and wetland hydrology may be present, unless disturbed or problematic. Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cmore in diameter at breast height (DBH), regardle height. Sapling/Shrub – Woody plants, excluding vines, 1 than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regard of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft height. Floration Hydrophytic Vegetation Present? Ves X No.

SOIL Sampling Point: W 4

Depth	cription: (Describe Matrix			ox Features					,	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	
0-18	10YR 2/1	100					muck	High organic	with coarse sand o	or thick dark surface
	-									
								_		
1=		- Indian DM D	and an all Marketin Ma	O Mandand	0 1 0 -		21 13	DI Daniel	tatan M. Mari	
	Concentration, D=De Indicators: (Appli					ains.			ining, M=Mate	
		cable to all Li			•	DD 0 T 1			-	30115 .
Histoso	pipedon (A2)		Polyvalue Be		. , .			Muck (A9) (I Muck (A10)	•	
	listic (A3)		Loamy Muck							MLRA 150A,B)
_	en Sulfide (A4)		Loamy Gley		, .	. 0,) (LRR P, S, T)
	d Layers (A5)		Depleted Ma		-/				Loamy Soils	
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		5)			RA 153B)	,	,
	ucky Mineral (A7) (L		Depleted Da	•	•			arent Mater		
	resence (A8) (LRR		Redox Depr	essions (F8)		Very S	Shallow Darl	k Surface (TF	12)
	uck (A9) (LRR P, T)		☐ Marl (F10) (I	,			U Other	(Explain in l	Remarks)	
	ed Below Dark Surfa	ce (A11)	Depleted Oc				3			
=	ark Surface (A12)	(MI DA 450A)	Iron-Mangar		. , .		•		drophytic vege	
	Prairie Redox (A16) (=			, U)		-	ogy must be p	
	Mucky Mineral (S1) (Gleyed Matrix (S4)	(LRR U, S)	Delta Ochric Reduced Ve			0A 150B)		ess disturbe	ed or problema	atic.
	Redox (S5)		Piedmont Fl							
	d Matrix (S6)						RA 149A, 1530	:. 153D)		
	urface (S7) (LRR P,	S, T, U)	/oa.ouo .	g	., (0) (, 1002)		
	Layer (if observed)									
Type:		-								
	nches):						Hydric Soi	Present?	Yes X	No
Remarks:							, , , , , ,			
rtomanto.										

Photograph Log

	Pnotogra	on Log
Date: 4/2/	21	Feature Name: W4
	Direction North	Photograph Direction South
Comments:		Comments:
Photograph	Direction East	Photograph Direction West_

Comments:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	x TFM			ity/County. Matl	news		Sampling Date:	7/9/2021
Applicant/Owner: HRSD			324.5		State: VA	Sampling Point: W5	5	
Investigator(s): Emily Foster,	James Cook		5	Section, Township	o, Range:			
Landform (hillslope, terrace, e								₩. 5-10
	0000							
Subregion (LRR or MLRA): M		<u> </u>						WG364
Soil Map Unit Name: Steep sa		Jan District				NWI classifi		
Are climatic / hydrologic condi		Marine Com	The second second second			A Charles Property		
Are Vegetation, Soil _	, or Hydro	ology	significantly d	listurbed?	Are "Norma	I Circumstances"	present? Yesx	_ No
Are Vegetation, Soil _	, or Hydro	ology	naturally prob	olematic?	(If needed,	explain any answ	ers in Remarks.)	
SUMMARY OF FINDING	GS - Attac	h site m	ap showing	sampling po	int location	ons, transect	s, important feat	ures, etc.
Hydrophytic Vegetation Pres	sent? Y	as X	No					
Hydric Soil Present?			No		pled Area	1000		
Wetland Hydrology Present?			No	within a W	fetland?	Yes	No	
Remarks:				160			Observed Classifica	ations:
on the other side of Twigg	s Ferry Road.							
HYDROLOGY								
Wetland Hydrology Indicat	ors:		7 AUGUST			Secondary Indic	ators (minimum of two	required)
Primary Indicators (minimum	of one is requi	red; check	(all that apply)			_ Surface Soi	Cracks (B6)	
Surface Water (A1)		Aqu	uatic Fauna (B13))		Sparsely Ve	egetated Concave Sur	face (B8)
X High Water Table (A2)		Mar	Deposits (B15)	(LRR U)		Drainage Pa	atterns (B10)	
X Saturation (A3)			drogen Sulfide Od			_ Moss Trim I		
Water Marks (B1)			dized Rhizosphe		Roots (C3)		Water Table (C2)	
— Sediment Deposits (B2)	Ē	1.7779	sence of Reduce		1227	Crayfish Bu	THE RESIDENCE OF THE PARTY OF T	Cvener)
Drift Deposits (B3)			cent Iron Reduction		(C6)		/isible on Aerial Image	ry (C9)
Algal Mat or Crust (B4)		to the second	n Muck Surface (Position (D2)	
Iron Deposits (B5)	edel leseves (D	Execution Section 1	er (Explain in Re	marks)		Shallow Aqu		
Inundation Visible on As Water-Stained Leaves (()				× FAC-Neutra		
Field Observations:	89)					spragnum	moss (D8) (LRR T, U)	
Surface Water Present?	Vac	No. X	Depth (inches):					
Water Table Present?			Depth (inches):					
Saturation Present?	V0 (2) (2) (2)	100000	Depth (inches):		Wotland	Hudrolony Proces	nt? Yes_x_ N	No
(includes capillary fringe)	105	140	Depth (inches).	<u> </u>	vveuanu	nyurology rrese	itt res	
Describe Recorded Data (str	eam gauge, me	onitoring w	vell, aerial photos	, previous inspec	tions), if av	ailable:		
2302 80								
Remarks:								
Tromano.								

VEGETATION (Five Strata)	- Use s	cientific	names o	of p	lants
---------------------	--------------	---------	-----------	---------	------	-------

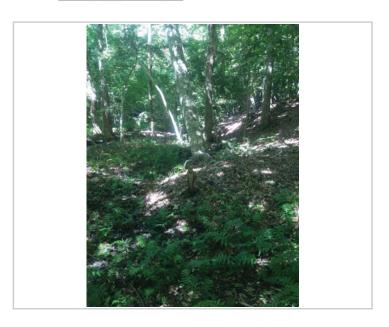
EGETATION (Five Strata) – Use scientific nar	Control of the second			7.45 (C.) * OC.	ng Point: W5	
Tree Stratum (Plot size: 30 ft)		Dominant		Dominance Test worksheet:		
	40	Species?		Number of Dominant Species That Are OBL, FACW, or FAC:	3	(4)
				mai Ale OBL, FACIV, O FAC.		. (^)
Carpinus caroliniana, American Hornbeam		7		Total Number of Dominant	2	
				Species Across All Strata:	3	(B)
				Percent of Dominant Species		
				That Are OBL. FACW, or FAC:	100.0%	(A/E
				Barrelana Indonesia da barrela		1000
	65	= Total Cov	er	Prevalence Index worksheet:	partition and the same	
50% of total cover: 32.5	20% of	total cover	13	Total % Cover of:	0.0000000000000000000000000000000000000	
apling Stratum (Plot size: 30 ft)				OBL species 30 x 1		
ran materia and prospersion and prospersion and the second and the				FACW species0 x 2	= 0	-
				FAC species65 x 3	195	- (3)
				FACU species 0 x 4	= 0	_
				UPL species 0 x 5	= 0	
			_	Column Totals: 95 (A)		
				- VV		_ (
				Prevalence Index = B/A =	2.37	_
	0	= Total Cov	er	Hydrophytic Vegetation Indicate	ors:	
50% of total cover:0	20% of	total cover	0	1 - Rapid Test for Hydrophytic		
Shrub Stratum (Plot size: 30 ft)				X 2 - Dominance Test is >50%		
				x 3 - Prevalence Index is ≤3.01		
			_			
				Problematic Hydrophytic Veg	etation (Expla	ain)
			_	Indicators of hydric soil and wetla		must
s				be present, unless disturbed or pre	oblematic.	
i,				Definitions of Five Vegetation S	trata:	
50% of total cover: 0 Herb Stratum (Plot size: 30 ft) Woodwardia areolata, Netted Chain Fern 2 3. 4.	30	Yes	OBL	Tree – Woody plants, excluding w approximately 20 ft (6 m) or more (7.6 cm) or larger in diameter at bit Sapling – Woody plants, excludin approximately 20 ft (6 m) or more than 3 in, (7.6 cm) DBH. Shrub – Woody plants, excluding approximately 3 to 20 ft (1 to 6 m)	in height and reast height (C g woody vines in height and woody vines,	OBH). s, less
					Annual Company	
3. ?. 3.			\equiv	Herb – All herbaceous (non-wood herbaceous vines, regardless of s plants, except woody vines, less to 3 ft (1 m) in height.	ize, and wood	ty
				ear and the second	1. 30.0	
0			2 31	Woody vine - All woody vines, re	gardless of he	eight.
1.						
50% of total cover: 15 Woody Vine Stratum (Plot size: 30 ft)	304	= Total Cov total cover				
l						
5.	0		v 14	Hydrophytic		
		= Total Cov	er	Vegetation		
				Present? Yesx	No	
50% of total cover: 0	2024	total amore			140	

SOIL Sampling Point: W5

Comparison Contentration	(inches)	Matrix			x Feature			P2008-074		20000000	
4-12 7.5yr 6/2 100% Sand Sand Sa		Color (moist)		Color (maist)	%	Type'	_Loc*_	Texture		Remarks	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Cocation: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils ³ : Histosol (A1)	0-4					_		Sand	mucky n	nodified	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Very Capilla	4-12	7.5yr 6/2	100%					Loamy sand			
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)	12-20	7.5yr 6/2	100%	-				Sand			
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)											
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)		0.00							9641 		
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)					_						
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)						_					
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)	Time: C-0	Concentration D-Day	eletion DM-D	advaged Matrix M	C-Mackad	Cand Ca		3 contion	DI -Dere I	ining MaMatris	2
Histosol (A1)							an15.				
Histic Epipedon (A2) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Stratified Layers (A5) Depleted Matrix (F3) Depleted Matrix (F3) Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F6) Depleted Dark Surface (F7) Muck Presence (A8) (LRR P, T) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coast Prairie Redox (A12) Coast Prairie Redox (A16) (MLRA 150A) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Delta Mucky Mineral (A7) (LRR P, S, Anomalous Bright Loamy Soils (F20) Mari (F10) (LRR U) Depleted Dark Surface (F8) Mari (F10) (LRR U) Depleted Dark Surface (A12) Coast Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (LRR P, T, U) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Dark Surface (S7) (LRR P, S, T, U) Destrictive Layer (if observed): Type: Depth (inches): Type: Depth (inches):							RR S. T. U				
Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Muck Presence (A8) (LRR U) Loamy Gleyed Matrix (F3) Muck Presence (A8) (LRR U) Depleted Dark Surface (F7) Muck (A9) (LRR P, T) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coast Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Dark Surface (S7) (LRR P, S, T, U) Depth (inches): Depth (inches): Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) (LRR P, S, Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Other (Explain in Remarks) Depleted Delow Dark Surface (A12) Liron-Manganese Masses (F12) (LRR O, P, T) Jindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Matrix (S4) Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Destrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes X No											
Stratified Layers (A5)	Black H	listic (A3)		Loamy Muck	y Mineral	(F1) (LRR	0)	Reduc	ed Vertic (F	18) (outside M	LRA 150A, E
Organic Bodies (A6) (LRR P, T, U) Redox Dark Surface (F6) (MLRA 153B) 5 cm Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F7) Red Parent Material (TF2) Muck Presence (A8) (LRR U) Redox Depressions (F8) Very Shallow Dark Surface (TF12) 1 cm Muck (A9) (LRR P, T) Marl (F10) (LRR U) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR O, P, T) Indicators of hydrophytic vegetation and Vertice (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F13) (LRR P, T, U) Wetland hydrology must be present, Very Shallow Dark Surface (F1						F2)					
5 cm Mucky Mineral (A7) (LRR P, T, U) Muck Presence (A8) (LRR U) 1 cm Muck (A9) (LRR P, T) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coast Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Dark Surface (S7) (LRR P, T, U) Depleted Dark Surface (F1) Mart (F10) (LRR U) Depleted Ochric (F11) (MLRA 151) Iron-Manganese Masses (F12) (LRR O, P, T) Jedicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Delta Ochric (F19) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Destrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes X No										Loamy Soils (F	20)
Muck Presence (A8) (LRR U) Redox Depressions (F8) Very Shallow Dark Surface (TF12) 1 cm Muck (A9) (LRR P, T) Marl (F10) (LRR U) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR O, P, T) Indicators of hydrophytic vegetation and Vegetation and Vegetation and Vegetation Surface (F13) (LRR P, T, U) Vegetation Surface (F13) (LRR P, T, U) Vegetation Surface (F13) (LRR P, T, U) Vegetation Vegetation Surface (F13) (LRR P, T, U) Vegetation Surface (F13) (LRR P, T, U) Vegetation Surface (F13) (MLRA 151) Vegetation Surface (F13) (MLRA 150) V	-							4.3.5	0. 109/2015	al (TE2)	
								_			2)
Thick Dark Surface (A12)	37 Co. 24 Co.	이 없는데 맛 없었다면 뭐 하면 것을 하면 없었습니?									-)
Coast Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present, unless disturbed or problematic. Sandy Mucky Mineral (S1) (LRR O, S) Delta Ochric (F17) (MLRA 151) unless disturbed or problematic. Sandy Gleyed Matrix (S4) Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes X No	Deplete	d Below Dark Surface	ce (A11)	Depleted Oc	hric (F11)	(MLRA 1	51)	SECTION SECTION	dioestrantic com	5002.0340.226.N	
Sandy Mucky Mineral (S1) (LRR O, S) Delta Ochric (F17) (MLRA 151) unless disturbed or problematic. Sandy Gleyed Matrix (S4) Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Type: Depth (inches): Hydric Soil Present? Yes X No											
Sandy Gleyed Matrix (S4) Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Pestrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes X No							, U)		The second of the second		
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Dark Surface (S7) (LRR P, S, T, U) Piedmont Floodplain Soils (F20) (MLRA 149A, 153C, 153D) Piedmont Floodplain Soils (F20) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Piedmont Floodplain Soils (F20) (MLRA 149A) Piedmont Floodplain Piedmo	The second of the second		LRR O, S)				0A 150R)	uni	ess disturbe	ed or problemat	IC.
Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Dark Surface (S7) (LRR P, S, T, U) testrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yesx No	THE TANK OF THE PARTY OF							9A)			
Dark Surface (S7) (LRR P, S, T, U) lestrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yesx No				- (V) D/ 2	10.00				, 153D)		
Type:	Dark S	urface (S7) (LRR P,	S, T, U)								
Depth (inches): No	Restrictive	Layer (if observed)	:								
(2) CAR A (2) CA	Type:			_				TOTOLIA (IIIIAA)			
emarks:	Depth (in	nches):		_				Hydric Soil	Present?	Yesx	No

Date: ____







Photograph Direction West

Comments:

Photograph Direction North

Comments:





Photograph Direction East

Comments:

Photograph Direction South

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese:	x TFM	City/C	County: Mathews		Sampling Date:	7/9/2021	
Applicant/Owner: HRSD	plicant/Owner: HRSD			State: VA	Sampling Point: WS		
Investigator(s): Emily Foster, James Cook Section, Township,			on, Township, Range:	A-COTOMINE.	EGCondender-rename-		
Landform (hillslope, terrace, e						%): 50	
Subregion (LRR or MLRA): M	Schile:				Datum		
Soil Map Unit Name: Steep sa		57.555572			cation: N/A	040	
Are climatic / hydrologic condi	itions on the site typ	pical for this time of year? Y	resx No	(If no, explain in F	Remarks.)		
Are Vegetation, Soil _	, or Hydrology	y significantly distur	rbed? Are *Norma	al Circumstances"	present? Yes x	No	
Are Vegetation, Soil _				explain any answe			
SUMMARY OF FINDING		# T				ures, etc.	
Hydrophytic Vegetation Pres	sent? Yes_	Nox	to the Complet Area				
Hydric Soil Present?		No x	Is the Sampled Area within a Wetland?	Vac	No_x		
Wetland Hydrology Present?		Nox	Within a Weband r	105	NO		
					Cowardin: <u>uplanc</u>	1	
HYDROLOGY							
Wetland Hydrology Indicat	tors:			Secondary Indic	ators (minimum of two	o required)	
Primary Indicators (minimum		check all that apply)		Surface Soil	Cracks (B6)		
Surface Water (A1)		_ Aquatic Fauna (B13)			getated Concave Sur	face (B8)	
High Water Table (A2)	2	Marl Deposits (B15) (LR	R U)	Drainage Patterns (B10)			
Saturation (A3)	<u> </u>	_ Hydrogen Sulfide Odor (NO CALL	Moss Trim L			
Water Marks (B1)		Oxidized Rhizospheres a	along Living Roots (C3)	Dry-Season	Water Table (C2)		
Sediment Deposits (B2)	_	Presence of Reduced Iro	on (C4)	Crayfish Bur	rrows (C8)		
Drift Deposits (B3)	-	Recent Iron Reduction in	Tilled Soils (C6)	Saturation V	/isible on Aerial Image	ery (C9)	
Algal Mat or Crust (B4)	_	_ Thin Muck Surface (C7)		Geomorphic	Position (D2)		
Iron Deposits (B5)	_	Other (Explain in Remark	ks)	Shallow Aqu	uitard (D3)		
Inundation Visible on Ae	erial Imagery (B7)			FAC-Neutra	l Test (D5)		
Water-Stained Leaves (B9)			Sphagnum r	moss (D8) (LRR T, U))	
Field Observations:							
Surface Water Present?		x Depth (inches):					
Water Table Present?	Yes No .	x Depth (inches):					
Saturation Present? (includes capillary fringe)	100.000	x Depth (inches):	10.11.50.50.50.50	Wetland Hydrology Present? Yes No×			
Describe Recorded Data (str	ream gauge, monito	oring well, aerial photos, pre	evious inspections), if av-	ailable:			
Remarks:							

VEGETATION	(Five Strata)	- Use s	scientific	names o	f plants
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Tree Stratum (Plot size: 30 ft

1 Quercus alba, Northern White Oak

Sapling Stratum (Plot size: 30 ft)

Shrub Stratum (Plot size: 30 ft)

Herb Stratum (Plot size: 30 ft)

Woody Vine Stratum (Plot size: 30 ft)

1.____

Sampling Point: W5-UP Absolute Dominant Indicator Dominance Test worksheet: % Cover Species? Status Number of Dominant Species 0 (A) That Are OBL, FACW, or FAC: 2 Fagus grandifolia, American Beech 30 x FACU Total Number of Dominant 2 (B) Species Across All Strata: Percent of Dominant Species 0.0% (A/B) That Are OBL, FACW, or FAC: Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____0 ___ x 1 = ____0 FACW species _____0 x 2 = ____0 FAC species _____0 ___ x 3 = ____0 FACU species 90 x 4 = 360 UPL species 0 x 5 = 0 Column Totals: 90 (A) 360 (B) Prevalence Index = B/A = 4.00 Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation __ 2 - Dominance Test is >50% _ 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Five Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.

	0 = Total Cover	Hydrophytic Vegetation			
50% of total cover: 0 Remarks: (If observed, list morphological adaptations below	20% of total cover:0 wv).	Present?	Yes	_ Nox	_
Managa aran salemata inga una ang ang ang ang		V. W. 1984 M. 1974 M. 1974 M. 1974	9960 ST Steel at 1000		edesso o
Army Corps of Engineers		Atlantic and Gu	ulf Coastal Plai	n Region – Versio	on 2

0 = Total Cover

______60___x____FACU

90 = Total Cover

____ 0 __ = Total Cover

0 = Total Cover

50% of total cover: 45 20% of total cover; 18

50% of total cover: ___0__ 20% of total cover: ___0

50% of total cover: 0 20% of total cover: 0

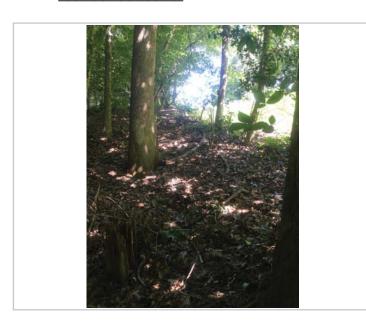
50% of total cover: 0 20% of total cover: 0

1.

SOIL Sampling Point: W5-UP

Date: ___

Feature Name: W 5 - UP





Photograph Direction North

Comments:



Comments:





Photograph Direction South

Comments:

Photograph Direction West

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	ex TFM	City	County Middlesex/Mid	dlesex	Sampling Date:7	7/14/2021
Applicant/Owner: HRSD	licant/Owner: HRSD			State: VA	Sampling Point: W6	
Investigator(s): Emily Foster,	. Katelyn Hoisingto	n Sec	tion, Township, Range:	Carto, T. Carto, Del	20000000000000000000000000000000000000	
Landform (hillslope, terrace, e						5-25
Subregion (LRR or MLRA): N	950-100 Zr				Datum: \	16.5
Soil Map Unit Name: Kemps				NWI classifi	200	
Are climatic / hydrologic cond	itions on the site typ	ical for this time of year?	Yesx _ No	(If no, explain in F	Remarks.)	
Are Vegetation, Soil _	, or Hydrology	y significantly dist.	urbed? Are "Norma	al Circumstances"	present? Yesx	No
Are Vegetation, Soil _	, or Hydrology	y naturally problem	natic? (If needed,	explain any answe	ers in Remarks.)	
SUMMARY OF FINDIN	GS – Attach si	ite map showing sa	mpling point locati	ons, transects	s, important featur	es, etc.
Hydrophytic Vegetation Pres	sent? Yes _	x No	Is the Sampled Area			
Hydric Soil Present?	Yes _	No	within a Wetland?	Yes	X No	
Wetland Hydrology Present	? Yes_	x No	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2.074		
PEM adjacent to Twiggs Fe	erry Road.				Cowardin:	
HYDROLOGY						
Wetland Hydrology Indica	tors:	09 09 KSHST KSSS		Secondary Indic	ators (minimum of two re	equired)
Primary Indicators (minimun	n of one is required;	check all that apply)		Surface Soil	Cracks (B6)	
Surface Water (A1)	_	_ Aquatic Fauna (B13)		Sparsely Ve	egetated Concave Surface	e (B8)
High Water Table (A2)	<u> </u>	Marl Deposits (B15) (LF	RR U)	Drainage Pa	atterns (B10)	
Saturation (A3)		_ Hydrogen Sulfide Odor	(C1)	Moss Trim L	Lines (B16)	
Water Marks (B1)			along Living Roots (C3)	Dry-Season	Water Table (C2)	
Sediment Deposits (B2)	_	Presence of Reduced In	ron (C4)	Crayfish Bu	rrows (C8)	
Drift Deposits (B3)	-	Recent Iron Reduction	in Tilled Soils (C6)		isible on Aerial Imagery	(C9)
— Algal Mat or Crust (B4)		_ Thin Muck Surface (C7)		Geomorphic		
Iron Deposits (B5)	The transport of the second se	Other (Explain in Rema	rks)	Shallow Aqu		
Inundation Visible on A				× FAC-Neutra		
Water-Stained Leaves ((B9)			Sphagnum	moss (D8) (LRR T, U)	
Field Observations:	W N-	V . D				
Surface Water Present?	ALTERNATION TO SANCE	X Depth (inches):				
Water Table Present?	\$10 Di	x Depth (inches): 18	1930000 00000		002 1220 C 1220 C	
Saturation Present? (includes capillary fringe)	Yes No	x Depth (inches): 15	Wetland	and Hydrology Present? Yesx No		
Describe Recorded Data (st	ream gauge, monito	oring well, aerial photos, p	revious inspections), if av	ailable:		,
Remarks:						
Saturation at 15, water tal	hle at 18					
Saturation at 15, water tal	ble at 18.					

VEGETATION (Five Strata) -	Use scientific	names of pla	ants.	
	50	Absolute	Dominant	Indicato

0 = Total Cover

Vegetation

Present?

50% of total cover: 0 20% of total cover: 0

1. Rubus pensilvanicus, Pennsylvania Blackberry 5 Yes FAC 2 Acer rubrum, Red Maple 2 Yes FAC 3 Morella cerifera, Southern Bayberry 2 Yes FAC

1 Woodwardia areolata, Netted Chain Fern 60 Yes OBL 2 Juncus effusus, Lamp Rush 12 No OBL 3. Parathelypteris noveboracensis, New York Fern 10 No FAC 4. Osmundastrum cinnamomeum, Cinnamon Fern 3 No FACW

Tree Stratum (Plot size: 30 ft)

Sapling Stratum (Plot size: 30 ft)

Shrub Stratum (Plot size: 30 ft)

Herb Stratum (Plot size: 30 ft)

50		Dominant		Dominance Test worksheet:
)	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:4 (A)
				Total Number of Dominant Species Across All Strata:4 (B)
			=	Percent of Dominant Species That Are OBL, FACW, or FAC:100.0% (A/B
	0	= Total Cov	er	Prevalence Index worksheet:
50% of total cover:0	20% of	total cover:	0	Total % Cover of;Multiply by:
) ft)			7 - 2	OBL species x 1 = 72
sylvania Blackberry	5	Yes	<u>FAC</u>	FACW species 3 x 2 = 6
	2	Yes	FAC	FAC species 19 x 3 = 57
n Bayberry	2	Yes	FAC	FACU species 0 x 4 = 0
				UPL species0 x 5 =0
				Column Totals: 94 (A) 135 (B)
				Prevalence Index = B/A =1.44
	9	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover: 4.5	20% of	total cover:	1.8	1 - Rapid Test for Hydrophytic Vegetation
t)				X 2 - Dominance Test is >50%
				X 3 - Prevalence Index is ≤3.01
				Problematic Hydrophytic Vegetation [†] (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present; unless disturbed or problematic.
				Definitions of Five Vegetation Strata:
	0	= Total Cov	ег	Tree - Woody plants, excluding woody vines,
50% of total cover: 0	20% of	total cover:	0	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
tted Chain Fern	60	Yes	OBL	Sapling - Woody plants, excluding woody vines,
ı	12	No	OBL	approximately 20 ft (6 m) or more in height and less
censis, New York Fern	10	No	FAC	than 3 in. (7.6 cm) DBH.
neum, Cinnamon Fern	3	<u>No</u>	FACW	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
	\equiv		\equiv	Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.
-	_			Woody vine - All woody vines, regardless of height.
	_	= Total Cov		
50% of total cover:42.5	20% of	total cover:	17	
30 ft)				
				1

Remarks: (If observed, list morphological adaptations below).

Woody Vine Stratum (Plot size: 30 ft)

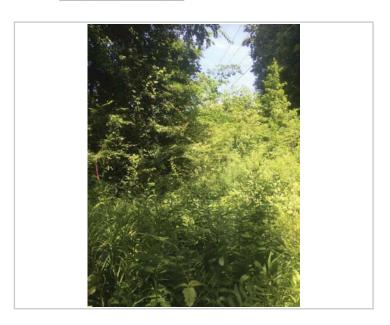
Yes X No __

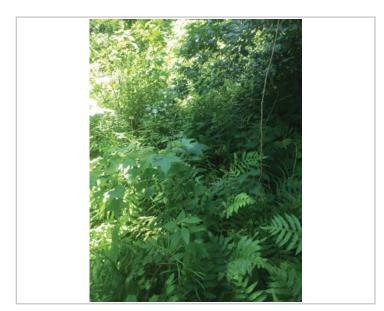
SOIL Sampling Point: W6

Depth	Matrix			x Feature			1-22/18/Vine	all files		
(inches)	Color (moist)	%	Color (moist)	%	Type	_Loc ²	Texture	Remarks		
0-11	10yr 2/1	100%						< 70% soil particles masked		
11-18	5y 6/1	60%	10yr 7/8	40%	C	M	Sandy clay			
		-								
	10 1		-							
	-				=		-	-		
nerver received		Stant Lab		S. S. Santon			(All constructions)			
	oncentration, D=Dep Indicators: (Applic					ains.		PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ :		
2		anie to an	Polyvalue B			DD C T I		Muck (A9) (LRR O)		
Histosol	pipedon (A2)		Polyvalue B			William Control		Muck (A10) (LRR S)		
	istic (A3)		Loamy Much					ed Vertic (F18) (outside MLRA 150A,		
	en Sulfide (A4)		Loamy Gley				- TOTAL CO.	ont Floodplain Soils (F19) (LRR P, S, T		
	d Layers (A5)		Depleted Ma	atrix (F3)				alous Bright Loamy Soils (F20)		
Organic Bodies (A6) (LRR P, T, U)			Redox Dark		(75 0 444).		(MLRA 153B)			
	ucky Mineral (A7) (LI	300						arent Material (TF2)		
	resence (A8) (LRR L uck (A9) (LRR P, T)	"	Redox Depr Mart (F10) (I		0)		Very Shallow Dark Surface (TF12) Other (Explain in Remarks)			
	d Below Dark Surfac	e (A11)	Depleted Oc		(MLRA 1	51)	_ 0000	(Explain in Nemarks)		
	ark Surface (A12)		Iron-Mangar				T) ³ India	ators of hydrophytic vegetation and		
_ Coast P	rairie Redox (A16) (I	MLRA 150	A) Umbric Surf	ace (F13)	LRR P, T	U)	wel	land hydrology must be present,		
	Mucky Mineral (S1) (I	LRR O, S)	Delta Ochric		September 1987 Inches			ess disturbed or problematic.		
	Gleyed Matrix (S4)		Reduced Ve							
	Redox (S5) d Matrix (S6)		Piedmont FI				A 149A, 153C	153D)		
	matrix (OO)	500000000		Dirigini E Con	ny cons (i	20) (1812)	in 140n, 1000	, 1000)		
	rface (S7) (LRR P. 5	S. T. U)								
Dark Su	rface (S7) (LRR P, \$ Layer (if observed):	121-112-11-12								
Dark Su	A PART OF THE PART	121-112-11-12								
Dark Su Restrictive	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes × No		
Dark Su Restrictive Type:	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes × No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes × No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yesx No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su Restrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No <u>——</u>		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>x</u> No		
Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>x</u> No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>x</u> No		
Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes No		
Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>x</u> No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes x No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes <u>×</u> No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes x No		
Dark Su testrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes x No		
Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes X No		
_ Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yes X No		
_ Dark Su estrictive Type: Depth (in	Layer (if observed):	121-112-11-12					Hydric Soil	Present? Yesx No		

Date: _____

Feature Name: W6





Photograph Direction North

Comments:



Comments:





Photograph Direction West

Comments:

Photograph Direction East

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex T	FM	City/C	ounty: Middlesex/Mid	ldlesex	Sampling Date: _	7/14/2021	
Applicant/Owner: HRSD			0.00	State: VA	Sampling Point: V	V6-UP	
Investigator(s): Emily Foster, Ka	itelyn Hoisington	Section	on, Township, Range: _	Securit Selform			
Landform (hillslope, terrace, etc.)): Hillslope	Local	relief (concave, convex	, none): None	Slope	(%): 20-40	
Subregion (LRR or MLRA): MLR			Long:				
Soil Map Unit Name: Kempsvill			F. 30474.870	5000000000 EX	F2	77.0m.	
Are climatic / hydrologic condition			MARKETT SATISFACE	and Variation and the			
Are Vegetation, Soil						No	
Are Vegetation, Soil							
SUMMARY OF FINDINGS				explain any answe		atures, etc.	
Hydrophytic Vegetation Presen	t? Yes	No x					
Hydric Soil Present?	Yes	10000	Is the Sampled Area		10000		
Wetland Hydrology Present?	Yes	Nox	within a Wetland?	105	Nox_		
Remarks: Upland adjacent to Twiggs Fe	erry Rd., upslope frpm \	N6 (PEM)			Observed Classifi Cowardin: <u>uplar</u>		
HYDROLOGY							
Wetland Hydrology Indicator	5:			Secondary Indica	ators (minimum of ty	wa required)	
Primary Indicators (minimum of	one is required; check a	Il that apply)		Surface Soil	Cracks (B6)		
Surface Water (A1)		tic Fauna (B13)		Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10)			
High Water Table (A2)		Deposits (B15) (LRF	R U)				
Saturation (A3)	Hydro	gen Sulfide Odor (0	C1)	Moss Trim L	ines (B16)		
Water Marks (B1)	Oxidiz	red Rhizospheres a	long Living Roots (C3)	Dry-Season	Water Table (C2)		
Sediment Deposits (B2)	Prese	nce of Reduced Iro	n (C4)	Crayfish Bur	rrows (C8)		
Drift Deposits (B3)	Recer	nt Iron Reduction in	Tilled Soils (C6)	Saturation V	isible on Aerial Ima	gery (C9)	
Algal Mat or Crust (B4)	Thin N	Muck Surface (C7)		Geomorphic	Position (D2)		
Iron Deposits (B5)	Other	(Explain in Remark	(s)	Shallow Aqu	uitard (D3)		
Inundation Visible on Aeria	I Imagery (B7)			FAC-Neutra	l Test (D5)		
Water-Stained Leaves (B9)			Sphagnum r	moss (D8) (LRR T,	U)	
Field Observations:							
Surface Water Present?	Yes No _x D	epth (inches):					
Water Table Present?	Yes No _x D	epth (inches):					
Saturation Present? (includes capillary fringe)	Yes No _x D				nt? Yes	No _x_	
Describe Recorded Data (strea	m gauge, monitoring wel	l, aerial photos, pre	vious inspections), if av	ailable:			
Remarks:							

VEGETATION (Five Strata) -	Use scientifi	c names of pla	ants.	
Self-transportation (VSR) (VSR	50		Dominant	
Tran Stratum (Diet cize: 20 ft	N.	Ol Course	Consise?	Chahren

2 Ilex opaca, American Holly 35 Yes FAC

1. Quercus alba, Northern White Oak 5 Yes FACU

Tree Stratum (Plot size: 30 ft)

Sapling Stratum (Plot size: 30 ft)

Shrub Stratum (Plot size: 30 ft)

Herb Stratum (Plot size: 30 ft)

Liriodendron tulipifera, Tuliptree

Sampling Point: W6-UP Dominance Test worksheet: Number of Dominant Species 2____ (A) That Are OBL, FACW, or FAC: Total Number of Dominant 4 ____ (B) Species Across All Strata: Percent of Dominant Species 50.0% (A/B) That Are OBL, FACW, or FAC: Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ 0 ___ x 1 = ____ 0 FACW species _____0 x 2 = ____0 FAC species _______ x 3 = ______ 210 FACU species 60 x 4 = 240 UPL species ____ 0 ___ x 5 = ___ 0 Column Totals: ____130____(A) ____450____(B) Prevalence Index = B/A = 3.46 Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation __ 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ Problematic Hydrophytic Vegetation¹ (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Five Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine - All woody vines, regardless of height.

0	= Total Co	ver			
_ 20% o	f total cover	r: <u>0</u>			
30	Yes	FAC_			
5	No	FAC			
5	No	FACU			
	0				
			Hydrophytic		
40	= Total Co	ver	Vegetation		
20% 0	f total cover	r: <u>8</u>	Present?	Yes	No
/)_					
	30 5 5 40	20% of total cover 30 Yes 5 No 5 No 40 = Total Co 20% of total cover 20% of total cover	5 No FACU 5 No FACU 40 = Total Cover 20% of total cover: 8		

% Cover Species? Status

50 Yes FACU

85 = Total Cover

5 = Total Cover

0 = Total Cover

50% of total cover: 42.5 20% of total cover: 17

50% of total cover: 2.5 20% of total cover: 1

50% of total cover: 0 20% of total cover: 0

SOIL Sampling Point: W6-UP

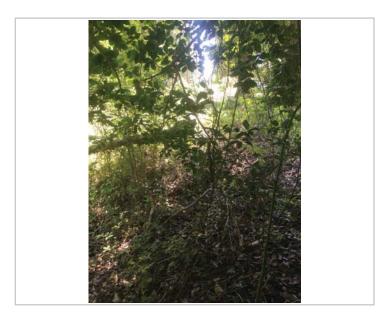
Depth	Matrix			x Feature			1-247-180 VIDS	425000000000000000000000000000000000000	
(inches)	Color (moist)		Color (moist)	%	Type'	_Loc ²	Texture	Remarks	
0-12	10yr 4/3	100%					Sandy loam		
12-18	2.5y 7/6	100%					Sand		
		0			ii-				
	60 60			-					
					$\overline{}$	_			
									922
	oncentration, D=Dep					ains.		L=Pore Lining, M=Matro or Problematic Hydric	
2	Indicators: (Applic	able to all L				DD 6 T 1			aons :
Histosol	pipedon (A2)		Polyvalue B					ck (A9) (LRR O) ck (A10) (LRR S)	
- Carrier 1880 1980	listic (A3)		Loamy Much					Vertic (F18) (outside	MLRA 150A.
	en Sulfide (A4)		Loamy Gley				- TOO TO THE PARTY OF THE PARTY	t Floodplain Soils (F19	
Stratifie	d Layers (A5)		Depleted Ma	atrix (F3)			Anomalo	ous Bright Loamy Soils	(F20)
	Bodies (A6) (LRR F		Redox Dark		(75 0 444).		3, 12, 30, 30, 31, 32, 33	(153B)	
	ucky Mineral (A7) (L	3.00	Depleted Da					ent Material (TF2)	
	resence (A8) (LRR L uck (A9) (LRR P, T)	1)	Redox Depr Mart (F10) (I		8)			allow Dark Surface (TF	12)
	d Below Dark Surface	e (A11)	Man (F10) (i		(MLRA 1	51)	— Other (E	xplain in Remarks)	
	ark Surface (A12)	~ ,	Iron-Mangar				T) ³ Indicat	ors of hydrophytic vege	etation and
	rairie Redox (A16) (MLRA 150A				The state of the s	1000 Hills (1000)	nd hydrology must be p	
	Mucky Mineral (S1) (LRR O, S)	Delta Ochric		Service Services			s disturbed or problems	atic.
	Gleyed Matrix (S4)		Reduced Ve						
	Redox (S5)		Piedmont FI					£2D)	
	d Matrix (S6) urface (S7) (LRR P, :	S T III	Anomalous	Bright Loai	ny sons (i	-20) (MLR	A 149A, 153C, 1	330)	
	Layer (if observed)	241-1-2-1-141							
A STITICTIVE									
Туре:	iches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	iches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No ×
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No ×
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	iches):						Hydric Soil P	resent? Yes	No X
Type:	iches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No x
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	nches):						Hydric Soil P	resent? Yes	No X
Type: Depth (in	iches):						Hydric Soil P	resent? Yes	No ×

Photograph Log

Date:		
Date.		

Feature Name:



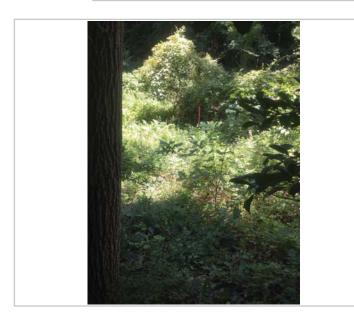


Photograph Direction North

Comments:



Comments:





Photograph Direction East

Comments:

Photograph Direction West

Comments:

Tetra Tech Photo Log Form

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	x TFM			City	/County: Mid	dlesex/Mid	dlesex	Sampling Date: _	7/14/2021
Applicant/Owner: HRSD							State: VA Sampling Point: \		
Investigator(s): Emily Foster,	Katelyn	Hoisingtor	1	Sec	ction, Townshi	p, Range:			
Landform (hillslope, terrace, e									(%): 10-45
Subregion (LRR or MLRA): M	00000mg							Datu	
Soil Map Unit Name: Steep s				_37.30397	<u> </u>		NWI classifi	17.000	MIL VVG304
Are climatic / hydrologic condi		anne de la constitución	and for this		V V	1010		77	
Are Vegetation, Soil _		The second of gales		and the state of the state of			A CONTRACTOR OF THE PARTY OF TH		No
Are Vegetation, Soil _	, or	Hydrology	na	turally proble	matic?	(If needed,	explain any answ	ers in Remarks.)	
SUMMARY OF FINDING	GS - A	ttach sit	e map s	howing sa	mpling po	int location	ons, transect	s, important fea	atures, etc.
Hydrophytic Vegetation Pres Hydric Soil Present? Wetland Hydrology Present?		Yes	x No x No x No		Is the San within a V	npled Area Vetland?	Yes	No	
Remarks:								Observed Classif	ications:
								Cowardin: <u>PFO</u>	
HYDROLOGY									
Wetland Hydrology Indicat	ors:			-			Secondary Indic	ators (minimum of t	wo required)
Primary Indicators (minimum	of one in	required;	check all th	at apply)			Surface Soi	Cracks (B6)	
Surface Water (A1)		_	Aquatic F	auna (B13)			Sparsely Ve	getated Concave S	urface (B8)
_X High Water Table (A2)			Marl Dep	osits (B15) (L	RR U)		Drainage Pa	atterns (B10)	
X Saturation (A3)		_	Hydrogen	Sulfide Odor	(C1)		Moss Trim I	Lines (B16)	
Water Marks (B1)					s along Living	Roots (C3)	_ Dry-Season	Water Table (C2)	
Sediment Deposits (B2)	l.	_	Presence	of Reduced	Iron (C4)		Crayfish Bu	rrows (C8)	
Drift Deposits (B3)			Recent In	on Reduction	in Tilled Soils	(C6)	Saturation \	risible on Aerial Ima	gery (C9)
— Algal Mat or Crust (B4)		_	Thin Muc	k Surface (C7	7)		Geomorphic	Position (D2)	
Iron Deposits (B5)		_	Other (Ex	plain in Rema	arks)		Shallow Aq		
Inundation Visible on Ae	rial Imag	ery (B7)					X FAC-Neutra		
Water-Stained Leaves (B9)						Sphagnum	moss (D8) (LRR T,	U)
Field Observations:									
Surface Water Present?	14.5	1.000	7.1						
Water Table Present?	Yes _	X No_	Dept	h (inches): 1	2				
Saturation Present? (includes capillary fringe)				h (inches): 0				nt? Yes_x_	No
Describe Recorded Data (str	eam gau	ge, monitor	ing well, a	erial photos, p	previous inspe	ctions), if ava	ailable:		
Remarks:									
TOTAL STATE OF THE									

VEGETATION	(Five Strata)	- Use	scientific	names	of p	plants
-------------------	---------------	-------	------------	-------	------	--------

	nes of pla				ng Point: W7	
5 Starten (States 20 ft		Dominant		Dominance Test worksheet:		
		Species?		Number of Dominant Species	7	
Nyssa sylvatica, Black Tupelo				That Are OBL, FACW, or FAC:	7	(A)
Ilex opaca, American Holly	30	Yes	<u>FAC</u>	Total Number of Dominant		
				Species Across All Strata:	7	(B)
				Percent of Dominant Species		
				That Are OBL, FACW, or FAC:	100.0%	(A/E
				- The second		1 Paris
	65	= Total Cov	er	Prevalence Index worksheet:		
50% of total cover: 32.5	20% of	total cover:	13	Total % Cover of:		-
Sapling Stratum (Plot size: 30 ft)	- 1000000			OBL species x 1		_
Carpinus caroliniana, American Hornbeam	15	Yes	FAC	FACW species5 x 2	= 10	-
Acer rubrum, Red Maple				FAC species 85 x 3	= 255	
(1)				FACU species 0 x 4	= 0	
Magnolia virginiana, Sweet-Bay		res	FACW	UPL species 0 x 5		-
			_	Column Totals: 135 (A)	-	(B)
k				County Foldis	- 010	_ (0)
				Prevalence Index = B/A = _	2.30	
	25	= Total Cov	er	Hydrophytic Vegetation Indicate		
50% of total cover:12.5	20% of	total cover:	5	1 - Rapid Test for Hydrophylic		
Shrub Stratum (Plot size: 30 ft)			- 1	X 2 - Dominance Test is >50%	regulation	
				X 3 - Prevalence Index is ≤3.01		
					1187 - 112 - 121	
				Problematic Hydrophytic Vege	etation' (Expla	in)
			_	A 3 3		
·			_	Indicators of hydric soil and wetla		must
j				be present, unless disturbed or pro		
3				Definitions of Five Vegetation S	trata:	
	0 1	= Total Cov	er	Tree - Woody plants, excluding w	nody vines	
50% of total cover: 0	20% of	total cover:	0	approximately 20 ft (6 m) or more		3 in.
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at br	reast height (D	BH)
Woodwardia areolata, Netted Chain Fern	30	Yes	OBL	Sapling - Woody plants, excluding	a woody vines	
Saururus cernuus, Lizard's-Tail	56	Yes	_	approximately 20 ft (6 m) or more		
				than 3 in. (7.6 cm) DBH.		
\ <u></u>				Chrish Wands about auchidian	usendo de e	
\ <u></u>				Shrub – Woody plants, excluding approximately 3 to 20 ft (1 to 6 m)		
ì				Herb - All herbaceous (non-wood		
!				herbaceous vines, regardless of s plants, except woody vines, less to	The second secon	A COLUMN TO SERVICE AND ADDRESS OF THE PARTY
L <u> </u>				3 ft (1 m) in height.	ion approxima	iciy
)				and the late of the	11.00	
0				Woody vine - All woody vines, re	gardless of he	ight.
1						
		= Total Cov				
50% of total cover: 22.5	_ 20% of	total cover				
Noody Vine Stratum (Plot size: 30 ft)						
c 						
			<u> </u>			
		_		District to		
·		= Total Cov		Hydrophytic Vegetation		
		- I oral Cov	e.			
50% of total cover:0	0000		_	Present? Yes X	No	

SOIL Sampling Point: W7

A Second	Matrix		needed to docu Red	x Feature						
(inches)	Color (moist)	%	Color (moist)	%		_Loc2	Texture		Remarks	
0-6	10yr 2/2	100%					Sand	< 70% so	oil particles m	asked
6-18	7.5yr 4/2	100%					Sand			
		-00 -00 -00 -00 -00 -00 -00 -00 -00 -00								
					_					
					_					
					-					
	oncentration, D=De					ains.			ining, M=Matri	
	Indicators: (Appli	cable to all L							matic Hydric	Solls":
_ Histosol	pipedon (A2)		Polyvalue B					Muck (A9) (I Muck (A10)		
	istic (A3)		Loamy Much				-		18) (outside N	ILRA 150A.B
	en Sulfide (A4)		Loamy Gley			-,	400000000000000000000000000000000000000		ain Soils (F19)	
_ Stratifie	d Layers (A5)		Depleted Ma	atrix (F3)			Anom	alous Bright	Loamy Soils (F20)
_	Bodies (A6) (LRR I	The state of the s	Redox Dark	Frank State At	(C) 5000 (I)		A	RA 153B)		
	ucky Mineral (A7) (L	ALL CONTRACTOR OF THE PARTY OF	Depleted Da					arent Mater		2)
	resence (A8) (LRR I uck (A9) (LRR P, T)		Redox Depr Mart (F10) (I		8)			(Explain in	(Surface (TF1	2)
	d Below Dark Surfa		Depleted Oc		(MLRA 15	51)	_ Other	(Explain iii	(Ciliaiks)	
Thick D	ark Surface (A12)		Iron-Mangar	ese Mass	es (F12) (I	LRR O, P, 1	T) ³ India	cators of hyd	trophytic veget	ation and
	rairie Redox (A16) (U)			ogy must be pr	
THE RESERVE OF THE PARTY	Mucky Mineral (S1)	(LRR O, S)	Delta Ochric				unl	ess disturbe	ed or problema	tic.
THE RESERVE OF THE PARTY OF THE	Gleyed Matrix (S4) Redox (S5)		Reduced Ve Piedmont FI)A)			
	Matrix (S6)					Control of the state of the state of	149A, 153C	. 153D)		
	urface (S7) (LRR P,	S, T, U)								
Restrictive	Layer (if observed):								
Trends										
Type:							Hudela Call	Dragant?	Yesx	No
Depth (in	iches):						nyane son	Liezein i		
	ches):						nyanc son	riesein r		
Depth (in Remarks:	nd top 2-3 inches.						nydric Soil	Pleselit		
Depth (in Remarks:	200 F 200 F 200						nydric son	riesettr		
Depth (in Remarks:	200 F 200 F 200						nyane son	Present		
Depth (in Remarks:	200 F 200 F 200						nydic soil	Plesent		
Depth (in Remarks:	200 F 200 F 200						nydiic Soil	Plesent		
Depth (in Remarks:	200 F 200 F 200						nydic soil	Present		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Present		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Present		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Present		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Priesell		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Present		
Depth (in Remarks:	200 F 200 F 200						nyane son	Fiesding		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Fiesding		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Fiesell		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Fieselit		
Depth (in Remarks:	200 F 200 F 200						nydric Son	Fiesding		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Fiesding		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Fiesding		
Depth (in Remarks:	200 F 200 F 200						nydric Soil	Fiesding		
Depth (in remarks:	200 F 200 F 200						nydric Son	Fieself		

Date: 7/14/21

Feature Name: W 7





Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex	TFM	City/C	County: Mathews		Sampling Date:	7/14/2021
Applicant/Owner: HRSD			3775	State: VA	Sampling Point: V	/7-UP
Investigator(s): Emily Foster, I	Katelyn Hoisington	Section Sectio	on, Township, Range: _	S-CATE VEHIC	55000000000000000000000000000000000000	
Landform (hillslope, terrace, etc	c): Hillslope	Local	relief (concave, convex	none): None	Slope	(%): 25-50
Subregion (LRR or MLRA): ML	200 To				Datu	
Soil Map Unit Name: Steep sai						V.V.
Are climatic / hydrologic conditi		al for this time of year?				
Are Vegetation, Soil						No
Are Vegetation, Soil SUMMARY OF FINDING				explain any answe ons, transects		itures, etc.
Hydrophytic Vegetation Prese	ent? Yes	No x				
Hydric Soil Present?	The state of the s	No_x	Is the Sampled Area	V	1 MAZ	
Wetland Hydrology Present?		No x	within a Wetland?	Tes	Nox	
					Cowardin: <u>Upla</u>	nd
HYDROLOGY						
Wetland Hydrology Indicato	ors:			Secondary Indic	ators (minimum of ty	vo required)
Primary Indicators (minimum		neck all that apply)		NEW 23 220/	Cracks (B6)	
Surface Water (A1)		Aquatic Fauna (B13)			getated Concave Si	urface (B8)
High Water Table (A2)		Marl Deposits (B15) (LR	R U)		atterns (B10)	
Saturation (A3)		Hydrogen Sulfide Odor (10(0)(N	Moss Trim I		
Water Marks (B1)		Oxidized Rhizospheres a	along Living Roots (C3)	Dry-Season	Water Table (C2)	
Sediment Deposits (B2)		Presence of Reduced Iro	on (C4)	Crayfish Bu	rrows (C8)	
Drift Deposits (B3)	_	Recent Iron Reduction in	Tilled Soils (C6)	Saturation \	isible on Aerial Ima	gery (C9)
Algal Mat or Crust (B4)	_	Thin Muck Surface (C7)		Geomorphic	Position (D2)	
Iron Deposits (B5)	_	Other (Explain in Remark	ks)	Shallow Aqu	uitard (D3)	
Inundation Visible on Aer	ial Imagery (B7)			FAC-Neutra	l Test (D5)	
Water-Stained Leaves (B	9)			Sphagnum	moss (D8) (LRR T, I	J)
Field Observations:						
Surface Water Present?	Yes No	Depth (inches):				
Water Table Present?	Yes No	Depth (inches):				
Saturation Present? (includes capillary fringe)	140.7.40	Depth (inches):			nt? Yes	No_x
Describe Recorded Data (stre	am gauge, monitorin	ng well, aerial photos, pre	evious inspections), if av	ailable:		
255						
Remarks:						

VEGETATION (Five Strata) – Use scientific names of plants.							
<u>Iree Stratum</u> (Plot size: <u>30 ft</u>)	Absolute Dominant Indicator % Cover Species? Status						

0 = Total Cover

Vegetation

Present?

50% of total cover: ___0___20% of total cover: ___0__

'EGETATION (Five Strata) – Use scientific n	2010/00 0 A 2020/00 1 0 0	22.3522			Point: W7-L	JP
Tree Stratum (Plot size: 30 ft)		Dominant Species?		Dominance Test worksheet:		
Carya glabra, Pignut Hickory				Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
2 Ilex opaca, American Holly				SECURITY STATES AND SECURITY STATES AND SECURITY STATES AND SECURITY SECURI		
3.				Total Number of Dominant Species Across All Strata:	3	(B)
4.	E800 =					.,-,
5				Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7%	(A/B)
S						97776
	70	= Total Cov	rer	Prevalence Index worksheet:	- manual	
50% of total cover:3	5 20% of	total cover	14		ultiply by:	
Sapling Stratum (Plot size: 30 ft)				OBL species 0 x 1 =		
l. <u>Ilex opaca, American Holly</u>	10	Yes	FAC_	FACW species0 x 2 =		
2				FAC species 40 x 3 =		
3				FACU species 40 x 4 =		
4				UPL species 0 x 5 =		
5				Column Totals: 80 (A)	280	_ (B)
š				Prevalence Index = B/A =	3.50	
	10	= Total Cov	rer	Hydrophytic Vegetation Indicators		_
50% of total cover:	20% of	total cover	2	1 - Rapid Test for Hydrophytic \		
Shrub Stratum (Plot size: 30 ft)				X 2 - Dominance Test is >50%		
l				3 - Prevalence Index is ≤3.0		
2				Problematic Hydrophytic Vegeta	ation (Explai	in)
3					Action Considerate	
4				Indicators of hydric soil and wetland	hvdrology r	must
5.				be present, unless disturbed or prob		iiu se
5.	200	73 53		Definitions of Five Vegetation Stra	ata:	
3.0		= Total Cov	rer		2001012	
50% of total cover:	20% of	total cover	0	Tree – Woody plants, excluding woo approximately 20 ft (6 m) or more in		3 in
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at brea		
1				Sapling - Woody plants, excluding	voody vinac	
2		70.	7	approximately 20 ft (6 m) or more in		
				than 3 in, (7.6 cm) DBH.		
1				Shrub - Woody plants, excluding w	oody vines.	
5.				approximately 3 to 20 ft (1 to 6 m) in		
3.				Herb - All herbaceous (non-woody)	nlante inclu	dina
7.				herbaceous vines, regardless of size		
				plants, except woody vines, less tha	n approxima	tely
8				3 ft (1 m) in height.		
				Woody vine - All woody vines, rega	rdless of he	ight.
10						
11		- Tatal Ca	-	-		
FRANCE CALL CANOLING	_	= Total Cov				
50% of total cover:	20% of	total cover				
Woody Vine Stratum (Plot size: 30 ft)						
1						
2						
3						
4						
5				9.8 (c) 1.8 (c) 2.9 (c) 5.8 (c)		

Remarks: (If observed, list morphological adaptations below).

Yes ____ No __x

SOIL Sampling Point: W7-UP

Depth	Matrix		Red	x Feature						
(inches)	Color (moist)		Color (moist)	%	Type	_Loc ²	Texture	-	Remarks	
0-18	7.5yr 3/2	100%			<u> </u>		Sand	Si .		
	187				-					
	-									
								:		
	-	3-33		-	i			9		
		72 <u></u>						3		
		77 - 272		33						
Type: C=C	oncentration, D=Dep	letion RM=R	educed Matrix M	S=Masker	Sand Gr	ains	å ocation: I	PI =Pore Lin	ning, M=Matri:	2
	Indicators: (Applic					JII 1 J.			atic Hydric 8	
Histoso			Polyvalue B			RR S. T. U				
	pipedon (A2)		Thin Dark S					uck (A10) (L		
- CONTRACTOR (1997)	istic (A3)		Loamy Muci			U-500 (50)			8) (outside N	ILRA 150A,I
Hydrog	en Sulfide (A4)		Loamy Gley				Piedmo	nt Floodplai	n Soils (F19)	(LRR P, S, T
	d Layers (A5)		Depleted Ma	etrix (F3)				5 (5) V 5 (1) (1) (1) (1) (1) (1) (1)	oamy Soils (I	20)
	Bodies (A6) (LRR P		Redox Dark		(75 5 935)		0.0000000000	A 153B)		
- 0000000 P.C.	ucky Mineral (A7) (LF		Depleted Da					rent Materia		200
	resence (A8) (LRR U)	Redox Depr		8)				Surface (TF1	2)
	uck (A9) (LRR P, T)	-7444	Mart (F10) ((14) DA 4)		_ Other (E	Explain in R	emarks)	
	d Below Dark Surfact ark Surface (A12)	e (A11)	Depleted Octors Iron-Mangar				T) ³ Indice	tore of hydr	ophytic veget	ation and
	rairie Redox (A16) (N	MLRA 150A)	Umbric Surf						gy must be pr	
	Mucky Mineral (S1) (L		Delta Ochric						or problemat	N. S. Carlos
	Gleyed Matrix (S4)	7010074.74	Reduced Ve			0A, 150B)				200
	Redox (S5)		Piedmont FI							
Stripped	d Matrix (S6)		Anomalous	Bright Loar	ny Soils (i	F20) (MLR	A 149A, 153C,	153D)		
David Co	rface (S7) (LRR P, S	S, T, U)								
	A PART OF THE PROPERTY OF THE									
	Layer (if observed):									
	A PART OF THE PROPERTY OF THE	5	_							
Restrictive Type:	A PART OF THE PROPERTY OF THE		_				Hydric Soil F	Present?	Yes	No×
Restrictive Type:	Layer (if observed):		<u> </u>				Hydric Soil F	Present?	Yes	Nox
Restrictive Type: Depth (in	Layer (if observed):		<u> </u>				Hydric Soil F	Present?	Yes	Nox
Restrictive Type: Depth (in	Layer (if observed):		_				Hydric Soil F	Present?	Yes	No <u>x</u>
Type: Depth (in	Layer (if observed):		<u>-</u>				Hydric Soil F	Present?	Yes	No x
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Restrictive Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	No <u>x</u>
Type: Depth (in	Layer (if observed):		<u>-</u>				Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	No <u>x</u>
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	No <u>x</u>
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	No _ x
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Restrictive Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	No _x
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	No _x
Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
estrictive Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox
estrictive Type: Depth (in	Layer (if observed):						Hydric Soil F	Present?	Yes	Nox

Date: _____

Feature Name: W7-UP





Photograph Direction West

Comments:

Photograph Direction East

Comments:





Photograph Direction North

Comments:

Photograph Direction South

Project/Site: HRSD Middlesex TFM		City/0	County Middlesex/Mid	dlesex	_ Sampling Date: _	7/14/2021
Applicant/Owner: HRSD			23/42	State: VA	Sampling Point: V	V8
Investigator(s): Emily Foster, Kately	n Hoisington	Secti	on, Township, Range:			
Landform (hillslope, terrace, etc.): D		10.000.000				(%) 0-10
Subregion (LRR or MLRA): MLRA 15					Datu	100000
						M W0304
Soil Map Unit Name Suffolk-Remli	A someone so and most re-			NWI classif		
Are climatic / hydrologic conditions of	n the site typical f	or this time of year?	/es_x_No	(If no, explain in	Remarks.)	
Are Vegetationx, Soilx,	or Hydrology	significantly distu	rbed? Are "Norma	al Circumstances'	present? Yesx	No
Are Vegetation, Soil,	or Hydrology	naturally problem	atic? (If needed,	explain any answ	rers in Remarks.)	
SUMMARY OF FINDINGS -	Attach site n	nap showing san	npling point locati	ons, transect	s, important fea	atures, etc.
Hydrophytic Vegetation Present?	Yes x	_ No	to the Country of Account			
Hydric Soil Present?		No	Is the Sampled Area	W	v	
Wetland Hydrology Present?		No	within a Wetland?	Yes	X No	1
Remarks:					Observed Classif	ications:
roadside area.						
HYDROLOGY				988 us 10000 to	- 201400 0000	
Wetland Hydrology Indicators:				Secondary India	cators (minimum of t	wo required)
Primary Indicators (minimum of one	e is required; chec	k all that apply)		Surface So	il Cracks (B6)	
Surface Water (A1)	Aq	uatic Fauna (B13)		Sparsely V	egetated Concave S	urface (B8)
High Water Table (A2)	Ma	arl Deposits (B15) (LR	R U)	X Drainage P	atterns (B10)	
Saturation (A3)	Hy	drogen Sulfide Odor (C1)	Moss Trim	Lines (B16)	
Water Marks (B1)	_ 0	idized Rhizospheres	along Living Roots (C3)	Dry-Season	Water Table (C2)	
Sediment Deposits (B2)	Pr	esence of Reduced Iro	on (C4)	Crayfish Bu	irrows (C8)	
Drift Deposits (B3)	Re	cent Iron Reduction in	Tilled Soils (C6)		Visible on Aerial Ima	gery (C9)
Algal Mat or Crust (B4)		in Muck Surface (C7)			c Position (D2)	
Iron Deposits (B5)	ACCUPATION OF THE PARK VIEW	her (Explain in Remar	ks)	Shallow Aq		
Inundation Visible on Aerial Im	agery (B7)				al Test (D5)	• • •
Water-Stained Leaves (B9)				Sphagnum	moss (D8) (LRR T,	U)
Field Observations:	v					
	La Company	Depth (inches):				
		_ Depth (inches):				
(includes capillary fringe)		_ Depth (inches):			ent? Yesx	No
Describe Recorded Data (stream g	auge, monitoring	well, aerial photos, pre	evious inspections), if av	ailable:		
Remarks:						
Normana.						

VEGETATION (Five Strata)	- Use	scientific	names	of plan	nts
---------------------	--------------	-------	------------	-------	---------	-----

				Sampli	Committee of the commit	
To Status (Diet in 20 ft		Dominant		Dominance Test worksheet:		
		Species?		Number of Dominant Species	3	141
Celtis occidentalis, Common Hackberry				That Are OBL, FACW, or FAC:		(A)
Ligustrum sinense, Chinese Privet			FAC	Total Number of Dominant	4	
				Species Across All Strata:	4	(B)
				Percent of Dominant Species		
				That Are OBL, FACW, or FAC:	75.0%	(A/E
				Prevalence Index worksheet:		1111111
	13	= Total Cov	rer			
50% of total cover: 6.5	20% of	total cover	2.6	Total % Cover of:		_
Sapling Stratum (Plot size: 30 ft)				OBL species 0 x 1		
5				FACW species 2 x 2		
				FAC species 8 x 3		
				FACU species 8 x 4		_
			_	UPL species 0 x 5) = 0	_
		_	-	Column Totals: 18 (A)	60	(B)
					2.22	
				Prevalence Index = B/A = _		_
	Table 1	= Total Cov		Hydrophytic Vegetation Indicate	ors:	
50% of total cover: 0	20% of	total cover		1 - Rapid Test for Hydrophytic	c Vegetation	
Shrub Stratum (Plot size: 30 ft)				X 2 - Dominance Test is >50%		
1				3 - Prevalence Index is ≤3.01		
2				Problematic Hydrophytic Veg	etation [†] (Expla	ain)
3						
L				Indicators of hydric soil and wetla	and hydrology	must
i				be present, unless disturbed or pr		
i		(1)		Definitions of Five Vegetation S	strata:	
		= Total Cov	er		**************************************	
50% of total cover:0				Tree - Woody plants, excluding wa approximately 20 ft (6 m) or more		3 in
Herb Stratum (Plot size: 30 ft)		total cover		(7.6 cm) or larger in diameter at b		
Microstegium vimineum, Japanese Stilt Grass	2	Voc	EAC			
		71		Sapling – Woody plants, excluding approximately 20 ft (6 m) or more		
Pilea pumila, Canadian Clearweed			FACW	than 3 in. (7.6 cm) DBH.	in neight and	1033
3						
4				Shrub – Woody plants, excluding approximately 3 to 20 ft (1 to 6 m)		
5				approximately 5 to 20 ft (1 to 6 ff)	in neight.	
3				Herb - All herbaceous (non-wood		
7				herbaceous vines, regardless of s plants, except woody vines, less t	The second secon	
1				3 ft (1 m) in height.	пан арргодин	atory
)				ran Indiana		
10			n 80	Woody vine - All woody vines, re	egardless of he	eight.
11.						
		= Total Cov	or.			
50% of total cover; 2.5						
	_ 20% Of	total cover				
Woody Vine Stratum (Plot size: 30 ft)						
l-———						
3						
l						
5				Hydrophytic		
	0 :	= Total Cov	er	Vegetation		
				Present? Yesx		

SOIL Sampling Point: W8

O-18 7.5yr 4/2 Type: C=Concentratio Hydric Soil Indicators Histosol (A1) Histic Epipedon (A	n, D=Depletion, RM=	Color (moist) 7.5yr 3/4 Reduced Matrix, MS	5%	De Loc²	loamy clay	Remarks
Type: C=Concentration ydric Soll Indicators Histosol (A1)	n, D=Depletion, RM=			C PL	loamy clay	
ydric Soil Indicators Histosol (A1)		Reduced Matrix, MS				
Muck Presence (Al 1 cm Muck (A9) (L Depleted Below Da Thick Dark Surface Coast Prairie Redo	A4) (5) (5) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	Polyvalue Be Thin Dark Su Loamy Muck Loamy Gleye X Depleted Ma Redox Dark Depleted Dai Redox Depre Marl (F10) (L Depleted Oc Iron-Mangan Umbric Surfa Delta Ochric Reduced Ver Piedmont Flo	wise noted.) low Surface (S9) (LR y Mineral (F1) d Matrix (F2) trix (F3) Surface (F6) d Surface (F7) essions (F8) RR U) nnic (F11) (MLI ese Masses (F ce (F13) (LRR (F17) (MLRA bodplain Soils (RA 151) 12) (LRR O, F P, T, U) 151) A 150A, 150B F19) (MLRA 1	Indicators for U) 1 cm Muck 2 cm Muck Reduced \ Piedmont i Anomalous (MLRA 1 Red Paren Very Shalk Other (Exp	at Material (TF2) ow Dark Surface (TF12) olain in Remarks) as of hydrophytic vegetation and if hydrology must be present, disturbed or problematic.

Date: 7/14/21

Feature Name: W 8





Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex TFM		City/County: Middlesex/N	1iddlesex	Sampling Date: 7/14/2
Applicant/Owner: HRSD		-58 W W-2	State: VA	Sampling Point: W8-UP
Investigator(s): Emily Foster, Kately	n Hoisington	Section, Township, Range:	e de la constantante de la const	ENVIOLETE HERETALISM = 1
Landform (hillslope, terrace, etc.): Hil	llslope	Local relief (concave, conv	ex. none): None	Slope (%): 10-30
Subregion (LRR or MLRA): MLRA 15:			-76.4217398	Datum: WGS84
Soil Map Unit Name: Suffolk-Remlik				cation:N/A
Are climatic / hydrologic conditions or				
		스탠보다 나타네스 하다		
Are Vegetation, Soil,				
Are Vegetation, Soil, SUMMARY OF FINDINGS -			d, explain any answ tions, transect	
Hydrophytic Vegetation Present?	Yes Nox	Is the Sampled Are		
Hydric Soil Present?	Yes Nox	within a Wetland?		Nox
Wetland Hydrology Present?	Yes Nox	- Within a Wedand?	105	
Hillsde upslope from sparsely veg	getated concave W8.			Observed Classifications: Cowardin: upland
HYDROLOGY				
Wetland Hydrology Indicators:	45 255200 00 00 25000 V		Secondary Indic	ators (minimum of two required
Primary Indicators (minimum of one	is required; check all that app	ily)	Surface Soi	Cracks (B6)
Surface Water (A1)	Aquatic Fauna ((B13)	Sparsely Ve	getated Concave Surface (B8)
High Water Table (A2)	Marl Deposits (I	B15) (LRR U)	Drainage Pa	atterns (B10)
Saturation (A3)	— Hydrogen Sulfic	de Odor (C1)	Moss Trim I	ines (B16)
Water Marks (B1)	Oxidized Rhizor	spheres along Living Roots (C	B) Dry-Season	Water Table (C2)
Sediment Deposits (B2)	Presence of Re	duced Iron (C4)	Crayfish Bu	
Drift Deposits (B3)		duction in Tilled Soils (C6)		fisible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Thin Muck Surfa	10.00 B (0.00 B)		: Position (D2)
Iron Deposits (B5)	Other (Explain i	n Remarks)	Shallow Aqu	
Inundation Visible on Aerial Ima	igery (B7)		FAC-Neutra	
Water-Stained Leaves (B9)			Spriagrium	moss (D8) (LRR T, U)
Field Observations:	No _x _ Depth (incl			
	장 그 아이는 아이는 그들은 아이는 아이를 하는데 없다.	1,000,000		
	No _x Depth (inch	\$00.00V = 1 100.0000 cm	d Hodesland Orean	-12 V N- Y
(includes capillary fringe)	No _x Depth (inch	nes): wetian	a Hydrology Prese	nt? Yes No _x
Describe Recorded Data (stream ga	auge, monitoring well, aerial ph	notos, previous inspections), if	available:	
Remarks:				

	Absolu	te Dominant I	nd cator	Dominance Test	worksheet			
Tree Stratum (Plot size: 30 ft)	% Cov	er Species?	Status	Number of Domina	ant Species	62		
1. Ligustrum sinense, Chinese Privet	30	Yes	FAC	That Are OBL, FA		:	2	(A)
2 Celtis occidentalis, Common Hackberry					2262 242020 S 0046			
				Total Number of D				
3.	_			Species Across Al	I Strata:	_	4	(B)
4								
5				Percent of Domina			50.0%	24 ms
				That Are OBL, FA	CVV, or FAC	-	30.070	(A/B)
6			_	Prevalence Index	workshaa	d-		
	55_	_ = Total Cove	E.			50	W. S. C.	
50% of total cover: 2	7.5 20%	of total cover:	11	Total % Cove				
Sapling Stratum (Plot size: 30 ft)	1000000			OBL species _	0 -	x 1 =	0	
49.70M(BCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC				FACW species _	0	x 2 =	0	
1				FAC species _			77.	
2	_							
3				FACU species _				
				UPL species _	0	x 5 =	0	-03
4				Column Totals: _	105	(A)	375	(B)
5						V. V.		- (-)
6	27.0			Prevalence I	Index = R/A	\ =	3.57	
		= Total Cove		AND				_
5004-51-1-1	7			Hydrophytic Veg				
50% of total cover:	20%	or total cover:	<u> </u>	1 - Rapid Tes	t for Hydrop	hytic V	egetation	
Shrub Stratum (Plot size: 30 ft)				2 - Dominanc	e Test is >5	10%		
1				3 - Prevalence				
2.				A STATE OF THE PARTY OF THE PAR			enterne	217
				Problematic H	tyaropnytic	vegeta	tion (Expia	an)
3								
4				Indicators of hydr	ic soil and	wetland	hydrology	must
5	0766	0.000 0.0000	100	be present, unless				
6.				Definitions of Fiv	e Vegetati	on Stra	tar	
·		= Total Cove	_	Demindons of Fry	e vegetati	on otra	CSA.	
50% of total cover: Herb Stratum (Plot size: 30 ft) 1. Ligustrum sinense, Chinese Privet 2 3	15	Yes	FAC	approximately 201 (7.6 cm) or larger Sapling – Woody approximately 201 than 3 in, (7.6 cm)	in diameter plants, exc ft (6 m) or n DBH.	at brea luding v	st height (C voody vines height and)BH). s,
4				Shrub – Woody p approximately 3 to				
5.				approximately 5 to				
5				Herb - All herbace		voody) i	plants, inclu	uding
5				Herb - All herbace herbaceous vines	eous (non-v , regardless	of size	and wood	У
5			_	Herb - All herbace herbaceous vines plants, except woo	eous (non-v , regardless ody vines, le	of size	and wood	У
5				Herb - All herbace herbaceous vines	eous (non-v , regardless ody vines, le	of size	and wood	У
5				Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5				Herb - All herbace herbaceous vines plants, except woo	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5				Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5				Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5. 6. 7. 8. 9. 10.		= Total Cove	r	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		= Total Cove	r	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5. 6. 7. 8. 9. 10. 11. 50% of total cover:7		= Total Cove	r	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5. 6. 7. 8. 9. 10	15	= Total Cove	3	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		_ = Total Cove of total cover:Yes	T 3	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		= Total Cove of total cover: Yes	3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		= Total Cove of total cover: Yes	3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5. 6. 7. 8. 9. 10. 11. 50% of total cover:		_ = Total Cove of total cover:Yes	3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		= Total Cove of total cover; Yes	3 FACU	Herb – All herbace herbaceous vines, plants, except woo 3 ft (1 m) in height Woody vine – All	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		_ = Total Cove of total cover;Yes	3 FACU	Herb - All herbace herbaceous vines, plants, except wor 3 ft (1 m) in height Woody vine - All	eous (non-v , regardless ody vines, le	of size	, <u>and</u> wood approxima	y ately
5		= Total Cove of total cover; Yes	3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height Woody vine - All Hydrophytic Vegetation	eous (non-v regardiess ody vines, la woody vine	of size	, <u>and</u> wood approximated appro	y ately
5		= Total Cove of total cover: Yes = Total Cove	T 3 FACU	Herb - All herbace herbaceous vines, plants, except wor 3 ft (1 m) in height Woody vine - All	eous (non-v regardiess ody vines, la woody vine	of size	, <u>and</u> wood approxima	y ately
5		= Total Cove of total cover: Yes = Total Cove	T 3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height Woody vine - All Hydrophytic Vegetation	eous (non-v regardiess ody vines, la woody vine	of size	, <u>and</u> wood approximated appro	y ately
5		= Total Cove of total cover: Yes = Total Cove	T 3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height Woody vine - All Hydrophytic Vegetation	eous (non-v regardiess ody vines, la woody vine	of size	, <u>and</u> wood approximated appro	y ately
5		= Total Cove of total cover: Yes = Total Cove	T 3 FACU	Herb - All herback herbaceous vines, plants, except wor 3 ft (1 m) in height Woody vine - All Hydrophytic Vegetation	eous (non-v regardiess ody vines, la woody vine	of size	, <u>and</u> wood approximated appro	y ately

SOIL Sampling Point: W8-UP

0-18	Matrix		Redo	x Features					
0-18	Color (moist)		olor (moist)	%	Type'	_Loc ²	Texture	Remarks	
	10yr 3/3	100%					Sandy loam		
			-						
	3								
Type: C=Cor	ncentration, D=Depl	etion RM=Redu	ced Matrix M:	S=Masked	Sand Gra	ins	å ocation: PL:	=Pore Lining, M=Matrix	
The second second second	dicators: (Applica							Problematic Hydric S	
Histosol (Polyvalue Be			RR S. T. U) 1 cm Muck	(A9) (LRR O)	
	pedon (A2)	\$ 	Thin Dark Su					(A10) (LRR S)	
Black Hist	tic (A3)		Loamy Muck	y Mineral (F1) (LRR	0)	Reduced \	/ertic (F18) (outside M	LRA 150A,
Hydrogen	Sulfide (A4)	- S	Loamy Gleye	ed Matrix (I	F2)		Piedmont	Floodplain Soils (F19) (LRR P, S, 1
	Layers (A5)		Depleted Ma					s Bright Loamy Soils (F	20)
- 1 M 1 M 2 M 1 M 1 M 1 M 1 M 1 M 1 M 1 M	Bodies (A6) (LRR P,		Redox Dark		7.59001		(MLRA1	25 HATEL - NO. 10 HATELEY	
	ky Mineral (A7) (LR		Depleted Da					t Material (TF2)	£0.
	sence (A8) (LRR U)	_	Redox Depre		3)			ow Dark Surface (TF12)
	k (A9) (LRR P, T)	- (411)	Mart (F10) (L		MIDA 14	41	Other (Exp	olain in Remarks)	
	Below Dark Surface k Surface (A12)	(A(1)	Depleted Oc Iron-Mangan	CONTRACTOR OF THE PROPERTY OF			T) ³ Indicator	s of hydrophytic vegeta	tion and
The state of the s	irie Redox (A16) (M	ILRA 150A)	Umbric Surfa					f hydrology must be pre	
	ucky Mineral (S1) (L		Delta Ochric					disturbed or problemati	Mark Contract
	eyed Matrix (S4)	reresentente: 0==	Reduced Ver		- De la Carte de l	OA, 150B)			
Sandy Re	dox (S5)		Piedmont Flo	odplain S	oils (F19)	(MLRA 14	9A)		
Stripped I	Matrix (S6)		Anomalous E	Bright Loan	ny Soils (F	20) (MLR	A 149A, 153C, 15	3D)	
	ace (S7) (LRR P, S	11-11-1-1-1-1-1							
testrictive La	ayer (if observed):								
Type:	Marin (Na) Vo						. 1 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Depth (inch	nes):						Hydric Soil Pre	sent? Yes	Nox
Remarks:									

Date: 7/14/21

Feature Name: W 8 UP





Photograph Direction North

Comments:



Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex TFM		City/C	County. Middlesex/Mid	dlesex	Sampling Date: 7/14/20		
Applicant/Owner: HRSD		38 90			Sampling Point: W9		
Investigator(s): Emily Foster, Kately	n Hoisington	Section	on, Township, Range:	Security State	546660000000000000000000000000000000000		
Landform (hillslope, terrace, etc.): De							
Subregion (LRR or MLRA): MLRA 15		7000000		10.10.000 10.000 10.000	Datum: WGS84		
Soil Map Unit Name Slagle silt loam, (NWI classific	T		
Are climatic / hydrologic conditions or	n the site typical for	this time of year? Y	/esx No	(If no, explain in F	Remarks.)		
Are Vegetationx, Soilx,	or Hydrology X	significantly distur	rbed? Are *Norma	al Circumstances"	present? Yes x No		
Are Vegetation, Soil,				explain any answe			
SUMMARY OF FINDINGS -							
Hydrophytic Vegetation Present?	Yes X	No					
Hydric Soil Present?		No	Is the Sampled Area		,		
Wetland Hydrology Present?		No	within a Wetland?	Yes/	No		
Disturbed roadside PEM in mowe	ed powerline ease	ment.			Cowardin: <u>PEM</u>		
HYDROLOGY							
Wetland Hydrology Indicators:	et constitution on	2010 T 2020		Secondary Indica	ators (minimum of two required		
Primary Indicators (minimum of one	is required; check	all that apply)		Surface Soil	Cracks (B6)		
X Surface Water (A1)	Aqua	atic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)			
High Water Table (A2)		Deposits (B15) (LR	R U)	Drainage Pa	tterns (B10)		
X Saturation (A3)	Hydr	rogen Sulfide Odor (C1)	Moss Trim L	ines (B16)		
Water Marks (B1)	Oxid	lized Rhizospheres a	along Living Roots (C3)	Dry-Season	Water Table (C2)		
Sediment Deposits (B2)	Pres	ence of Reduced Iro	on (C4)	Crayfish Bur	rows (C8)		
Drift Deposits (B3)	Reco	ent Iron Reduction in	Tilled Soils (C6)	Saturation V	isible on Aerial Imagery (C9)		
Algal Mat or Crust (B4)	Thin	Muck Surface (C7)		Geomorphic	Position (D2)		
Iron Deposits (B5)	Othe	er (Explain in Remark	ks)	Shallow Aqu	itard (D3)		
Inundation Visible on Aerial Ima	agery (B7)			FAC-Neutra	Test (D5)		
Water-Stained Leaves (B9)				Sphagnum r	moss (D8) (LRR T, U)		
Field Observations:							
Surface Water Present? Yes	No	Depth (inches): 1					
Water Table Present? Yes	No _x	Depth (inches):					
Saturation Present? Yes (includes capillary fringe)	_x_ No	Depth (inches): 0	100113000000000000000000000000000000000		nt? Yesx No		
Describe Recorded Data (stream ga	auge, monitoring we	ell, aerial photos, pre	evious inspections), if av	ailable:			
Remarks:							

VE	GETATION (Five Strata) -	Use scientifi	scientific names of plants.					
ter ti terre	chande trade on the engagement for the trade	50		Dominant				

Tree Stratum (Plot size: 30 ft)

Sapling Stratum (Plot size: 30 ft)

Shrub Stratum (Plot size: 30 ft)

Herb Stratum (Plot size: 30 ft)

1. Murdanna keisak, Wart-Removing Herb 45 Yes

2 Phalaris arundinacea, Reed Canary Grass 15 Yes OBL 3. Juncus effusus, Lamp rush 15 Yes OBL

)		Dominant Species?		Dominance Test worksheet: Number of Dominant Species		3	1440
	_		_	That Are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:	_	3	
				125 OK 1844 AV 10850 AV	-	3	(B)
	_	_	_	Percent of Dominant Species That Are OBL, FACW, or FAC:		100.0%	(A/B)
	=	= Total Cov	er	Prevalence Index worksheet:		Black / Born	
50% of total cover:	20% of	total cover:		Total % Cover of:X OBL species75x		VOX -0.554 (-0.55	
t)				FACW species0 x	1000		
				FAC species 0 x	200 To 100 To 10		
				FACU species0 x			
				UPL species0x			_
				Column Totals:75(/			(D)
			1	2 - SVS	9 6		_ (B)
		= Total Cov		Prevalence Index = B/A =			_
50% of total cover:0				Hydrophytic Vegetation Indica			
50% of total cover;0	20% of	total cover:		1 - Rapid Test for Hydrophy 2 - Dominance Test is >509		getation	
				X 3 - Prevalence Index is ≤3.0			
				Problematic Hydrophytic Ve		on [†] (Evola	in)
				Problematic Hydrophytic Vo	Getari	OII (Expia	9117
				Indicators of hydric soil and we			must
				be present, unless disturbed or		100000	
			_	Definitions of Five Vegetation	Strate	a;	
		= Total Cov		Tree - Woody plants, excluding			
50% of total cover:0				approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter at			
Removing Herb	45	Yes	OBL	Sapling - Woody plants, exclud	fing wo	oody vines	Š.
ed Canary Grass	15	Yes	OBL_	approximately 20 ft (6 m) or mo	re in h	eight and l	ess
h	15	Yes	OBL	than 3 in, (7.6 cm) DBH.			
				Shrub - Woody plants, excluding approximately 3 to 20 ft (1 to 6 ii			
				Supplied to the supplied of the supplied to th			
				Herb - All herbaceous (non-wo			
				herbaceous vines, regardless of plants, except woody vines, less			
				3 ft (1 m) in height.			
	=			Woody vine - All woody vines,	regard	dess of he	ight.
		= Total Cov					
50% of total cover: 37.5							
50% of total cover: _37.5 30 ft)							

____ = Total Cover 50% of total cover: ___0 ___ 20% of total cover: ___0 Remarks: (If observed, list morphological adaptations below). Mowed veg. some species unidentifiable

Woody Vine Stratum (Plot size: 30 ft)

Yes X No

Hydrophytic

Vegetation

Present?

SOIL Sampling Point: W9

Color (moist)	100%	Color (moist)	0.6	Tomas	1	Tours	Manager 1
			%	Type'	_Loc ²	Texture	Remarks
1-18 10yr 5/2		/0				Muck	< 70% soil particles masked
	80% 1	Jyr 5/8			PL	Sandy clay	
Type: C=Concentration, D=E ydric Soil Indicators: (App Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Organic Bodies (A6) (LRI 5 cm Mucky Mineral (A7) Muck Presence (A8) (LRR P, Depleted Below Dark Sur Thick Dark Surface (A12) Coast Prairie Redox (A16 Sandy Mucky Mineral (S1 Sandy Gleyed Matrix (S4 Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR I estrictive Layer (if observe Type: Depth (inches):	Cepletion, RM=R Dilicable to all Li R P, T, U) (LRR P, T, U) T) face (A11) (MLRA 150A) () (LRR O, S)	And the second section is a second section of the second section is	wise note ow Surface (S9) r Mineral (d Matrix (F rix (F3) Surface (F6 x Surface ssions (F8 RR U) ric (F11) (rise Masse pe (F13) (I F17) (MLI ric (F18) (I ric (d.) de (S8) (L (LRR S, F1) (LRR F2) (F7) MLRA 15 ss (F12) (L LRR P, T, RA 151) MLRA 15	RR S, T, U) T, U) O) A 150B) (MLRA 145	Indicators 1 cm M 2 cm M Reduc Piedm Anoms (MLI Red P Very S Other T) 3Indic wet unle	PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ : fluck (A9) (LRR O) fluck (A10) (LRR S) ed Vertic (F18) (outside MLRA 150A, 16) ont Floodplain Soils (F19) (LRR P, S, 16) alous Bright Loamy Soils (F20) RA 153B) arent Material (TF2) shallow Dark Surface (TF12) (Explain in Remarks) eators of hydrophytic vegetation and land hydrology must be present, ess disturbed or problematic. 153D) Present? Yes X No

Date: _____

Feature Name: W9





Photograph Direction North

Comments:



Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex T	FM	City/C	ounty. Middlesex/Mid	dlesex	Sampling Date: _	7/14/2021
Applicant/Owner: HRSD		78 30			Sampling Point: V	N9-UP
Investigator(s): Emily Foster, Ka	telyn Hoisington	Section	on, Township, Range:			
Landform (hillslope, terrace, etc.)		10.000,000,000	relief (concave, convex			(%): 0-5
Subregion (LRR or MLRA): MLRA		E-9/1/1/1			Datu	
		2000	Long:		1 10	JM VVG364
Soil Map Unit Name: Slagle silt loa			PO?- SAME		cation: N/A	
Are climatic / hydrologic condition	s on the site typical	for this time of year? Y	'es _ x _ No	(If no, explain in I	Remarks.)	
Are Vegetation, Soil	, or Hydrology	significantly distur	bed? Are *Norma	al Circumstances"	present? Yesx	No
Are Vegetation, Soil	, or Hydrology	naturally problems	atic? (If needed,	explain any answ	ers in Remarks.)	
SUMMARY OF FINDINGS	- Attach site	map showing san	pling point locati	ons, transect	s, important fe	atures, etc.
Hydrophytic Vegetation Present	? Yes_x	No	Is the Sampled Area			
Hydric Soil Present?	Yes	Nox	within a Wetland?	Vac	No x	
Wetland Hydrology Present?	Yes	Nox	Within a Wotand	100		i
					Cowardin: <u>Upla</u>	<u>IIu</u>
HYDROLOGY						
Wetland Hydrology Indicators	i .	er esec		Secondary Indic	ators (minimum of the	wo required)
Primary Indicators (minimum of	one is required; che	eck all that apply)		Surface Soi	Cracks (B6)	
Surface Water (A1)		quatic Fauna (B13)			egetated Concave S	urface (B8)
High Water Table (A2)	_ N	lari Deposits (B15) (LRI	R U)	Drainage Pa	atterns (B10)	
Saturation (A3)		lydrogen Sulfide Odor (I	A STATE OF THE PARTY OF THE PAR	Moss Trim I		
Water Marks (B1)		xidized Rhizospheres a			Water Table (C2)	
Sediment Deposits (B2)	0.00	resence of Reduced Iro		Crayfish Bu		(00)
Drift Deposits (B3)		ecent Iron Reduction in	Tilled Soils (C6)		/isible on Aerial Ima	gery (C9)
Algal Mat or Crust (B4)		hin Muck Surface (C7)	(e)		Position (D2)	
Iron Deposits (B5) Inundation Visible on Aerial	CONTRACTOR OF THE PARTY OF THE	ther (Explain in Remark	(8)	Shallow Aqu FAC-Neutra		
Water-Stained Leaves (B9)					moss (D8) (LRR T,	U)
Field Observations:	<u> </u>			opinginani	moss (Bo) (Entre 1)	-1
	Yes No X	Depth (inches):				
		Depth (inches):				
		Depth (inches):	Wetland	Hydrology Prese	nt? Yes	No _x
Describe Recorded Data (stream	n gauge, monitoring	well, aerial photos, pre	vious inspections), if av	ailable:		
Remarks:						

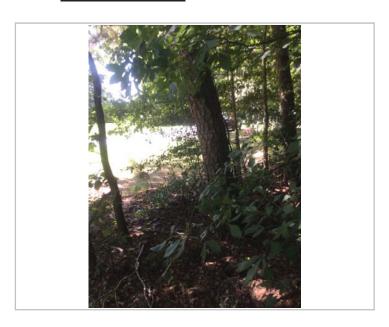
EGETATION (Five Strata) – Use scientific nan	nee or bre			AND THE PROPERTY OF THE PROPER	<u>UP</u>
- Andrews and Selection of the Control of the Contr		Dominant		Dominance Test worksheet:	
		Species?		Number of Dominant Species	7000
Pinus taeda, Loblolly Pine				That Are OBL, FACW, or FAC: 4	(A)
Acer rubrum, Red Maple				Total Number of Dominant	
Quercus rubra, Northern Red Oak	15	<u>Yes</u>	FACU	Species Across All Strata: 6	(B)
				Percent of Dominant Species	
				That Are OBL, FACW, or FAC: 66.7%	(A/B
3					111111
	70	= Total Cov	er	Prevalence Index worksheet:	
50% of total cover: 35	20% of	total cover	14	Total % Cover of;Multiply by:	
Sapling Stratum (Plot size: 30 ft)				OBL species 0 x 1 = 0	_
Juniperus virginiana, Eastern Red-Cedar	14	Yes	FACU	FACW species0 x 2 =0	_
				FAC species x 3 =231	
				FACU species 29 x 4 = 116	
				UPL species 0 x 5 = 0	-01
				Column Totals: 106 (A) 347	
i				Oddini Totals	_ (0)
				Prevalence Index = B/A = 3.27	
	14	= Total Cov	er	Hydrophytic Vegetation Indicators:	
50% of total cover:7	20% of	total cover	2.8	1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: 30 ft)				x 2 - Dominance Test is >50%	
5				3 - Prevalence Index is ≤3.01	
					7.4
				Problematic Hydrophytic Vegetation [†] (Explication)	ain)
<u> </u>			_		
	70			Indicators of hydric soil and wetland hydrology	must
5			_	be present, unless disturbed or problematic.	
S				Definitions of Five Vegetation Strata:	
50% of total cover: 0 Herb Stratum (Plot size: 30 ft)		= Total Cov total cover:		Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and (7.6 cm) or larger in diameter at breast height (0.6 cm).	
				Sapling - Woody plants, excluding woody vine	S.
2				approximately 20 ft (6 m) or more in height and	less
3				than 3 in. (7.6 cm) DBH.	
k				Shrub - Woody plants, excluding woody vines,	
				approximately 3 to 20 ft (1 to 6 m) in height.	
				Herb - All herbaceous (non-woody) plants, incli	udina
<u> </u>				herbaceous vines, regardless of size, and wood	
'	$\overline{}$			plants, except woody vines, less than approxim	
3	$\overline{}$			3 ft (1 m) in height.	
0				Woody vine - All woody vines, regardless of he	eight.
0				The say this is a say this is a say the say th	ang.in.
1					
	0	= Total Cov	er		
50% of total cover; 0	20% of	total cover	0		
Noody Vine Stratum (Plot size: 30 ft)	7.7				
Campsis radicans, Trumpet-Creeper	12	Yes	FAC		
Rubus pensilvanicus, Pennsylvania Blackberry		-			
			-1710		
	_				
)				Hydrophytic	
	-	= Total Cov		Vegetation Present? Yes X No	
50% of total cover:11_	4444			FIRSHII TAS NO	

SOIL Sampling Point: W9-UP

Depth	Matrix			ox Feature				
inches)	Color (maist)		Color (moist)	%	Type'	Loc		Remarks
0-8	10yr 5/4	100%					Sandy loam	
				-				
					_			
	<u> </u>							
Type: C=Co	oncentration, D=Dep	oletion RM=R	leduced Matrix M	S=Masked	Sand Gr	ains.	Location: PL=	Pore Lining, M=Matrix.
-	ndicators: (Applic					7.00		Problematic Hydric Soils ³ :
Histosol			Polyvalue B			RR S, T, U) 1 cm Muck	(A9) (LRR O)
	pipedon (A2)		Thin Dark S					(A10) (LRR S)
Black Hi	stic (A3)		Loamy Muci	ky Mineral	(F1) (LRR	(0)	Reduced V	ertic (F18) (outside MLRA 150A,
	n Sulfide (A4)		Loamy Gley	ed Matrix (F2)		Piedmont F	Toodplain Soils (F19) (LRR P, S, 1
	Layers (A5)		Depleted Ma	Carried Control of the sale of the				Bright Loamy Soils (F20)
_	Bodies (A6) (LRR F	Contract to the second	Redox Dark	Maria Carant	102.500.H		(MLRA 1	
	icky Mineral (A7) (L	Control of the Contro	Depleted Da					Material (TF2)
97000000000000	esence (A8) (LRR L	J)	Redox Depr Mart (F10) (8)			ow Dark Surface (TF12)
	ick (A9) (LRR P, T) d Below Dark Surfac	- (Δ11)	Depleted Oc		MIDA 1	541	_ Other (Expi	lain in Remarks)
	rk Surface (A12)	(A) 1)	Iron-Mangar				T) ³ Indicators	s of hydrophytic vegetation and
5 m/d 1/4 m/m CH	rairie Redox (A16) (I	MLRA 150A)	Umbric Surf					hydrology must be present.
	lucky Mineral (S1) (Delta Ochric					disturbed or problematic.
_ Sandy G	lleyed Matrix (S4)		Reduced Ve	ertic (F18) (MLRA 15	0A, 150B)		
	edox (S5)		Piedmont FI					
	Matrix (S6)		Anomalous	Bright Loar	ny Soils (F20) (MLR	A 149A, 153C, 153	(D)
	rface (S7) (LRR P,							
	Layer (if observed)	:						
Type:	Obcode:		_				and the largest baseling	DOMESTIC SOLUTION
Depth (inc	ches):						Hydric Soil Pres	sent? Yes Nox
Remarks:								

Date: 7/14/21

Feature Name: W 9 UP





Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex	TFM	City/Co	ounty: Middlesex/Mid	dlesex	Sampling Date:	7/15/2021	
Applicant/Owner: HRSD		State: VA Sampling Point: W10-UP					
Investigator(s): Emily Foster, k	Katelyn Hoisington	Sectio	n, Township, Range: _				
Landform (hillslope, terrace, etc						(%): 5-15	
Subregion (LRR or MLRA): ML					Datu		
Soil Map Unit Name: Slagle si			Long			m. <u>woso-</u>	
Are climatic / hydrologic conditi	ions on the site typical for						
Are Vegetation, Soil		-				No	
Are Vegetation, Soil				explain any answe			
SUMMARY OF FINDING					,	itures, etc.	
Hydrophytic Vegetation Prese	ont? Vec	Nox					
Hydric Soil Present?		No x	Is the Sampled Area				
Wetland Hydrology Present?	Yes		within a Wetland?	Yes	Nox		
Remarks:					Observed Classifi	cations:	
Upslope from W10					Cowardin: uplar		
HYDROLOGY							
Wetland Hydrology Indicato	ors:			Secondary Indica	ators (minimum of tw	vo required)	
Primary Indicators (minimum	of one is required; check	all that apply)		Surface Soil	Cracks (B6)		
Surface Water (A1)	Aqu	atic Fauna (B13)		Sparsely Ve	getated Concave Su	urface (B8)	
High Water Table (A2)	Mari	Deposits (B15) (LRR	t U)	Drainage Pa	tterns (B10)		
Saturation (A3)	Hyd	rogen Sulfide Odor (C	(1)	Moss Trim L	ines (B16)		
Water Marks (B1)	Oxid	dized Rhizospheres al	long Living Roots (C3)	Dry-Season	Water Table (C2)		
Sediment Deposits (B2)	Pres	sence of Reduced Iron	n (C4)	Crayfish Bur	rows (C8)		
Drift Deposits (B3)	Rec	ent Iron Reduction in	Tilled Soils (C6)	Saturation V	isible on Aerial Imag	gery (C9)	
Algal Mat or Crust (B4)	Thin	Muck Surface (C7)		Geomorphic	Position (D2)		
Iron Deposits (B5)	Othe	er (Explain in Remarks	s)	Shallow Aqu	itard (D3)		
Inundation Visible on Aer	ial Imagery (B7)			FAC-Neutral	Test (D5)		
Water-Stained Leaves (B	(9)			Sphagnum n	moss (D8) (LRR T, l	J)	
Field Observations:							
Surface Water Present?	Yes No _x	Depth (inches):					
Water Table Present?	Yes Nox	Depth (inches):					
Saturation Present?	Yes No _x		Wetland	Hydrology Preser	nt? Yes	Nox	
(includes capillary fringe) Describe Recorded Data (stre	eam gauge monitoring w	ell aerial photos prev	vious inspections) if av	ailable:			
Describe Necorada Data (Sire	dill gauge, monitoring m	ell, actial priotos, pro-	rioda iriapocuoria,, ii uri	dilabie.			
Remarks:							
Remarks:							

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft)	% Cover	Species?	Status	Number of Dominant Species
1. Acer rubrum, Red Maple	<u>65</u>	<u>Yes</u>	<u>FAC</u>	That Are OBL, FACW, or FAC:2 (A)
Magnolia virginiana, Sweet-Bay	5	<u>No</u>	<u>FACW</u>	Total Number of Dominant
3				Species Across All Strata:5 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 40.0% (A/B)
6				
	70	= Total Co	/er	Prevalence Index worksheet:
50% of total cover: 35	20% of	total cover	:14	Total % Cover of: Multiply by:
Sapling Stratum (Plot size: 30 ft)				OBL species 0 x 1 = 0
1. Juniperus virginiana, Eastern Red-Cedar	10	Yes	<u>FACU</u>	FACW species 5 x 2 = 10
2				FAC species75 x 3 =225
3				FACU species 20 x 4 = 80
4.				UPL species0 x 5 =0
5.				Column Totals:100 (A)315 (B)
6.				Prevalence Index = B/A =3.15
		= Total Co	/er	Hydrophytic Vegetation Indicators:
50% of total cover:5	20% of	total cover	:2	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 30 ft)				2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0¹
2.				I —
3.				Problematic Hydrophytic Vegetation ¹ (Explain)
4				1
				'Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5				Definitions of Five Vegetation Strata:
6		= Total Co		Definitions of Five Vegetation Strata.
EQUI of total across				Tree – Woody plants, excluding woody vines,
50% of total cover: 0	20% of	total cover	:	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: 30 ft)	_	Voc	FACII	
1. Quercus alba, Northern White Oak				Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
2. Vitis aestivalis, Summer Grape				than 3 in. (7.6 cm) DBH.
3				
4				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
5				approximatory of to 20 it (1 to 5 iii) iii iii iigiit.
6				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
7				plants, except woody vines, less than approximately
8				3 ft (1 m) in height.
9				Woody vine – All woody vines, regardless of height.
10				, , , , , , , , , , , , , , , , , , ,
11				
	10	= Total Co	/er	
50% of total cover:5_	20% of	total cover	:2	
Woody Vine Stratum (Plot size: 30 ft)				
1. Smilax rotundifolia, Horsebrier	10	Yes	FAC	
2				
3				
4.				
5.				Hydrophytic
	10	= Total Co	/er	Vegetation
50% of total cover:5	20% of	total cover	:2	Present? Yes Nox
Remarks: (If observed, list morphological adaptations belo				
, , , , , , , , , , , , , , , , , , , ,	•			

Sampling Point: W10-UP

SOIL Sampling Point: W10-UP

Profile Des	cription: (Describe	to the depth				or confirm	the absence of in	ndicators.)
Depth (inches)	Matrix Color (moist)	 _	Color (moist)	ox Features %	Type ¹	Loc ²	Texture	Remarks
0-10	10yr 4/3	100%	Color (Illoist)		Туре	LOC	Sandy loam	Remarks
		100%						
12-18	10yr 6/6						Loamy sand	
¹Type: C=C	concentration, D=Dep	letion, RM=F	Reduced Matrix, M	S=Masked	Sand Gra	ains.	² Location: PL=	Pore Lining, M=Matrix.
Hydric Soil	Indicators: (Applic	able to all L	RRs, unless othe	rwise note	ed.)			Problematic Hydric Soils ³ :
Histoso	I (A1)		Polyvalue Be) 1 cm Muck	(A9) (LRR O)
_	pipedon (A2)		Thin Dark Si				2 cm Muck	. , ,
ı —	listic (A3) en Sulfide (A4)		Loamy Muck	-		(0)	_	ertic (F18) (outside MLRA 150A,B) Toodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		Depleted Ma		12)		_	Bright Loamy Soils (F20)
	Bodies (A6) (LRR P		Redox Dark		6)		(MLRA 1	
	ucky Mineral (A7) (LI		Depleted Da		. ,		_	Material (TF2)
ı —	resence (A8) (LRR U	1)	Redox Depr	-	8)			w Dark Surface (TF12)
ı —	uck (A9) (LRR P, T) d Below Dark Surfac	e (A11)	Marl (F10) (I Depleted Oc		(MIRA 1	51)	Other (Expi	ain in Remarks)
1 — .	ark Surface (A12)	((())	Iron-Mangar	, ,	•	,	T) ³ Indicators	s of hydrophytic vegetation and
Coast F	rairie Redox (A16) (F	VILRA 150A)	Umbric Surfa	ace (F13) (LRR P, T	, U)	wetland	hydrology must be present,
	Mucky Mineral (S1) (I	LRR O, S)	Delta Ochric	. , .				listurbed or problematic.
1	Gleyed Matrix (S4) Redox (S5)		Reduced Ve					
1 —	d Matrix (S6)						A 149A, 153C, 153	D)
	ırface (S7) (LRR P, \$	S, T, U)	_		•	, ,		•
Restrictive	Layer (if observed):							
Туре:			_					
Depth (in	ches):		_				Hydric Soil Pres	sent? Yes Nox
Remarks:								
1								

Date: ____

Feature Name: W 10 UP





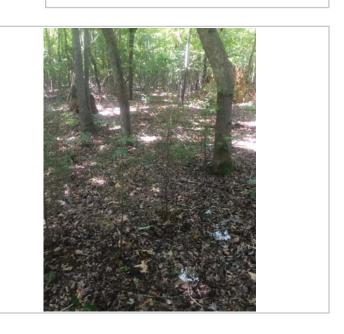
Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex TFM	City/County: Middle	esex/Middlesex	Sampling Date:	7/15/202
Applicant/Owner: HRSD		State: _VA	Sampling Point: _V	W10
Investigator(s): _Emily Foster, Katelyn Hoisington	Section, Township, R	lange:		
Landform (hillslope, terrace, etc.): Depression				(%): 0-5
Subregion (LRR or MLRA): _MLRA 153B of LRR T Lat: _37.55		Long:76.451741		
		NWI classific		
Are climatic / hydrologic conditions on the site typical for this time of ye				
Are Vegetationx_, Soilx_, or Hydrologyx_ significantly				No
Are Vegetation, Soil, or Hydrology naturally pr	oblematic? (If r	needed, explain any answer	rs in Remarks.)	
SUMMARY OF FINDINGS - Attach site map showing	g sampling point	locations, transects	, important fea	tures, etc.
Hydrophytic Vegetation Present? Yesx No				
Hydric Soil Present? Yes x No	is the Sample			
Wetland Hydrology Present? Yesx No	within a Wetla	and? Yes^	No	
Remarks:			Observed Classif	fications:
Small disturbed depression adjacent to General Puller Ave. Fill with ponding water, but poorly defined bed and bank. Water e south. Marginal wetland indicators visible to the south, feature Creeks.	ends directly outside	of survey area to the	Cowardin: <u>PFO</u>	
HYDROLOGY				
Wetland Hydrology Indicators:		Secondary Indica	tors (minimum of tw	vo required)
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil	Cracks (B6)	
_x Surface Water (A1) Aquatic Fauna (B1	13)	Sparsely Veg	etated Concave Su	urface (B8)
High Water Table (A2) Marl Deposits (B1:		Drainage Pat	terns (B10)	
Saturation (A3) Hydrogen Sulfide		Moss Trim Li	nes (B16)	
Water Marks (B1) Oxidized Rhizosph		ts (C3) Dry-Season \	Water Table (C2)	
Sediment Deposits (B2) Presence of Redu	ced Iron (C4)	Crayfish Burr	ows (C8)	
Drift Deposits (B3) Recent Iron Reduc	ction in Tilled Soils (C6	Saturation Vi	sible on Aerial Imag	gery (C9)
Algal Mat or Crust (B4) Thin Muck Surface		Geomorphic		
Iron Deposits (B5) Other (Explain in F	Remarks)	Shallow Aqui		
Inundation Visible on Aerial Imagery (B7)		FAC-Neutral		
Water-Stained Leaves (B9)		Sphagnum m	oss (D8) (LRR T, U	J)
Field Observations:				
Surface Water Present? Yesx No Depth (inches				
Water Table Present? Yes Nox Depth (inches				
Saturation Present? Yes Nox_ Depth (inches includes capillary fringe)		Vetland Hydrology Presen	t? Yes X	No
Describe Recorded Data (stream gauge, monitoring well, aerial phot	os, previous inspection	ns), if available:		
Remarks:				

VEGETATION	(Five Strata)	- Use	scientific	names	of	plants
-------------------	---------------	-------	------------	-------	----	--------

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft)		Species?		Number of Dominant Species
1. Acer rubrum, Red Maple				That Are OBL, FACW, or FAC: 8 (A)
2. <u>Ligustrum sinense, Chinese Privet</u>				Total Number of Dominant
3. <u>Liriodendron tulipifera, Tuliptree</u>				Species Across All Strata: 8 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100.0% (A/B)
6				Prevalence Index worksheet:
		= Total Cov		Total % Cover of: Multiply by:
50% of total cover: 30	20% of	total cover:	12	OBL species x 1 =
Sapling Stratum (Plot size: 30 ft)				FACW species x 2 =
Ligustrum sinense, Chinese Privet	25	<u>Yes</u>		FAC species x 3 =
Liquidambar styraciflua, Sweet-Gum	15	<u>Yes</u>	<u>FAC</u>	FACU species x 4 =
3				
4				UPL species x 5 =
5				Column Totals: (A) (B)
6				Prevalence Index = B/A =
	40	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover: 20	20% of	total cover:	8	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 30 ft)				x 2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.01
2				Problematic Hydrophytic Vegetation¹ (Explain)
3				
4				¹ Indicators of hydric soil and wetland hydrology must
5				be present, unless disturbed or problematic.
6.				Definitions of Five Vegetation Strata:
		= Total Cov	er	Too 186-advantanta avaluation was division a
50% of total cover:0				Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at breast height (DBH).
1. Saururus cernuus, Lizard's-Tail	5	Yes	OBL	Sapling – Woody plants, excluding woody vines,
2. Woodwardia areolata, Netted Chain Fern		Yes	OBL	approximately 20 ft (6 m) or more in height and less
Campsis radicans, Trumpet-Creeper		Yes	FAC	than 3 in. (7.6 cm) DBH.
Toxicodendron radicans, Eastern Poison Ivy		Yes	FAC	Shrub – Woody plants, excluding woody vines,
5				approximately 3 to 20 ft (1 to 6 m) in height.
6				Herb – All herbaceous (non-woody) plants, including
				herbaceous vines, regardless of size, and woody
7				plants, except woody vines, less than approximately
8				3 ft (1 m) in height.
9				Woody vine - All woody vines, regardless of height.
10				
11				
10		= Total Cov		
50% of total cover: 10	20% of	total cover:	4	
Woody Vine Stratum (Plot size: 30 ft)				
1				
2				
3				
4				
5				Hydrophytic
	0	= Total Cov	er	Vegetation
50% of total cover:0	20% of	total cover:	0	Present? Yes X No No No
Remarks: (If observed, list morphological adaptations belo	w).			

Sampling Point: W10

SolL Sampling Point: W10

Profile Des Depth	cription: (Describe t Matrix	to the depth		ment the ir ox Features		or confirn	n the absence of in	ndicators.)
(inches)	Color (moist)	%	Color (moist)	<u> %</u>	Type ¹	Loc ²	Texture	Remarks
0-18	2.5yr 4/2	80% 1	0yr 5/6	20%	C	PL	Sandy clay loam	
1 0-6					0		21	Dans Links at Madein
	concentration, D=Dep Indicators: (Application)					ains.		Pore Lining, M=Matrix. Problematic Hydric Soils ³ :
Histoso		abio to all El	Polyvalue Be			.RR S. T. I		-
_	pipedon (A2)		Thin Dark S				2 cm Muck	
_	istic (A3)		Loamy Muck	-		(O)	_	ertic (F18) (outside MLRA 150A,B)
	en Sulfide (A4)		Loamy Gley		-2)		_	Floodplain Soils (F19) (LRR P, S, T)
ı —	d Layers (A5) : Bodies (A6) (LRR P ,	T 10	_x Depleted Ma _ Redox Dark	, ,	3)		Anomalous (MLRA 1:	Bright Loamy Soils (F20)
_	ucky Mineral (A7) (LR		Depleted Da		,		•	: Material (TF2)
	resence (A8) (LRR U		Redox Depr				_	ow Dark Surface (TF12)
ı —	uck (A9) (LRR P, T)		Marl (F10) (I	-			Other (Expl	ain in Remarks)
	d Below Dark Surface	e (A11)	Depleted Oc				T) 3In diagtors	af hudvanhutia va satatian and
_	ark Surface (A12) Prairie Redox (A16) (N	ILRA 150A)	Iron-Mangar Umbric Surfa					s of hydrophytic vegetation and hydrology must be present,
_	Mucky Mineral (S1) (L		Delta Ochric	. ,		, -,		listurbed or problematic.
Sandy	Gleyed Matrix (S4)		Reduced Ve					
	Redox (S5)		Piedmont Flo					
	d Matrix (S6) urface (S7) (LRR P, S	T 11)	Anomalous I	Bright Loan	ny Soils (F20) (NILF	RA 149A, 153C, 153	(D)
	Layer (if observed):							
	ches):		_				Hydric Soil Pres	sent? Yes ^x No
Remarks:								

Date: ____

Feature Name: W 10





Photograph Direction North

Comments:



Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex	TFM	City/C	ounty: Middlesex/Mid	ldlesex	Sampling Date:	7/15/2021
Applicant/Owner: HRSD					Sampling Point: W	/11
Investigator(s): Emily Foster, k	Katelyn Hoisington	Section	on, Township, Range:			
Landform (hillslope, terrace, etc						(%): 0-25
Subregion (LRR or MLRA): ML					Datu	
Soil Map Unit Name: _Emporia-						III. <u>WG30-</u>
Are climatic / hydrologic conditi						
Are Vegetationx, Soil	x , or Hydrology	x significantly distur	bed? Are *Norma	al Circumstances" p	present? Yes	C No
Are Vegetation, Soil				explain any answe		
SUMMARY OF FINDING				, , , , , , , , , , , , , , , , , , , ,	,	itures, etc.
Hydrophytic Vegetation Prese	ent? Yes x	No	le the Sempled Area			
Hydric Soil Present?		No	Is the Sampled Area within a Wetland?	Vac X	No	
Wetland Hydrology Present?		No	within a wetland?	res^	No	
Remarks:					Observed Classifi	cations:
Emergent and scrubby vege suvey area. Cannot access of	_			oe outside of	Cowardin: <u>PSS</u>	
HYDROLOGY						
Wetland Hydrology Indicato	ors:			Secondary Indica	ntors (minimum of tw	vo required)
Primary Indicators (minimum	of one is required; che	ck all that apply)		Surface Soil	Cracks (B6)	
Surface Water (A1)	A	quatic Fauna (B13)		Sparsely Ve	getated Concave Si	urface (B8)
High Water Table (A2)	M	larl Deposits (B15) (LRF	R U)	_x Drainage Pa	tterns (B10)	
X Saturation (A3)		ydrogen Sulfide Odor (0	-	Moss Trim L	. ,	
Water Marks (B1)		xidized Rhizospheres a			Water Table (C2)	
Sediment Deposits (B2)		resence of Reduced Iro		X Crayfish Bur		
Drift Deposits (B3)		ecent Iron Reduction in	Tilled Soils (C6)		isible on Aerial Imag	gery (C9)
Algal Mat or Crust (B4)	_	hin Muck Surface (C7)			Position (D2)	
Iron Deposits (B5)		ther (Explain in Remark	(8)	Shallow Aqu FAC-Neutral		
Inundation Visible on Aer Water-Stained Leaves (B				_	noss (D8) (LRR T, I	n
Field Observations:	9)			Opriagrium	iloss (Do) (ERR 1, 1	<i>'</i>
Surface Water Present?	Ves No X	Depth (inches):				
Water Table Present?						
Saturation Present?	Ves X No	Depth (inches): _ Depth (inches): 12	Wotland	Hudrology Proces	nt? Yesx	No
(includes capillary fringe)	res No	Depth (inches)	vvetand	nyarology Fresei	itr res	NO
Describe Recorded Data (stre	am gauge, monitoring	well, aerial photos, pre	vious inspections), if av	ailable:		
Remarks:						
Drainage/stream headwate	rs visible downslope	, cant penetrate vege	tation and very steep	slope prohibits ac	ccess	

VEGETATION (!	Five Strata) -	- Use scientific names	of plants
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_	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft)		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC:6 (A)
2				Total Number of Dominant
3				Species Across All Strata: 8 (B)
4.				(2)
				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 75.0% (A/B)
6				Prevalence Index worksheet:
		= Total Cov		Total % Cover of: Multiply by:
50% of total cover:0	20% of	f total cover	:0	OBL species30 x 1 =30
Sapling Stratum (Plot size: 30 ft)				
1. Ligustrum sinense, Chinese Privet	30	Yes	FAC	FACW species0 x 2 =0
2. Rubus pensilvanicus, Pennsylvania Blackberry	20	Yes	FAC	FAC species95 x 3 =285
3. Salix nigra, Black Willow				FACU species15 x 4 =60
4				UPL species0 x 5 =0
				Column Totals:140 (A)375 (B)
5				
6				Prevalence Index = B/A =2.68
	70	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover: 35	20% of	f total cover	14	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 30 ft)				x 2 - Dominance Test is >50%
1				X 3 - Prevalence Index is ≤3.0¹
2.				
				Problematic Hydrophytic Vegetation¹ (Explain)
3				
4				Indicators of hydric soil and wetland hydrology must
5				be present, unless disturbed or problematic.
6				Definitions of Five Vegetation Strata:
	0	= Total Cov	er	Tree – Woody plants, excluding woody vines,
50% of total cover:0	20% of	f total cover	:0	approximately 20 ft (6 m) or more in height and 3 in.
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at breast height (DBH).
1. Verbesina alternifolia, Wingstem	25	Yes	FAC	Santing Moderate and adding was deviced
		Yes		Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
				than 3 in. (7.6 cm) DBH.
3. Sorghum halepense, Johnson Grass		<u>Yes</u>		
4				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
5				approximately 5 to 20 ft (1 to 5 ff) in fleight.
6				Herb - All herbaceous (non-woody) plants, including
7				herbaceous vines, regardless of size, and woody
8.				plants, except woody vines, less than approximately 3 ft (1 m) in height.
9.				o k (1 m) m noight.
				Woody vine - All woody vines, regardless of height.
10				
11				
	<u>45</u>	= Total Cov	er	
50% of total cover: <u>22.5</u>	20% of	f total cover	:9	
Woody Vine Stratum (Plot size: 30 ft)				
Campsis radicans, Trumpet-Creeper	20	Yes	FAC	
2. Vitis aestivalis, Summer Grape		Yes	FACU	
3				
4				
5				Hydrophytic
		= Total Cov		Vegetation
50% of total cover:12.5	20% of	f total cover	5	Present? Yes X No No No
Remarks: (If observed, list morphological adaptations below	w).			

Sampling Point: W11

SOIL Sampling Point: W11

Profile Des Depth	cription: (Describe t Matrix	to the depth		ment the i ox Features		or confirm	the absence of i	indicators.)
(inches)	Color (moist)	%	Color (moist)	% reatures	_Type ¹	_Loc ²	Texture	Remarks
0-18	10yr 4/2	90% 7	'.5yr 5/6	10%			Sandy clay	
	oncentration, D=Depl					ains.		=Pore Lining, M=Matrix.
	Indicators: (Applica	able to all L						Problematic Hydric Soils ³ :
Histoso	(A1) pipedon (A2)		Polyvalue Be				_	k (A9) (LRR O) k (A10) (LRR S)
_	istic (A3)		Loamy Muck					Vertic (F18) (outside MLRA 150A,B)
_	en Sulfide (A4)		Loamy Gley			. •,	_	Floodplain Soils (F19) (LRR P, S, T)
Stratifie	d Layers (A5)		x Depleted Ma				Anomalou	s Bright Loamy Soils (F20)
	Bodies (A6) (LRR P,		Redox Dark		,		(MLRA	
	ucky Mineral (A7) (LR		Depleted Da				_	nt Material (TF2)
ı —	resence (A8) (LRR U uck (A9) (LRR P, T))	Redox Depr	,	3)			ow Dark Surface (TF12) plain in Remarks)
ı —	d Below Dark Surface	e (A11)	Depleted Oc	-	(MLRA 1	51)	0000 (Exp	sair ii Nemarca)
	ark Surface (A12)	, ,	Iron-Mangar		-	-	T) ³ Indicator	rs of hydrophytic vegetation and
_	rairie Redox (A16) (N		_			, U)		d hydrology must be present,
	Mucky Mineral (S1) (L	.RR O, S)	Delta Ochric	. , .		0A 450D)	unless	disturbed or problematic.
I	Gleyed Matrix (S4) Redox (S5)		Reduced Ve				9Δ)	
	Matrix (S6)						A 149A, 153C, 15	3D)
	rface (S7) (LRR P, S	, T, U)	_				, ,	,
Restrictive	Layer (if observed):							
Туре:			_					
Depth (in	ches):		_				Hydric Soil Pre	esent? Yesx No
Remarks:								

Date: ____

Feature Name: W 11





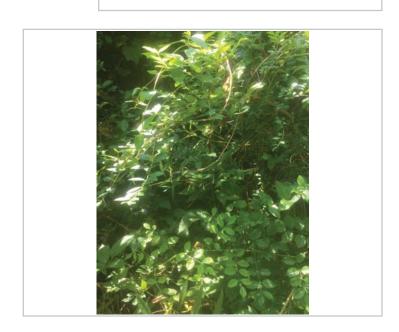
Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex TFM	City/County: Middl	esex/Middlesex	Sampling Date:	7/15/2021		
Applicant/Owner: HRSD		State: VA	Sampling Point: M	V11-UP		
Investigator(s): Emily Foster, Katelyn Hoisington	Section, Township,	Range:				
Landform (hillslope, terrace, etc.): Interstream divide				(%): 5-15		
Subregion (LRR or MLRA): MLRA 153B of LRR T Lat: _37.55						
Soil Map Unit Name: Emporia loam, 2 to 6 percent slopes						
Are climatic / hydrologic conditions on the site typical for this time of your Are Vegetationx, Soilx, or Hydrologyx significantly				No		
	-			NO		
Are Vegetation, Soil, or Hydrology naturally pr	roblematic? (If needed, explain any answe	rs in Remarks.)			
SUMMARY OF FINDINGS - Attach site map showing	g sampling poir	nt locations, transects	, important fea	ıtures, etc.		
Hydrophytic Vegetation Present? Yes No X	Is the Samp	oled Area				
Wetland Hydrology Present? Yes No x	within a We	etland? Yes	Nox			
Remarks:			Observed Classifi	ications:		
Slope adjacent to W11. abuts General Puller Blvd.			Cowardin: uplar			
			cowardin. <u>apiar</u>	iu .		
HYDROLOGY						
		Secondary Indica	store (minimum of t	uo required)		
Wetland Hydrology Indicators:			creeks (R6)	vo requirea)		
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil		urface (DR)		
Surface Water (A1) Aquatic Fauna (B1		Sparsely Vegetated Concave Surface (B8) Drainage Patterns (B10)				
High Water Table (A2) Marl Deposits (B1 Saturation (A3) Hydrogen Sulfide						
		Moss Trim Lines (B16) Roots (C3) Dry-Season Water Table (C2)				
Sediment Deposits (B2) Presence of Redu		Crayfish Burn		(CO)		
	ction in Tilled Soils (0		isible on Aerial Imag	gery (C9)		
Algal Mat or Crust (B4) Thin Muck Surface			Position (D2)			
Iron Deposits (B5) Other (Explain in F Inundation Visible on Aerial Imagery (B7)	Remarks)	Shallow Aqui				
Water-Stained Leaves (B9)		FAC-Neutral	noss (D8) (LRR T, I	un.		
Field Observations:		Spriagrium ii	1088 (D0) (LKK 1, C	J)		
Surface Water Present? Yes No _x Depth (inches	e):					
Water Table Present? Yes No _x _ Depth (inches						
		Watland Hudralagu Brasan	ut? Voc	No. X		
Saturation Present? Yes No _x Depth (inches (includes capillary fringe)	5):	Wetland Hydrology Presen	itr res	Nox		
Describe Recorded Data (stream gauge, monitoring well, aerial phot	tos, previous inspect	ions), if available:				
Remarks:						

		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft)		Species?		Number of Dominant Species
1. Pinus resinosa, Red Pine	15	<u>Yes</u>	<u>FACU</u>	That Are OBL, FACW, or FAC:1 (A)
2				Total Number of Dominant
3				Species Across All Strata:5 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 20.0% (A/B)
6				Prevalence Index worksheet:
		= Total Cov		Total % Cover of: Multiply by:
50% of total cover:7.5	20% of	total cover:	:3	OBL species
Sapling Stratum (Plot size: 30 ft)				FACW species 0 x 2 = 0
1. Juniperus virginiana, Eastern Red-Cedar	5	Yes	<u>FACU</u>	
2				FAC species 20 x 3 = 60
3				FACU species x 4 =
4				UPL species 0 x 5 = 0
5				Column Totals: (A) (B)
6				Prevalence Index = B/A =0.00
		= Total Cov	/er	Hydrophytic Vegetation Indicators:
50% of total cover: 2				1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 30 ft)				2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0¹
2.				I —
3.				Problematic Hydrophytic Vegetation¹ (Explain)
				1
4				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5				
6				Definitions of Five Vegetation Strata:
		= Total Cov		Tree – Woody plants, excluding woody vines,
50% of total cover:0	20% of	total cover:	:0	approximately 20 ft (6 m) or more in height and 3 in.
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at breast height (DBH).
1. Poa pratensis, Kentucky Blue Grass			<u>FACU</u>	Sapling – Woody plants, excluding woody vines,
2. Plantago lanceolata, English Plantain	15	<u>No</u>	<u>FACU</u>	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
3. Liquidambar styraciflua, Sweet-Gum	10	No	FAC	than 3 iii. (7.6 cm) DBH.
4. Trifolium pratense, Red Clover	5	<u>No</u>	_FACU_	Shrub - Woody plants, excluding woody vines,
5				approximately 3 to 20 ft (1 to 6 m) in height.
6				Herb - All herbaceous (non-woody) plants, including
7				herbaceous vines, regardless of size, <u>and</u> woody
8.				plants, except woody vines, less than approximately 3 ft (1 m) in height.
9.				
10				Woody vine – All woody vines, regardless of height.
11				
11	80	= Total Cov		
500/ of total agree 40				
50% of total cover: 40	20% of	total cover:		
Woody Vine Stratum (Plot size: 30 ft)	4.0	V	FAC	
1. Toxicodendron radicans, Eastern Poison Ivy	10	Yes	FAC	
2. Lonicera japonica, Japanese Honeysuckle	10	<u>Yes</u>	<u>FACU</u>	
3				
4				
5				Hydrophytic
	20:	= Total Cov	/er	Vegetation
E00/ - 51 - 1 10	20% of	total cover	. 4	Present? Yes Nox
50% of total cover: 10	20 70 01	10101 00101		I and the second

Sampling Point: W11-UP

Soll Sampling Point: W11-UP

	cription: (Describe	to the depth				or confirm	the absence of i	ndicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Features %	Type ¹	Loc ²	Texture	Remarks
0-18	2.5y 5/4	100%					Sandy loam	
				- —				
1Time: C=C	concentration, D=Dep	lation DM-D	aduand Matrix M	C-Maakad			2l costion: DL	=Pore Lining, M=Matrix.
	Indicators: (Applic					all15.		Problematic Hydric Soils ³ :
Histoso		able to all El	Polyvalue Be			RRSTI		-
_	pipedon (A2)		Thin Dark S				_	(A10) (LRR S)
	istic (A3)		Loamy Muck					Vertic (F18) (outside MLRA 150A,B)
_	en Sulfide (A4)		Loamy Gley	-		,	_	Floodplain Soils (F19) (LRR P, S, T)
Stratifie	d Layers (A5)		Depleted Ma	atrix (F3)			Anomalous	s Bright Loamy Soils (F20)
	Bodies (A6) (LRR P		Redox Dark		,		(MLRA 1	-
	ucky Mineral (A7) (LI		Depleted Da		. ,		_	nt Material (TF2)
_	resence (A8) (LRR U	J)	Redox Depr	,	8)			ow Dark Surface (TF12)
_	uck (A9) (LRR P, T) d Below Dark Surfac	ο (Δ11)	Marl (F10) (I Depleted Oc		(MIRA 1	54)	Other (Exp	plain in Remarks)
ı —	ark Surface (A12)	C (A11)	Iron-Mangar		-		T) ³ Indicator	rs of hydrophytic vegetation and
ı —	rairie Redox (A16) (I	VILRA 150A)	Umbric Surfa				•	d hydrology must be present,
Sandy I	Mucky Mineral (S1) (Delta Ochric	(F17) (ML	.RA 151)		unless	disturbed or problematic.
Sandy	Gleyed Matrix (S4)		Reduced Ve					
	Redox (S5)		Piedmont Fl					
	d Matrix (S6)		Anomalous I	Bright Loar	ny Soils (F20) (MLR	A 149A, 153C, 15	3D)
	ırface (S7) (LRR P,							
_	Layer (if observed)							
			_					
	ches):		_				Hydric Soil Pre	esent? Yes Nox
Remarks:								

Date: ___

Feature Name: W 11 UP





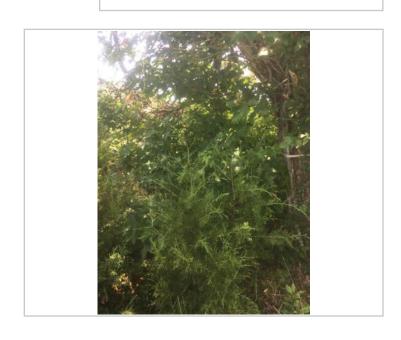
Photograph Direction North

Comments:



Comments:





Photograph Direction East

Comments:

Photograph Direction West

Project/Site: HRSD Middlesex TFM	_ City/County: Midd	llesex/Middlesex	Sampling Date: 7/15/2021
Applicant/Owner: HRSD		State: VA	Sampling Point: W12
Investigator(s): Emily Foster, Katelyn Hoisington	Section, Township	o, Range:	
Landform (hillslope, terrace, etc.): Depression			
Subregion (LRR or MLRA): MLRA 153B of LRR T Lat: 37.5			Datum: WGS84
Soil Map Unit Name: Slagle silt loam, 2 to 6 percent slopes			
Are climatic / hydrologic conditions on the site typical for this time of			
Are Vegetationx, Soilx, or Hydrologyx significant			
Are Vegetation, Soil, or Hydrology naturally p	problematic?	(If needed, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing	ng sampling poi	nt locations, transects	s, important features, etc.
Hydrophytic Vegetation Present? Yesx No			
Hydric Soil Present? Yes x No	is the Sam	•	
Wetland Hydrology Present? Yesx No	within a W	etland? Yes^	No
Remarks:			Observed Classifications:
Likely hydrologically isolated PEM adjacent to soybean field ar	nd General Puller Bl	vd. Appears regularly	Cowardin: PEM
mowed, some ponding.			
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply	/)	Surface Soil	Cracks (B6)
x Surface Water (A1) x Aquatic Fauna (B	313)	Sparsely Ve	getated Concave Surface (B8)
High Water Table (A2) Marl Deposits (B		Drainage Pa	itterns (B10)
Saturation (A3) Hydrogen Sulfide		Moss Trim L	ines (B16)
	pheres along Living R		Water Table (C2)
Sediment Deposits (B2) Presence of Red		Crayfish Bur	, ,
	uction in Tilled Soils (isible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Thin Muck Surface		¥	Position (D2)
Iron Deposits (B5) Other (Explain in		Shallow Aqu	
Inundation Visible on Aerial Imagery (B7)	-	x FAC-Neutral	
Water-Stained Leaves (B9)			moss (D8) (LRR T, U)
Field Observations:			
Surface Water Present? Yesx No Depth (inche	es): 1-2		
Water Table Present? Yes Nox Depth (inche	es):		
Saturation Present? Yes Nox Depth (inche	es):	Wetland Hydrology Preser	nt? Yes _ x _ No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial pho		tiona) if available:	
Describe Recorded Data (stream gauge, monitoring well, adrial pric	otos, previous inspec	tions), if available.	
Remarks:			
Tadpoles observed.			
Taupoles observed.			

VEGETATION	(Five Strata)	- Use	scientific	names	of plants
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		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft) 1.	% Cover	Species?	Status	Number of Dominant Species That Are OBL, FACW, or FAC:3 (A)
2				Total Number of Dominant Species Across All Strata: 3 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)
0		= Total Co	/er	Prevalence Index worksheet:
50% of total cover: 0				Total % Cover of: Multiply by:
Sapling Stratum (Plot size: 30 ft)	20 70 01	total cover		OBL species60 x 1 =60
1				FACW species40 x 2 =80
				FAC species0 x 3 =0
2				FACU species 0 x 4 = 0
3				UPL species0 x 5 =0
4				Column Totals:100 (A)140 (B)
5				
		= Total Co	/er	Prevalence Index = B/A =1.40 Hydrophytic Vegetation Indicators:
50% of total cover:0	20% of	total cover	:0	x 1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 30 ft)				x 2 - Dominance Test is >50%
1				x 3 - Prevalence Index is ≤3.0¹
2.				Problematic Hydrophytic Vegetation¹ (Explain)
3.				Problematic Hydrophytic Vegetation (Explain)
4				Indicators of hydric cail and watland hydrology must
5.				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6				Definitions of Five Vegetation Strata:
		= Total Co	 /er	
50% of total cover:0				Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at breast height (DBH).
1. Eleocharis obtusa, Blunt Spike-Rush				Sapling – Woody plants, excluding woody vines,
	30			approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
3. Echinochloa crus-galli, Large Barnyard Grass				than 3 in. (7.0 cm) DBH.
Carex vulpinoidea, Common Fox Sedge Sedge	15	No_	FACW	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				Herb - All herbaceous (non-woody) plants, including
7.				herbaceous vines, regardless of size, and woody
8.				plants, except woody vines, less than approximately 3 ft (1 m) in height.
9				
10.				Woody vine - All woody vines, regardless of height.
11.				
	100	= Total Co	 /er	
50% of total cover:50				
Woody Vine Stratum (Plot size: 30 ft)	2070 01	.o.ui oovei		
1				
2				
3				
4				
5				Hydrophytic
		= Total Cov		Vegetation Present?
50% of total cover: 0	20% of	total cover	:0	103
Remarks: (If observed, list morphological adaptations belo	ow).			
	,			
	,			

Sampling Point: W12

SolL Sampling Point: W12

Profile Des	cription: (Describe t	o the depth	needed to docur	ment the i	ndicator	or confirm	the absence	of indicate	ors.)	
Depth (inches)	Matrix Color (moist)	 _	Color (moist)	x Features %		Loc ²	Texture		Remarks	
(inches) 0-18	10yr 4/2	85% 7		15%	Type' C	PL	Sandy clay		Remarks	
	10y1 4/2		.5 yr 5/0							
	Concentration, D=Depl					ains.			ining, M=Matrix	
	Indicators: (Applica	ible to all L	Polyvalue Be			DD C T 11			matic Hydric \$	Solls :
Histoso	pipedon (A2)		Thin Dark Su				_	luck (A3) (1		
_	listic (A3)		Loamy Muck						18) (outside N	ILRA 150A,B)
ı —	en Sulfide (A4)		Loamy Gleye		F2)		_		ain Soils (F19)	
_	d Layers (A5) Bodies (A6) (LRR P,	T 10	_x Depleted Ma _ Redox Dark		6)		_	ilous Bright RA 153B)	Loamy Soils (F	F20)
ı —	ucky Mineral (A7) (LR		Depleted Da					arent Mater	ial (TF2)	
ı —	resence (A8) (LRR U)		Redox Depre				_		k Surface (TF1	2)
_	uck (A9) (LRR P, T)		Marl (F10) (L	-			Other (Explain in I	Remarks)	
ı —	d Below Dark Surface ark Surface (A12)	e (A11)	Depleted Oc Iron-Mangan	1	•	-	T) ³ India	ators of hy	drophytic veget	ation and
ı —	Prairie Redox (A16) (M	ILRA 150A)			. , ,		*	-	ogy must be pr	
	Mucky Mineral (S1) (L		Delta Ochric	(F17) (ML	RA 151)				ed or problemat	
	Gleyed Matrix (S4)		Reduced Ver							
	Redox (S5) d Matrix (S6)		Piedmont Flo			-		153D)		
	urface (S7) (LRR P, S	T, U)	Anomalous E	origini Loan	ily Golls (i	-20) (WILK)	n 143A, 1330,	1330)		
	Layer (if observed):	, -, -,								
Туре:			_							
Depth (ir	nches):		_				Hydric Soil	Present?	Yesx	No
Remarks:										

Date: 7/15/21







Photograph Direction North

Comments:



Comments:





Photograph Direction East

Comments:

Photograph Direction West

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	City/County: Midd	Middlesex/Middlesex Sampling Date: 7			
Applicant/Owner: HRSD		State: VA			
Investigator(s): Emily Foster, Katelyn Hoisington	Section, Township	o. Range:			
Landform (hillslope, terrace, etc.): Hillslope					
Subregion (LRR or MLRA): MLRA 153B of LRR T			Datum: WGS84	_	
				_	
Soil Map Unit Name: Slagle silt loam, 2 to 6 percent slope			cation:	_	
Are climatic / hydrologic conditions on the site typical for t					
Are Vegetationx, Soilx, or Hydrologyx_	significantly disturbed?	Are "Normal Circumstances"	present? Yesx No	_	
Are Vegetation, Soil, or Hydrology	naturally problematic?	(If needed, explain any answ	ers in Remarks.)		
SUMMARY OF FINDINGS - Attach site may	showing sampling po	int locations, transects	s, important features, et	c.	
		,	,,		
Hydrophytic Vegetation Present? Yes	is the Jan	pled Area			
Hydric Soil Present? Yes		/etland? Yes	Nox		
Wetland Hydrology Present? Yes	Nox			_	
Remarks:			Observed Classifications:		
Mowed uplands			Cowardin: <u>upland</u>	-	
				_	
HYDROLOGY				_	
Wetland Hydrology Indicators:		Secondary Indic	ators (minimum of two required)	1	
Primary Indicators (minimum of one is required; check a	****		Cracks (B6)		
	ic Fauna (B13)		egetated Concave Surface (B8)		
	Deposits (B15) (LRR U)		atterns (B10)		
	gen Sulfide Odor (C1)	Moss Trim I			
	red Rhizospheres along Living F nce of Reduced Iron (C4)		Water Table (C2)		
	nt Iron Reduction in Tilled Soils	Crayfish Bu	/isible on Aerial Imagery (C9)		
	Auck Surface (C7)		Position (D2)		
	(Explain in Remarks)	Shallow Aqu			
Inundation Visible on Aerial Imagery (B7)	(==-	FAC-Neutra			
Water-Stained Leaves (B9)		_	moss (D8) (LRR T, U)		
Field Observations:			, ,,,	\neg	
Surface Water Present? Yes No _x _	Pepth (inches):				
Water Table Present? Yes Nox	epth (inches):				
Saturation Present? Yes No _x D	Pepth (inches):	Wetland Hydrology Prese	nt? Yes Nox		
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well	Laerial photos, previous insper	tions) if available:		\dashv	
Describe Necorded Data (stream gauge, monitoring wei	, acital priotos, previous irispec	diono, il avallable.			
Remarks:				\dashv	
remarks.					
				\neg	

	Absolute Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft)	% Cover Species? Status	Number of Dominant Species
1		That Are OBL, FACW, or FAC:0 (A)
2		Total Number of Dominant
3		Species Across All Strata: 3 (B)
4		
5		Percent of Dominant Species
		That Are OBL, FACW, or FAC: 0.0% (A/B)
6		Prevalence Index worksheet:
	0 = Total Cover	Total % Cover of: Multiply by:
50% of total cover:0	20% of total cover:0	OBL species 0 x 1 = 0
Sapling Stratum (Plot size: 30 ft)		
1		FACW species0 x 2 =0
2		FAC species0 x 3 =0
3.		FACU species100 x 4 =400
		UPL species0 x 5 =0
4		Column Totals:100 (A)400 (B)
5		
6		Prevalence Index = B/A =4.00
	0 = Total Cover	Hydrophytic Vegetation Indicators:
50% of total cover:0	20% of total cover:0	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 30 ft)		2 - Dominance Test is >50%
1		3 - Prevalence Index is ≤3.0¹
2.		I —
		Problematic Hydrophytic Vegetation¹ (Explain)
3		
4		Indicators of hydric soil and wetland hydrology must
5		be present, unless disturbed or problematic.
6		Definitions of Five Vegetation Strata:
	0 = Total Cover	Tree – Woody plants, excluding woody vines,
50% of total cover:0	20% of total cover:0	approximately 20 ft (6 m) or more in height and 3 in.
Herb Stratum (Plot size: 30 ft)		(7.6 cm) or larger in diameter at breast height (DBH).
	35YesFACU	
	35 Yes FACU	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
		than 3 in. (7.6 cm) DBH.
3. Plantago lanceolata, English Plantain		
4		Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
5		approximatery 5 to 20 it (1 to 6 in) in height.
6		Herb - All herbaceous (non-woody) plants, including
7		herbaceous vines, regardless of size, and woody
8.		plants, except woody vines, less than approximately 3 ft (1 m) in height.
9.		o k (1 m) in noight.
		Woody vine - All woody vines, regardless of height.
10		
11	100	
	100 = Total Cover	
50% of total cover:50	20% of total cover:20	
Woody Vine Stratum (Plot size: 30 ft)		
1		
2.		
3		
4		
5		Hydrophytic
	0 = Total Cover	Vegetation
50% of total cover: 0	20% of total cover:0	Present? Yes Nox
Remarks: (If observed, list morphological adaptations belo	DW).	
,		

Sampling Point: W12-UP

SOIL Sampling Point: W12-UP

Profile Des	cription: (Describe t	to the depth	needed to docu	ment the i	ndicator	or confirm	the absence of	f indicator	rs.)	
Depth (inches)	Matrix Color (moist)	——————————————————————————————————————	Color (moist)	ox Feature: %		Loc ²	Texture		Remarks	
		100%	Color (moist)	70	_ type				Remarks	
0-18	10yr 4/4	100%					Loam			
										_
¹ Type: C=C	concentration, D=Depl	etion, RM=Re	educed Matrix, M	S=Masked	Sand Gr	ains.	² Location: P	L=Pore Lir	ning, M=Matrix	<u>.</u>
	Indicators: (Applica								natic Hydric S	
Histoso	I (A1)		Polyvalue Be) 1 cm Mu	ck (A9) (L l	RR O)	
_	pipedon (A2)		Thin Dark S					ck (A10) (I	*	
_	listic (A3)		Loamy Muck	-		(O)	_			ILRA 150A,B)
1 –	en Sulfide (A4) d Layers (A5)		Loamy Gley Depleted Ma		F2)		_		in Soils (F19) Loamy Soils (F	
_	Bodies (A6) (LRR P.	T. U)	Redox Dark		6)		_	153B)	Loanly Colls (I	20)
5 cm M	ucky Mineral (A7) (LR	R P, T, U)	Depleted Da					ent Materia	al (TF2)	
ı —	resence (A8) (LRR U)	Redox Depr		8)				Surface (TF12	2)
ı —	uck (A9) (LRR P, T)	(4.11)	Marl (F10) (I			-40	Other (E	xplain in R	lemarks)	
1 —	d Below Dark Surface ark Surface (A12)	e (A11)	Depleted Oc Iron-Mangar		•		T) ³ Indicat	ors of hydr	rophytic veget	ation and
1 —	Prairie Redox (A16) (N	ILRA 150A)			. , ,		,		gy must be pr	
	Mucky Mineral (S1) (L		Delta Ochric	(F17) (ML	.RA 151)				d or problemat	
1 —	Gleyed Matrix (S4)		Reduced Ve							
	Redox (S5)		Piedmont FI			-		50 D)		
	d Matrix (S6) urface (S7) (LRR P, S	T 11)	Anomalous	Bright Loar	ny Solis (I	F20) (NILKA	A 149A, 153C, 1	530)		
	Layer (if observed):									
Type:			_							
Depth (ir	nches):		_				Hydric Soil P	resent?	Yes	Nox
Remarks:										

Date: ____

Feature Name: W 12 UP





Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	City/County: Middlesex/	/Middlesex	Sampling Date: 7/29/2021
Applicant/Owner: HRSD		State: VA	Sampling Point: W13
Investigator(s): Emily Foster, Kristen Walls	Section, Township, Rang	ge:	
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, cor	nvex, none); Concave	Slope (%): 0-5
Subregion (LRR or MLRA): MLRA 153B of LRR T Lat:			
		8 9	
Are climatic / hydrologic conditions on the site typical for this time			
Are Vegetationx, Soilx, or Hydrologyx signifi			
Are Vegetation, Soil, or Hydrology natura	lly problematic? (If need	ded, explain any answer	rs in Remarks.)
SUMMARY OF FINDINGS – Attach site map sho			
Hydrophytic Vegetation Present? Yes x No	Is the Commission A		
Hydric Soil Present? Yesx No	is the Sampled A		No.
Wetland Hydrology Present? Yesx No	within a Wetland	ir tes	No
Remarks:	***		Observed Classifications:
Roadside depression adjacent to ag. Field.			Cowardin: PEM
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indica	tors (minimum of two required)
Primary Indicators (minimum of one is required; check all that a	pply)	Surface Soil (Cracks (B6)
Surface Water (A1) Aquatic Faun	a (B13)		getated Concave Surface (B8)
High Water Table (A2) Marl Deposits		Drainage Pat	
Saturation (A3) Hydrogen Su		Moss Trim Li	
	zospheres along Living Roots (Water Table (C2)
	Reduced Iron (C4)	Crayfish Burr	
	Reduction in Tilled Soils (C6)	Saturation Vi	sible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Thin Muck So	ırface (C7)	_x Geomorphic	
Iron Deposits (B5) Other (Explai	n in Remarks)	Shallow Aqui	
Inundation Visible on Aerial Imagery (B7)		FAC-Neutral	Test (D5)
Water-Stained Leaves (B9)		Sphagnum m	noss (D8) (LRR T, U)
Field Observations:			
Surface Water Present? Yes Nox Depth (ii	nches):		
Water Table Present? Yes No _x Depth (ii			
Saturation Present? Yes No _x Depth (ii		and Hydrology Presen	t? Yes × No
(includes capillary fringe)			100,000
Describe Recorded Data (stream gauge, monitoring well, aerial	photos, previous inspections),	if available:	
Remarks:			

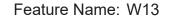
VEGETATION	(Five Strata)	- Use	scientific	names	of	plants

'EGETATION (Five Strata) – Use scientific nar				Sampling P	OIIIL. VVIJ	
T 01 1 (7) 1 1 20 ft		Dominant		Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft) 1)	% Cover		Status	Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
2				Total Number of Dominant		
3				Species Across All Strata:	0	(B)
4				Percent of Dominant Species		
5				That Are OBL, FACW, or FAC:	0.0%	(A/B)
6						
	:	= Total Cov	er	Prevalence Index worksheet:	Aim Is a los se	
50% of total cover:0	20% of	total cover:	0			_
Sapling Stratum (Plot size: 30 ft)				FACW species 0 x 2 =		_
1				FAC species		
2				l .		
3				FACU species 0 x 4 =		
4				UPL species 0 x 5 =		
5				Column Totals:30 (A)	30	_ (B)
6				Prevalence Index = B/A =	1.00	_
	:	= Total Cov	er	Hydrophytic Vegetation Indicators:		
50% of total cover:0	20% of	total cover:	0	1 - Rapid Test for Hydrophytic Ve	getation	
Shrub Stratum (Plot size: 30 ft)				2 - Dominance Test is >50%		
1				X 3 - Prevalence Index is ≤3.01		
2				Problematic Hydrophytic Vegetati	on¹ (Explair	n)
3						
4				¹ Indicators of hydric soil and wetland h	ydrology m	nust
5				be present, unless disturbed or proble	matic.	
6				Definitions of Five Vegetation Strate	a:	
	:	= Total Cov	er	Tree - Woody plants, excluding wood	y vines,	
50% of total cover:0	20% of	total cover:	0	approximately 20 ft (6 m) or more in he	eight and 3	
Herb Stratum (Plot size: 30 ft)		,		(7.6 cm) or larger in diameter at breas	t neight (DE	3H).
1. Murdannia keisak, Wart-Removing-Herb				Sapling - Woody plants, excluding we	oody vines,	
2				approximately 20 ft (6 m) or more in he than 3 in. (7.6 cm) DBH.	eight and le	SS
3						
4				Shrub – Woody plants, excluding woo approximately 3 to 20 ft (1 to 6 m) in h		
5				approximately 3 to 20 it (1 to 6 iii) iii ii	eigiit.	
6				Herb – All herbaceous (non-woody) pl		
7				herbaceous vines, regardless of size, plants, except woody vines, less than		
8				3 ft (1 m) in height.		-
9				Woody vine - All woody vines, regard	dless of heir	aht.
10						g
11						
	30_:	= Total Cov	er			
50% of total cover:15	20% of	total cover:	6			
Woody Vine Stratum (Plot size: 30 ft)						
1						
2						
3						
4						
5				Hydrophytic		
	:	= Total Cov	er	Vegetation		
50% of total cover:0	20% of	total cover	. 0	Present? Yes X No		
50% of total cover.	20 % 01	total cover.	· —	l .		

SolL Sampling Point: W13

(inches)	Matrix			ox Feature				
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	<u>Texture</u>	Remarks
0-3	2.5y 3/2	100%					Muck	< 70% soil particles masked
3-6	2.5y 5/2	70%	7.5yr 5/6	30%	<u>C</u>	PL	Sandy clay	
6-18	2.5y 5/2	50%	10yr 5/6	50%	C	M	Clay	
Tyme: C=(Concentration, D=Dep	lotion DM	-Daduaad Matrix M				² l eastion:	PL=Pore Lining, M=Matrix.
	Indicators: (Applic					uii5.		for Problematic Hydric Soils ³ :
Histoso			Polyvalue B		,	RR S. T. U		Muck (A9) (LRR O)
_	Epipedon (A2)		Thin Dark S					Muck (A10) (LRR S)
Black H	Histic (A3)		Loamy Mucl					ced Vertic (F18) (outside MLRA 150A,
	en Sulfide (A4)		Loamy Gley		F2)			nont Floodplain Soils (F19) (LRR P, S, 7
	ed Layers (A5)		Depleted Ma				_	alous Bright Loamy Soils (F20)
_ ~	c Bodies (A6) (LRR F lucky Mineral (A7) (L l		Redox Dark Depleted Da	,	-		,	RA 153B) arent Material (TF2)
_	Presence (A8) (LRR L		Redox Depr		. ,		_	Shallow Dark Surface (TF12)
	luck (A9) (LRR P, T)	,	Marl (F10) (,	0,			(Explain in Remarks)
	ed Below Dark Surfac	e (A11)	Depleted Oc	hric (F11)	(MLRA 15	i1)	_	
_	Dark Surface (A12)		Iron-Mangar		. , .			cators of hydrophytic vegetation and
	Prairie Redox (A16) (I					U)		tland hydrology must be present,
_	Mucky Mineral (S1) (LRR O, S)	Delta Ochrid		-	0.0.450.00\	uni	ess disturbed or problematic.
	Gleyed Matrix (S4) Redox (S5)		Reduced Ve Piedmont FI	, ,			9Δ)	
	d Matrix (S6)						эд, A 149A, 153C	c. 153D)
_	urface (S7) (LRR P,	S, T, U)	_		, (.		,	,,
	Layer (if observed)							
Type:								
							1	
Depth (i	nches):						Hydric Soil	Present? Yes No
							Hydric Soil	Present? Yes No
Depth (i							Hydric Soil	Present? Yes No
							Hydric Soil	Present? Yes X No No No
							Hydric Soil	Present? Yes X No No No
							Hydric Soil	Present? Yes <u>x</u> No
							Hydric Soil	Present? Yes x No No
							Hydric Soil	Present? Yes <u>x</u> No
							Hydric Soil	Present? Yes X No No No
							Hydric Soil	Present? Yes x No No
							Hydric Soil	Present? Yes x No No
							Hydric Soil	Present? Yes x No No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yes x No No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yes x No No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yesx No
							Hydric Soil	Present? Yes No
							Hydric Soil	Present? Yes No

Date: ____







Photograph Direction West

Comments:

Photograph Direction East

Comments:





Photograph Direction South

Comments:

Photograph Direction North

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	_ City/County: Middles	sex/Middlesex	Sampling Date:	7/29/2021
Applicant/Owner: HRSD		State: VA	Sampling Point: W	/13-up
Investigator(s): Emily Foster, Kristen Walls	_ Section, Township, R	ange:		
1014 (Nov 1015		convex, none): None		(%): 0-5
Subregion (LRR or MLRA): MLRA 153B of LRR T Lat: _37.5				
Soil Map Unit Name: Slagle silt loam, 2 to 6 percent slopes				
Are climatic / hydrologic conditions on the site typical for this time of Are Vegetationx, Soilx, or Hydrologyx significant		"Normal Circumstances" p		No
Are Vegetation, Soil, or Hydrology naturally p		needed, explain any answe		
SUMMARY OF FINDINGS – Attach site map showing				tures, etc.
Hydrophytic Vegetation Present? Yes _ X No		52/2		
Hydric Soil Present? Yes No _x	is the bample			
Wetland Hydrology Present? Yes Nox	within a Wetla	and? Yes	Nox	
Remarks:			Observed Classific	cations:
soybean field adacent to road			Cowardin: uplan	ıd
HYDROLOGY				
Wetland Hydrology Indicators:		Secondary Indica	ators (minimum of tw	vo required)
Primary Indicators (minimum of one is required; check all that apply	v)	Surface Soil	-AV-	
Surface Water (A1) Aquatic Fauna (B	313)		getated Concave Su	urface (B8)
High Water Table (A2) Marl Deposits (B		Drainage Pa		
Saturation (A3) Hydrogen Sulfide		Moss Trim Li		
	pheres along Living Roo		Water Table (C2)	
Sediment Deposits (B2) Presence of Red		Crayfish Burn	rows (C8)	
	uction in Tilled Soils (C6	Saturation Vi	isible on Aerial Imag	gery (C9)
Algal Mat or Crust (B4) Thin Muck Surface	ce (C7)	Geomorphic	Position (D2)	
Iron Deposits (B5) Other (Explain in	Remarks)	Shallow Aqui	itard (D3)	
Inundation Visible on Aerial Imagery (B7)		FAC-Neutral	Test (D5)	
Water-Stained Leaves (B9)		Sphagnum n	noss (D8) (LRR T, L	١)
Field Observations:				
Surface Water Present? Yes Nox Depth (inche	.00			
Water Table Present? Yes No _x Depth (inches	es):			
Saturation Present? Yes No _x Depth (inche (includes capillary fringe)	es): W	etland Hydrology Presen	it? Yes	Nox
Describe Recorded Data (stream gauge, monitoring well, aerial pho	otos, previous inspection	ns), if available:		
		F=1651111751515000000000000000000000000000		
Remarks:				

VEGETATION	(Five Strata	- Use	scientific	names	of	plants
------------	--------------	-------	------------	-------	----	--------

/EGETATION (Five Strata) – Use scientific nar	nes of pla	ants.		Sampling Point: W13	-up
		Dominant		Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: <u>30 ft</u>) 1. <u>Liquidambar styraciflua, Sweet-Gum</u>	% Cover			Number of Dominant Species That Are OBL, FACW, or FAC: 2	(4)
Pinus taeda, Loblolly Pine			FAC	That Ale OBL, FACW, of FAC.	. (^)
3				Total Number of Dominant Species Across All Strata: 3	(B)
4				Species Across All Strata:3	(D)
5				Percent of Dominant Species	(A (D)
6				That Are OBL, FACW, or FAC: 67.0%	(A/B)
0		Total Cov	/er	Prevalence Index worksheet:	
50% of total cover:22.5				Total % Cover of: Multiply by:	_
Sapling Stratum (Plot size: 30 ft)	20 % OI	total cover		OBL species0 x 1 =0	_
1. Juniperus virginiana, Eastern Red-Cedar	10	J	FΔCII	FACW species0 x 2 =0	_
				FAC species45 x 3 =135	_
2				FACU species10 x 4 =40	_
3				UPL species0 x 5 =0	
4				Column Totals:55(A)175	
5					
6				Prevalence Index = B/A =3.18	_
		= Total Cov		Hydrophytic Vegetation Indicators:	
50% of total cover:5	20% of	total cover	:2	1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: 30 ft)				2 - Dominance Test is >50%	
1				3 - Prevalence Index is ≤3.01	
2				Problematic Hydrophytic Vegetation¹ (Expla	ain)
3					
4				¹ Indicators of hydric soil and wetland hydrology	must
5				be present, unless disturbed or problematic.	
6				Definitions of Five Vegetation Strata:	
50% of total cover:0		= Total Cover		Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and	3 in
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at breast height (E	
1. soybean				Sapling – Woody plants, excluding woody vines	
2				approximately 20 ft (6 m) or more in height and	
3.				than 3 in. (7.6 cm) DBH.	
				Shrub – Woody plants, excluding woody vines,	
4				approximately 3 to 20 ft (1 to 6 m) in height.	
5				Harb. All barbassass (non-susarb) alanta include	
6				Herb – All herbaceous (non-woody) plants, inclunderbaceous vines, regardless of size, and wood	
7				plants, except woody vines, less than approxima	
8				3 ft (1 m) in height.	
9				Woody vine - All woody vines, regardless of he	eight.
10					
11					
		= Total Cov			
50% of total cover: 0	20% of	total cover	:0		
Woody Vine Stratum (Plot size: 30 ft)					
1					
2					
3					
4					
5				Hydrophytic	
	0 :	= Total Cov	er er	Vegetation	
50% of total cover: 0	20% of	total cover	:0	Present? Yes X No No	
Remarks: (If observed, list morphological adaptations belo	w).			1	
	-				

SOIL Sampling Point: W13-up

Depth	cription: (Describe Matrix			ox Feature				,	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	<u> </u>
0-5	10yr 4/4	100%					Sandy loam		
5-10	7.5yr 4/4	100%					Sandy loam		
1 			Dadward Matrix M	0-14			21	Dana Linin - M.M.	A-t-
	Concentration, D=De Indicators: (Appli					ains.		Pore Lining, M=Ma	
Histoso		cable to all i	Polyvalue Be		,	RRSTII		_	c cons .
_	pipedon (A2)		Thin Dark S				_	(A10) (LRR S)	
	listic (A3)		Loamy Muck					ertic (F18) (outside	e MLRA 150A,B)
	en Sulfide (A4)		Loamy Gley		(F2)		_	oodplain Soils (F1	
	d Layers (A5)	D T III	Depleted Ma		-0)		_	Bright Loamy Soils	s (F20)
_	: Bodies (A6) (LRR ucky Mineral (A7) (L		Redox Dark Depleted Da				(MLRA 15	ง ธ) Material (TF2)	
_	resence (A8) (LRR		Redox Depr		' '		_	w Dark Surface (TF	F12)
_	uck (A9) (LRR P, T)	,	Marl (F10) (I	*	-,			ain in Remarks)	,
Deplete	d Below Dark Surfa	ce (A11)	Depleted Oc	chric (F11)	(MLRA 1	51)			
_	ark Surface (A12)		Iron-Mangar					of hydrophytic veg	
	Prairie Redox (A16) (Mucky Mineral (S1)		- B # 6 ! :			, U)		hydrology must be sturbed or problen	
_	Gleyed Matrix (S4)	(LKK 0, 3)	Delta Ochric		-	0A. 150B)		sturbed of problem	natic.
_	Redox (S5)		Piedmont Fl	, , ,					
	d Matrix (S6)						A 149A, 153C, 153	D)	
	urface (S7) (LRR P,								
	Layer (if observed								
							l _		v
	iches):		_				Hydric Soil Pres	ent? Yes	No×
Remarks:									

Date: ____







Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction West

Comments:

Photograph Direction East

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	City/C	ounty: Middlesex/Midd	esex	Sampling Date:	7/29/2021
Applicant/Owner: HRSD		s	State: VA	Sampling Point: W	14
Investigator(s): Emily Foster, Kristen Walls	Section	on, Township, Range:			
Landform (hillslope, terrace, etc.): Drainageway					(%)· 0-15
Subregion (LRR or MLRA): MLRA 153B of LRR T		4 E W	500		S. t. 5/4.5
a sealth obligation of the					
Soil Map Unit Name: Slagle silt loam, 2 to 6 percent		n ng 19			
Are climatic / hydrologic conditions on the site typical					
Are Vegetationx, Soilx, or Hydrology _			Circumstances" p	present? Yesx	No
Are Vegetation, Soil, or Hydrology _	naturally problema	atic? (If needed, e.	xplain any answe	rs in Remarks.)	
SUMMARY OF FINDINGS - Attach site	map showing sam	pling point locatio	ns, transects	, important fea	tures, etc.
	1000				
	No	Is the Sampled Area			
	No	within a Wetland?	Yesx	No	
Remarks:	NO			Observed Classifis	ations.
Excavated drainage ditch with dense hydric ver	getation draining south	est.		Observed Classific Cowardin: PEM	ations:
	500000000000000000000000000000000000000			COWARDIN: PEIVI	
HYDROLOGY					
Wetland Hydrology Indicators:			Secondary Indica	ators (minimum of tw	o required)
Primary Indicators (minimum of one is required; ch	neck all that apply)		Surface Soil		o required/
	Aquatic Fauna (B13)			getated Concave Su	rface (B8)
	Marl Deposits (B15) (LRF	R U)	Drainage Pa		ridoc (Do)
	Hydrogen Sulfide Odor (0		Moss Trim Li	2000 000 000	
	Oxidized Rhizospheres a			Water Table (C2)	
	Presence of Reduced Iro	n (C4)	Crayfish Buri	rows (C8)	
	Recent Iron Reduction in		Saturation Vi	isible on Aerial Imag	ery (C9)
	Thin Muck Surface (C7)		Geomorphic	Position (D2)	
Iron Deposits (B5)	Other (Explain in Remark	(S)	Shallow Aqui	itard (D3)	
Inundation Visible on Aerial Imagery (B7)			FAC-Neutral	Test (D5)	
Water-Stained Leaves (B9)			Sphagnum n	noss (D8) (LRR T, U)
Field Observations:					
A STATE OF THE STA	Depth (inches): 2				
Water Table Present? Yesx No					
Saturation Present? Yesx No (includes capillary fringe)	Depth (inches): 0	Wetland H	ydrology Presen	nt? Yesx	No
Describe Recorded Data (stream gauge, monitoring	ng well, aerial photos, pre	vious inspections), if avai	lable:		
The State of the S					
Remarks:					

VEGETATION (Five Strata) —	Use	scientific	names	of	plants
----------------------------	-----	------------	-------	----	--------

/EGETATION (Five Strata) – Use scientific nam	nes of pla	ants.		Sampling	Point: W14	
	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u>) 1	% Cover	Species?		Number of Dominant Species That Are OBL, FACW, or FAC:	3	(Δ)
2.				Total Number of Dominant		(^)
3				Species Across All Strata:	3	(B)
4						, ,
5.				Percent of Dominant Species	100.0%	(A (D)
6				That Are OBL, FACW, or FAC:	100.070	(AVB)
		Total Cov		Prevalence Index worksheet:		
				Total % Cover of: M	ultiply by:	_
50% of total cover:0_	20% 01	total cover.		OBL species50 x 1 =	50	
Sapling Stratum (Plot size: 30 ft)				FACW species15 x 2 =		_
1				FAC species x 3 =		
2				FACU species 0 x 4 =		
3				I .		-
4				UPL species 0 x 5 =		- (D)
5				Column Totals: 85 (A)	140	_ (B)
6				Prevalence Index = B/A =	1.65	
		= Total Cov		Hydrophytic Vegetation Indicators		
50% of total cover:0						
Shrub Stratum (Plot size: 30 ft)				1 - Rapid Test for Hydrophytic V	egetation	
				2 - Dominance Test is >50%		
1				X 3 - Prevalence Index is ≤3.01		
2				Problematic Hydrophytic Vegeta	ition¹ (Explaii	n)
3						
4				¹ Indicators of hydric soil and wetland		nust
5				be present, unless disturbed or probl	lematic.	
6				Definitions of Five Vegetation Stra	ıta:	
	0 :	= Total Cov	er	Tree – Woody plants, excluding woo	dy vines	
50% of total cover:0	20% of	total cover:	0	approximately 20 ft (6 m) or more in		in.
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at brea	st height (Di	BH).
1. Typha latifolia, Broad-Leaf Cat-Tail	50	yes	OBL	Sapling – Woody plants, excluding v	woody vines	
2. Dichanthelium clandestinum, Deer-Tongue Rosette			FACW	approximately 20 ft (6 m) or more in		
Microstegium vimineum, Japanese Stilt Grass				than 3 in. (7.6 cm) DBH.		
				Shrub - Woody plants, excluding wo	oody vines	
4				approximately 3 to 20 ft (1 to 6 m) in		
5						_
6				Herb – All herbaceous (non-woody) herbaceous vines, regardless of size		
7				plants, except woody vines, less than		
8				3 ft (1 m) in height.		
9				Woody vine - All woody vines rese	rdless of hai	ah t
10				Woody vine – All woody vines, rega	i uless of nei	giit.
11						
	85 :	= Total Cov	er			
50% of total cover: 42.5						
Woody Vine Stratum (Plot size: 30 ft)						
1						
2						
3						
4						
5				Hydrophytic		
	:	= Total Cov	er	Vegetation	1-	
50% of total cover: 0	20% of	total cover:	0	Present? Yes x N		
Remarks: (If observed, list morphological adaptations below	w).			1		
(/-					

SOIL Sampling Point: W14

Depth	Matrix			ox Features		1 - 2	T4	Barrant
inches)	Color (moist)	%	Color (moist)		Type ¹	_Loc ² _	Texture	Remarks
0-12	2.5y 4/2	70%	5yr 5/6	30%	<u> </u>	PL	Clay	
12-18	2.5y 6/1	70%_	5yr 5/6	30%	C		Clay	
							2	
	Concentration, D=Dep Indicators: (Applic					ains.		Problematic Hydric Soils ³ :
Histoso		able to all	Polyvalue B		,	PPSTI		-
_	pipedon (A2)		Thin Dark S					(A10) (LRR S)
_	listic (A3)		Loamy Muc					ertic (F18) (outside MLRA 150A
	en Sulfide (A4)		Loamy Gley	ed Matrix (F2)		Piedmont F	loodplain Soils (F19) (LRR P, S,
	ed Layers (A5)		Depleted Ma				_	Bright Loamy Soils (F20)
	Bodies (A6) (LRR P		Redox Dark	,	,		(MLRA 15	•
_	lucky Mineral (A7) (LI Presence (A8) (LRR U		Depleted Da Redox Depr		, ,		_	Material (TF2) w Dark Surface (TF12)
	luck (A9) (LRR P, T)	''	Marl (F10) (*	0)			ain in Remarks)
	ed Below Dark Surfac	e (A11)	Depleted O		(MLRA 1	51)		,
Thick E	ark Surface (A12)		Iron-Manga	nese Mass	es (F12) (LRR O, P,	T) ³ Indicators	of hydrophytic vegetation and
	Prairie Redox (A16) (I					, U)		hydrology must be present,
_	Mucky Mineral (S1) (I	LRR O, S)	_			0.5 4505)		isturbed or problematic.
	Gleyed Matrix (S4) Redox (S5)		Reduced Ve	, , ,				
	d Matrix (S6)						A 149A, 153C, 153	D)
_	urface (S7) (LRR P, \$	S, T, U)	_ :	g c	, (, (,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,
Restrictive	Layer (if observed):							
Туре:								
Depth (ii	nches):						Hydric Soil Pres	ent? Yes <u> </u>
Remarks:								

Date: ____







Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction East

Comments:

Photograph Direction West__

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex	TFM	City/Co	ounty: Middlesex/M	iddlesex	Sampling Date:	7/29/2021
Applicant/Owner: HRSD				_ State: VA	Sampling Point: W	14-UP
Investigator(s): Emily Foster, K	Kristen Walls	Section				
Landform (hillslope, terrace, etc	c.): Flat	Local r	elief (concave, conve	ex. none); None	Slope	(%): 5-10
Subregion (LRR or MLRA): ML			15 E	W		S-1 1/4.5
Soil Map Unit Name: _Slagle sil				Distriction Victoria		
Are climatic / hydrologic conditi						
Are Vegetation, Soil				mal Circumstances" p		No
Are Vegetation, Soil	, or Hydrology	_ naturally problemat	tic? (If needed	d, explain any answe	ers in Remarks.)	
SUMMARY OF FINDING	S – Attach site ma	p showing sam	pling point loca	tions, transects	, important fea	tures, etc.
Hydrophytic Vegetation Prese	ent? Yesx	No				
Hydric Soil Present?	Yes	No x	Is the Sampled Are			
Wetland Hydrology Present?	Yes		within a Wetland?	Yes	Nox	
Remarks:					Observed Classific Cowardin: <u>uplan</u>	
HYDROLOGY						-
Wetland Hydrology Indicato	ors:			Secondary Indica	ators (minimum of tw	o required)
Primary Indicators (minimum	of one is required; check a	Il that apply)		Surface Soil	Cracks (B6)	
Surface Water (A1)	Aquat	tic Fauna (B13)		Sparsely Ve	getated Concave Su	rface (B8)
High Water Table (A2)		Deposits (B15) (LRR	U)	Drainage Pa	tterns (B10)	
Saturation (A3)	Hydro	gen Sulfide Odor (C	1)	Moss Trim L	ines (B16)	
Water Marks (B1)	Oxidiz	ed Rhizospheres ald	ong Living Roots (C3	Dry-Season	Water Table (C2)	
Sediment Deposits (B2)	Prese	nce of Reduced Iron	(C4)	Crayfish Bur	rows (C8)	
Drift Deposits (B3)	Recer	nt Iron Reduction in T	Tilled Soils (C6)	Saturation V	isible on Aerial Imag	ery (C9)
Algal Mat or Crust (B4)	Thin N	Muck Surface (C7)		Geomorphic	Position (D2)	
Iron Deposits (B5)	Other	(Explain in Remarks	3)	Shallow Aqu	itard (D3)	
Inundation Visible on Aer	ial Imagery (B7)			FAC-Neutral	Test (D5)	
Water-Stained Leaves (B	9)			Sphagnum n	moss (D8) (LRR T, U	I)
Field Observations:						
Surface Water Present?	Yes No _x _ D	epth (inches):				
Water Table Present?	Yes No X D	epth (inches):				
Saturation Present? (includes capillary fringe)	Yes No _x D	Depth (inches):	Wetland	d Hydrology Preser	nt? Yes	Nox
Describe Recorded Data (stre	am gauge, monitoring wel	l, aerial photos, prev	vious inspections), if a	available:		
Remarks:						

____15 = Total Cover

Present?

EGETATION (Five Strata) – Use scientific na		Dominant	Indicator	Dominance Test worksheet:	oling Point: W14	
Tree Stratum (Plot size: 30 ft)		Species?		Number of Dominant Species		
1. Acer rubrum, Red Maple	40	<u>Yes</u>	<u>FAC</u>	That Are OBL, FACW, or FAC:	4	(A)
2. <u>Pinus taeda, Loblolly Pine</u>	25	<u>Yes</u>	<u>FAC</u>	Total Number of Dominant		
3. Quercus alba, Northern White Oak	20	Yes	<u>FACU</u>	Species Across All Strata:	5	(B)
4				Percent of Dominant Species		
5				That Are OBL, FACW, or FAC:	80.0%	(A/B)
6		= Total Cov		Prevalence Index worksheet:		
50% of total cover: 42				Total % Cover of:	Multiply by:	_
Sapling Stratum (Plot size: 30 ft)	20% 01	total cover		OBL species 0 x	1 =0	_
1. Vaccinium formosum, Southern Blueberry	10	Vec	FAC	FACW species0 x	2 =0	_
2				FAC species 90 x	3 = 270	_
3				FACU species 20 x	4 = 80	_
4				UPL species0 x	5 =0	_
5				Column Totals:110 (A	A) <u>350</u>	(B)
6.				Prevalence Index = B/A =	. 318	
		= Total Cov	/er	Hydrophytic Vegetation Indica		
50% of total cover:				1 - Rapid Test for Hydrophy		
Shrub Stratum (Plot size: 30 ft)				× 2 - Dominance Test is >50%	_	
1				3 - Prevalence Index is ≤3.0		
2.				Problematic Hydrophytic Ve		ain)
3					gotation (Explo	AII1)
4				¹ Indicators of hydric soil and wel	tland hydrology	must
5				be present, unless disturbed or		
6				Definitions of Five Vegetation	Strata:	
	0	= Total Cov	/er	Tree - Woody plants, excluding	woody vines.	
50% of total cover:0	20% of	total cover	:0	approximately 20 ft (6 m) or mor	re in height and	
Herb Stratum (Plot size: 30 ft)				(7.6 cm) or larger in diameter at	breast height (D	OBH).
1				Sapling - Woody plants, exclude		
2				approximately 20 ft (6 m) or more than 3 in. (7.6 cm) DBH.	re in height and	less
3				(7.0 cm) DB11.		
4				Shrub – Woody plants, excluding approximately 3 to 20 ft (1 to 6 r		
5				approximately 3 to 20 ft (1 to 61	ii) iii neigiit.	
6				Herb – All herbaceous (non-wood herbaceous vines, regardless of		
7				plants, except woody vines, less		
8				3 ft (1 m) in height.		•
9				Woody vine – All woody vines,	regardless of he	eiaht.
10						
11						
		= Total Cov				
50% of total cover:	20% of	total cover	:			
Woody Vine Stratum (Plot size: 30 ft)	4 -	Vc -	E ^ ^	1		
Woody Vine Stratum (Plot size: 30 ft) 1. Smilax rotundifolia, Horsebrier						
Woody Vine Stratum (Plot size: 30 ft) 1. Smilax rotundifolia, Horsebrier 2.						
Woody Vine Stratum (Plot size: 30 ft) 1. Smilax rotundifolia, Horsebrier 2						
Woody Vine Stratum (Plot size: 30 ft) 1. Smilax rotundifolia, Horsebrier 2.				Hydrophytic		

Remarks: (If observed, list morphological adaptations below).

Yes ___ No ___

SOIL Sampling Point: W14-UP

Profile Des	cription: (Describe	to the depth	needed to docu	ment the i	ndicator	or confirm	the absence of	findicators.)	
Depth _(inches)	Matrix Color (moist)		Redo Color (moist)	x Feature: %		Loc ²	Texture	Remarks	
0-15	10yr 3/2	100%	Color (Illoist)		_ Type		Loam	Remarks	
		10070							
15-18	10yr 4/4						Sandy loam		—
¹ Type: C=C	oncentration, D=Dep	letion, RM=Re	educed Matrix, M	S=Masked	Sand Gra	ains.	² Location: P	L=Pore Lining, M=Matrix.	
Hydric Soil	Indicators: (Applic	able to all LR	Rs, unless othe	rwise note	ed.)			r Problematic Hydric Soils ³ :	
Histosol	, ,		Polyvalue Be) 1 cm Mu	ck (A9) (LRR O)	
I	pipedon (A2)		Thin Dark Su					ck (A10) (LRR S)	
ı —	istic (A3) en Sulfide (A4)		Loamy Muck Loamy Gleye	-		(0)		l Vertic (F18) (outside MLRA 150 t Floodplain Soils (F19) (LRR P, 5	
	d Layers (A5)	,	Depleted Ma		r2)			us Bright Loamy Soils (F20)	3, 1)
ı —	Bodies (A6) (LRR P	, T, U)	Redox Dark	, ,	6)		_	(153B)	
5 cm Mi	ucky Mineral (A7) (LF	RR P, T, U)	Depleted Da	rk Surface	(F7)		Red Pare	ent Material (TF2)	
I —	resence (A8) (LRR U)	Redox Depre	*	8)		_ ′	allow Dark Surface (TF12)	
ı —	uck (A9) (LRR P, T)	o (A11)	Marl (F10) (L		/MI DA 4/	54)	Other (E	xplain in Remarks)	
I — ·	d Below Dark Surface ark Surface (A12)	e (ATT)	Depleted Oc Iron-Mangan		-	-	T) ³ Indicat	ors of hydrophytic vegetation and	i
ı —	rairie Redox (A16) (N	/ILRA 150A)	Umbric Surfa					nd hydrology must be present,	
Sandy N	Mucky Mineral (S1) (L	.RR O, S)	Delta Ochric	(F17) (ML	.RA 151)		unles	s disturbed or problematic.	
	Gleyed Matrix (S4)		Reduced Ve						
ı —	Redox (S5) d Matrix (S6)		Piedmont Flo	•	, ,	•	9A) A 149A, 153C, 1	53D)	
ı —	rface (S7) (LRR P, S	s. T. U)	Allollialous I	Silgili Loai	rry cons (i	-20) (WILK)	A 143A, 133C, 1	330)	
	Layer (if observed):								
Туре:			_						
Depth (in	ches):		_				Hydric Soil P	resent? Yes No	
Remarks:									

Date: ____







Photograph Direction North

Comments:

Photograph Direction South

Comments:





Photograph Direction West

Comments:

Photograph Direction East

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Beaverdam Pump Station	City/County: Gloud	ester	Sampling Date: 09/03/2021
Applicant/Owner: HRSD		State: VA	Sampling Point: W15-UP
	Section, Township,		
Landform (hillslope, terrace, etc.): Terrace			Slone (%). 20
Subregion (LRR or MLRA): LRRT			
Soil Map Unit Name: Lumbee sandy loam	Lat	NWI classif	Datum
Are climatic / hydrologic conditions on the site typical fo			
Are Vegetation, Soil, or Hydrology			present? Yes _ ✓ No
Are Vegetation, Soil, or Hydrology	naturally problematic? (f needed, explain any answ	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site m	ap showing sampling poir	nt locations, transect	s, important features, etc.
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes Remarks:	No within a Wa	etland? Yes	No✓ Water Type:
HYDROLOGY			
Wetland Hydrology Indicators:	- II (b - (b)	<u> </u>	cators (minimum of two required)
Primary Indicators (minimum of one is required; check		Surface Soi	
	atic Fauna (B13)		egetated Concave Surface (B8)
	I Deposits (B15) (LRR U) rogen Sulfide Odor (C1)	Moss Trim	atterns (B10)
	dized Rhizospheres along Living R		n Water Table (C2)
	sence of Reduced Iron (C4)	Crayfish Bu	
	ent Iron Reduction in Tilled Soils (0		Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Thir	Muck Surface (C7)	Geomorphi	c Position (D2)
Iron Deposits (B5) Other	er (Explain in Remarks)	Shallow Aq	uitard (D3)
Inundation Visible on Aerial Imagery (B7)		FAC-Neutra	` '
Water-Stained Leaves (B9)	<u>,</u>	Sphagnum	moss (D8) (LRR T, U)
Field Observations:			
	Depth (inches):		
	Depth (inches):		ent? Yes No✓
Saturation Present? Yes No✓_ (includes capillary fringe)	Depth (inches):	Wetland Hydrology Prese	ent? Yes No
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspect	ions), if available:	
Remarks:			

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

EGETATION (Four Strata) – Use scientific na	р.			Sampling Point: W15-UP
5 0 (0)		Dominant		Dominance Test worksheet:
ree Stratum (Plot size:30) Acer rubrum	<u>% Cover</u> 70	Species?	FAC	Number of Dominant Species That Are OBL FACW or FAC: 4 (A)
Liquidambar styraciflua	5		170	That Are OBL, FACW, or FAC: 4 (A)
				Total Number of Dominant
				Species Across All Strata:5 (B)
·				Percent of Dominant Species
i				That Are OBL, FACW, or FAC: 80% (A/B
S				
.				Prevalence Index worksheet:
3.				Total % Cover of: Multiply by:
	75	= Total Cov	/er	OBL species x 1 =
50% of total cover:37.				FACW species x 2 =
Sapling/Shrub Stratum (Plot size: 15)			· ——	FAC species x 3 =
Asimina triloba	5	1	FAC	FACU species x 4 =
•				UPL species x 5 =
2				Column Totals: (A) (B)
3				(2)
l				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
S				1 - Rapid Test for Hydrophytic Vegetation
7				✓ 2 - Dominance Test is >50%
3.				3 - Prevalence Index is ≤3.0¹
	5	= Total Cov	/er	
50% of total cover: 2.5				Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (Plot size: 5)	2070 01	10101 00701		
Ligustrum sinense	5	./	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Vaccinium corymbosum			FACW	
	- — —			Definitions of Four Vegetation Strata:
3				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) o
4. <u> </u>				more in diameter at breast height (DBH), regardless o
5				height.
5				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
3				Herb – All herbaceous (non-woody) plants, regardless
).				of size, and woody plants less than 3.28 ft tall.
0				
				Woody vine – All woody vines greater than 3.28 ft in
11			-	height.
2	10			
		= Total Cov		
50% of total cover:5.0	20% of	total cover	: 2.0	
Noody Vine Stratum (Plot size:)		,		
Smilax rotundifolia	5	✓	FAC	
2				
3				
4.				
5.				Hydrophytia
	_	= Total Cov	/er	Hydrophytic Vegetation
FOO/ of total appears 2.5				Present? Yes No
		total cover	:	
50% of total cover: <u>2.5</u> Remarks: (If observed, list morphological adaptations below		total cover	:	Present? Tes NO

SOIL Sampling Point: W15-UP

Profile Desc	ription: (Describe	e to tne ae	pth needed to docu	ment the n	idicator or cor	ifirm the ab	sence	oi illuicator	s. <i>)</i>	1
Depth	Matrix			ox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹ Loc	Z Text	ure		Remarks	
0-6	10YR 4/3	100						sandy loa	m	
6-12	7.5YR 3/3	80	10YR 3/3	20				sandy loa	m	
12-18	7.5YR 3/3	80	10YR 3/3	20				sandy loa	m	
	-		-							
			I=Reduced Matrix, M						ning, M=Matrix	
-		icable to al	I LRRs, unless other		•				atic Hydric S	Soils':
Histosol	` '				e (S8) (LRR S,			luck (A9) (LF	•	
Histic Ep	oipedon (A2)				(LRR S, T, U) F1) (LRR O)			luck (A10) (L		ILRA 150A,B)
	n Sulfide (A4)		Loamy Gley							(LRR P, S, T)
	d Layers (A5)		Depleted Ma		_,				oamy Soils (I	
	Bodies (A6) (LRR	P, T, U)	Redox Dark		6)			RA 153B)	`	,
	ıcky Mineral (A7) (I							rent Materia		
	esence (A8) (LRR		Redox Depr	•)		-		Surface (TF1:	2)
	ick (A9) (LRR P, T)		Marl (F10) (I	,	MI DA 151\	_ '	Other (Explain in R	emarks)	
	d Below Dark Surfa ark Surface (A12)	ice (ATT)	Iron-Mangar). P. T)	3Indica	ators of hydr	ophytic veget	ation and
·	, ,	(MLRA 150	(A) Umbric Surf		. , .	,,,,,,			gy must be pr	
Sandy M	lucky Mineral (S1)	(LRR O, S)	Delta Ochric	(F17) (ML	RA 151)		unle	ss disturbed	or problemat	ic.
	Bleyed Matrix (S4)				MLRA 150A, 15					
	ledox (S5)				oils (F19) (MLR			4=4=)		
	Matrix (S6)	C T II)	Anomalous	Bright Loan	ny Soils (F20) (I	VILRA 149A,	, 153C,	153D)		
	rface (S7) (LRR P, _ayer (if observed									
Type:	zayer (ii observed	.,,.								
	ches):					Hydri	ic Soil	Present?	Yes	No ✓
Remarks:						- Inyun				
rtomants.										

Date: 9/3/21



Photograph Number ______Photograph Direction North

Comments:



Photograph Number ______Photograph Direction East____

Comments:



Photograph Number _____

Photograph Direction South

Comments:



Photograph Number _____

Photograph Direction West

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlesex TFM	City/Cou	_{nty:} Middlesex		Sampling Date: 9/14/2021	
Applicant/Owner: HRSD			State: VA	Sampling Point: W16	
Investigator(s): Emily Foster, Katelyn Hoisington	Section,	Township, Range:			
Landform (hillslope, terrace, etc.): Hillslope	Local reli	ief (concave, convex, r	none): concave	Slope (%): 5	
Subregion (LRR or MLRA): MLRA 1538 of LRR T	Lat: 37.584816	Long: -7	6.490421	Datum: WGS84	4
Soil Map Unit Name: Slagle silt loam, 2 to 6 percent	slopes		NWI classific	ation: N/A	
Are climatic / hydrologic conditions on the site typical for	this time of year? Yes	✓ No (If no, explain in R	emarks.)	
Are Vegetation, Soil, or Hydrology				oresent? Yes 🗸 No	
Are Vegetation, Soil, or Hydrology			xplain any answe		
SUMMARY OF FINDINGS – Attach site ma				,	c.
			<u> </u>	<u> </u>	
Hydrophytic Vegetation Present? Hydric Soil Present? Yes	No.	the Sampled Area		,	
Wetland Hydrology Present? Yes	No w	vithin a Wetland?	Yes	No	
Remarks:					-
HYDROLOGY					
Wetland Hydrology Indicators:			_	tors (minimum of two required)	-
Primary Indicators (minimum of one is required; check a			Surface Soil		
	atic Fauna (B13)			getated Concave Surface (B8)	
	Deposits (B15) (LRR U		Drainage Pat		
	ogen Sulfide Odor (C1) ized Rhizospheres alon		Moss Trim Li	Water Table (C2)	
	ence of Reduced Iron (Crayfish Burr		
	ent Iron Reduction in Till	,	_ ·	sible on Aerial Imagery (C9)	
	Muck Surface (C7)			Position (D2)	
Iron Deposits (B5)	r (Explain in Remarks)		Shallow Aqui	tard (D3)	
Inundation Visible on Aerial Imagery (B7)			FAC-Neutral	* *	
☐ Water-Stained Leaves (B9)			Sphagnum m	noss (D8) (LRR T, U)	_
Field Observations: Surface Water Present? Yes No No	Donth (inches):				
	Depth (inches): 12				
	Depth (inches): 0	Wetland H	vdrology Presen	it? Yes 🗸 No	
(includes capillary fringe)				. 100 <u> </u>	_
Describe Recorded Data (stream gauge, monitoring we	II, aerial photos, previo	ous inspections), if avai	lable:		
Remarks:					_

VEGETATION (Four Strata) – Use scientific na	Sampling Point:			
	Absolute	Dominant Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:) 1)	% Cover	Species? Status	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2			Total Number of Dominant Species Across All Strata:	<u>3</u> (B)

1				That Are OBL, FACW, or FAC:	3	(A)
2				Total Number of Dominant		
3				Species Across All Strata:	3	_ (B)
4				Percent of Dominant Species		
5				That Are OBL, FACW, or FAC:	100	_ (A/B)
6				Prevalence Index worksheet:		
7				Total % Cover of:	Multiply by:	
8				OBL species x		
		_ = Total Cov		FACW species 95 x		_
50% of total cover:	20%	of total cover		FAC species 10 x		_
Sapling/Shrub Stratum (Plot size:) 1. Liquidambar styraciflua	5	V	EΛC	FACU species x		
**					5 =	
2.				Column Totals: 105 (A	000	(B)
3				·		_ ` '
4				Prevalence Index = B/A =	2.09	
5				Hydrophytic Vegetation Indica	ators:	
6				1 - Rapid Test for Hydrophy	tic Vegetation	
7				2 - Dominance Test is >50%	6	
8				- 3 - Prevalence Index is ≤3.0) ¹	
		_ = Total Cov		Problematic Hydrophytic Ve	egetation ¹ (Explain	ain)
50% of total cover: 2.5	20%	of total cover	:	-		
Herb Stratum (Plot size:)	0.5	V	E 4 (0) 4 /	¹ Indicators of hydric soil and we		must
1. Mikania scandens				be present, unless disturbed or	•	
2				Definitions of Four Vegetation	Strata:	
3				Tree - Woody plants, excluding	vines, 3 in. (7.6	3 cm) or
4				more in diameter at breast heigh	nt (DBH), regard	dless of
5			-	height.		
6				Sapling/Shrub – Woody plants,	, excluding vine	s, less
7			-	than 3 in. DBH and greater than	3.28 ft (1 m) ta	III.
8				Herb - All herbaceous (non-woo		ardless
9				of size, and woody plants less th	nan 3.28 ft tall.	
10				Woody vine – All woody vines	greater than 3.2	28 ft in
11				height.		
12						
	95	_ = Total Cov	er er			
50% of total cover: 47.5	20%	of total cover	19			
Woody Vine Stratum (Plot size:)						
1. Smilax rotundifolia	5	<u>Y</u>	FAC	.		
2			-	.		
3			-			
4.						
5.				Hydrophytic		
		= Total Cov	er	Vegetation		
50% of total cover: 2.5		of total cover		Present? Yes	No	

Remarks: (If observed, list morphological adaptations below).

SOIL Sampling Point: _____

Profile Des	cription: (Describ Matrix	e to the de _l		ment the		or confirn	n the absence of in	dicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-15	10 YR 5/2	90	10 YR 5/8	10			CI	
15-18	10 YR 5/2	70	10 YR 5/8	30			SaCl	
					-			_
1 _{Tymov} C C	Concentration D. D.	nletion DM	=Reduced Matrix, M	C Maaka	d Cond Cr		2l costion: DL F	Pore Lining, M=Matrix.
			LRRs, unless othe			all 15.		roblematic Hydric Soils ³ :
☐ Histoso			Polyvalue B		•	.RR S, T, I		(A9) (LRR O)
	pipedon (A2)		Thin Dark S		. , .		· -	(A10) (LRR S)
_	istic (A3)		Loamy Mucl			? O)		ertic (F18) (outside MLRA 150A,B)
	en Sulfide (A4) d Layers (A5)		Loamy Gley		(F2)			oodplain Soils (F19) (LRR P, S, T)
_	Bodies (A6) (LRR	P. T. U)	Depleted Ma		F6)		(MLRA 15	Bright Loamy Soils (F20)
	ucky Mineral (A7) (1 1 '	Material (TF2)
Muck P	resence (A8) (LRR	U)	Redox Depr	essions (F			Very Shallov	w Dark Surface (TF12)
	uck (A9) (LRR P, T		Marl (F10) (I			- 4.	U Other (Expla	ain in Remarks)
=	d Below Dark Surfa ark Surface (A12)	ace (A11)	☐ Depleted Oc ☐ Iron-Mangar				T) ³ Indicators	of hydrophytic vegetation and
	Prairie Redox (A16)	(MLRA 150						nydrology must be present,
	Mucky Mineral (S1)	•	Delta Ochric			, -,		sturbed or problematic.
	Gleyed Matrix (S4)		Reduced Ve					
	Redox (S5)		Piedmont FI					2)
	d Matrix (S6) urface (S7) (LRR P ,	S T III	Anomalous	Bright Loa	imy Solis (F20) (WILF	RA 149A, 153C, 153I	ס)
	Layer (if observed							
Type:	•							
Depth (in	iches):						Hydric Soil Pres	ent? Yes <u>/</u> No
Remarks:								



Photograph Number _____

Photograph Direction North

Comments:



Photograph Number ____

Photograph Direction East

Comments:



Photograph Number _____

Photograph Direction South

Comments:



Photograph Number _____

Photograph Direction West

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: HRSD Middlese	ex TFM	City/C	ounty: Middlesex		Sampling Date: 9/14/2021
Applicant/Owner: HRSD			,	State: VA	Sampling Date: 9/14/2021 Sampling Point: W16-UP
Investigator(s): Emily Foster,	12 () 11 1 1 1 (on, Township, Range: _		
Landform (hillslope, terrace, etc					Slope (%): 5
Subregion (LRR or MLRA). MI	LRA 1538 of LRR T	Lat. 37.584784	Long	-76.490324	Datum: WGS84
Soil Map Unit Name: Slagle s	ilt loam, 2 to 6 percent	slopes			cation:
Are climatic / hydrologic conditi					
Are Vegetation, Soil					oresent? Yes 🗸 No
Are Vegetation, Soil				explain any answe	
					s, important features, etc.
				•	
Hydrophytic Vegetation Prese	Yes X Yes	No	Is the Sampled Area		
Hydric Soil Present? Wetland Hydrology Present?	Yes	No	within a Wetland?	Yes	No
Remarks:	163	140			
HYDROLOGY					
Wetland Hydrology Indicato	ors:			Secondary Indica	ators (minimum of two required)
Primary Indicators (minimum		all that apply)		Surface Soil	
Surface Water (A1)		itic Fauna (B13)			getated Concave Surface (B8)
High Water Table (A2)		Deposits (B15) (LRI	₹ U)	Drainage Pa	= : : :
Saturation (A3)		ogen Sulfide Odor (0		Moss Trim L	
Water Marks (B1)		•	long Living Roots (C3)		Water Table (C2)
Sediment Deposits (B2)	Prese	ence of Reduced Iro	n (C4)	Crayfish Bur	rows (C8)
Drift Deposits (B3)	☐ Rece	ent Iron Reduction in	Tilled Soils (C6)	Saturation V	isible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	H Thin	Muck Surface (C7)		Geomorphic	Position (D2)
Iron Deposits (B5)		r (Explain in Remark	(s)	Shallow Aqu	
Inundation Visible on Aer	• • • •			FAC-Neutral	` '
Water-Stained Leaves (B	.9)			☐ Spnagnum n	noss (D8) (LRR T, U)
Surface Water Present?	Yes No I	Denth (inches):			
Water Table Present?	Yes No I				
Saturation Present?	Yes No I		· ·	Hydrology Preser	nt? Yes No
(includes capillary fringe)					100 100 100 <u>-</u>
Describe Recorded Data (stre	am gauge, monitoring we	ell, aerial photos, pre	vious inspections), if av	ailable:	
Devente					
Remarks:					

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

bsolute			
Cover	Dominant Species?	Status	Dominance Test worksheet: Number of Dominant Species
	Y N	FAC FAC	That Are OBL, FACW, or FAC: 3 (A)
			Total Number of Dominant
			Species Across All Strata: 4 (B)
			Percent of Dominant Species
			That Are OBL, FACW, or FAC: 75 (A/B)
			Prevalence Index worksheet:
<u> </u>	= Total Cov	er	OBL species x 1 =
20% of	total cover:	12	FACW species x 2 =
			FAC species x 3 =
	N	FAC	FACU species x 4 =
	N	FAC	UPL species x 5 =
0	N	FAC	Column Totals: (A) (B)
	N	FACU	Prevalence Index = B/A =
0	Υ	ND	Hydrophytic Vegetation Indicators:
			1 - Rapid Test for Hydrophytic Vegetation x 2 - Dominance Test is >50%
 5 _	- Total Cov	or	3 - Prevalence Index is ≤3.0¹
			Problematic Hydrophytic Vegetation ¹ (Explain)
20% 01	total cover.		
n	V	ΕΛC	¹ Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
	<u> </u>	FAC	Definitions of Four Vegetation Strata:
			Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
			more in diameter at breast height (DBH), regardless of
			height.
			height. Sapling/Shrub – Woody plants, excluding vines, less
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
			Sapling/Shrub – Woody plants, excluding vines, less
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 =	= Total Cov	er	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 =		er	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 ₌ 20% of	= Total Cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 = 20% of	= Total Cov total cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 = 20% of	= Total Cov total cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 = 20% of	= Total Cov total cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 = 20% of	= Total Cov total cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in
5 = 20% of	= Total Cov total cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height. Hydrophytic
5 = 20% of	= Total Cov total cover:	er 5	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
	20% of	Total Cover: N	Total Cover 12

SOIL Sampling Point: W16-UP

Depth		e to the dep	oth needed to docu			or confirm	n the absenc	e of indicators.)
(inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	Type ¹	Loc ²	Texture	Remarks
0-6	10 YR 3/2	100					CLo	
6-18	10 YR 3/2	50	10 YR 5/8	50			SaCl	Disturbed soil w/ mixed layer dual matrix
Hydric Soil Histosol Histosol Histic E Black H Hydroge Stratifier Organic 5 cm Mi Muck Pi 1 cm Mi Deplete Thick Di Sandy N Sandy F Stripped Dark Su Restrictive	Indicators: (Appli	Cable to all P, T, U) LRR P, T, U U) CCE (A11) (MLRA 150 (LRR O, S) S, T, U)):	Redox Depr Marl (F10) (Depleted Oc Iron-Mangai Multiple Delta Ochric Reduced Ve Piedmont Fl	erwise not elow Surfa urface (S9 ky Mineral red Matrix atrix (F3) Surface (I ark Surface ressions (F LRR U) chric (F11) nese Mass ace (F13) c (F17) (Mi ertic (F18)	red.) ace (S8) (L b) (LRR S, (F1) (LRR (F2) F6) e (F7) F8) (MLRA 1: Ses (F12) ((LRR P, T LRA 151) (MLRA 15 Soils (F19)	RR S, T, U T, U) (CO) (DI) (DI) (DI) (DI) (MI) (MI) (MI)	Indicator I cm	i: PL=Pore Lining, M=Matrix. is for Problematic Hydric Soils³: Muck (A9) (LRR O) Muck (A10) (LRR S) Icced Vertic (F18) (outside MLRA 150A,B) mont Floodplain Soils (F19) (LRR P, S, T) Inalous Bright Loamy Soils (F20) LRA 153B) Parent Material (TF2) Shallow Dark Surface (TF12) r (Explain in Remarks) Ilicators of hydrophytic vegetation and etland hydrology must be present, nless disturbed or problematic. C, 153D) Ill Present? Yes No



Photograph Number ______Photograph Direction North

Comments:



Photograph Number _____ Photograph Direction East

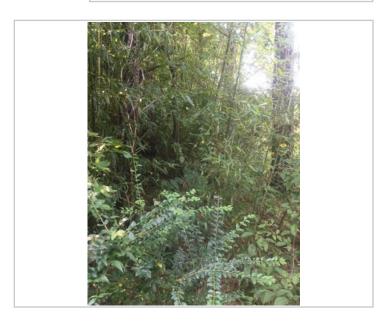
Comments:



Photograph Number _____

Photograph Direction South

Comments:



Photograph Number _____

Photograph Direction West





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 **Mathews County,** Virginia, and Middlesex County, 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 (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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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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



MAP LEGEND

Special Line Features Streams and Canals Interstate Highways Aerial Photography Very Stony Spot Major Roads Local Roads Stony Spot **US Routes** Spoil Area Wet Spot Other Rails Nater Features **Fransportation 3ackground** W ŧ Soil Map Unit Polygons Severely Eroded Spot Area of Interest (AOI) Soil Map Unit Points Miscellaneous Water Soil Map Unit Lines Closed Depression Marsh or swamp Perennial Water Mine or Quarry Rock Outcrop Special Point Features **Gravelly Spot** Saline Spot Sandy Spot Slide or Slip **Borrow Pit** Lava Flow Sodic Spot Clay Spot **Gravel Pit** Area of Interest (AOI) Sinkhole Blowout Landfill 9 Soils

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:20,000.

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: Mathews County, Virginia Survey Area Data: Version 13, Sep 14, 2021

Soil Survey Area: Middlesex County, Virginia Survey Area Data: Version 14, Sep 14, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Oct 11, 2019—Oct 15, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
Dr	Dragston fine sandy loam, shallow	0.0	0.0%	
Fa	Fallsington fine sandy loam	0.4	0.2%	
KtA	Kempsville loamy fine sand, thick surface, 0 to 2 percent slopes	1.3	0.5%	
SaA	Sassafras fine sandy loam, 0 to 2 percent slopes	4.0	1.6%	
SdA	Sassafras loamy fine sand, 0 to 2 percent slopes	4.2	1.7%	
StE	Steep sandy land	2.5	1.0%	
W	Water	2.5	1.0%	
Wo	Woodstown fine sandy loam	2.0	0.8%	
Subtotals for Soil Survey Area		16.8	6.7%	
Totals for Area of Interest		250.0	100.0%	

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Bethera and Daleville soils	3.4	1.4%
4	Catpoint loamy sand	0.6	0.3%
5B	Craven silt loam, 2 to 6 percent slopes	0.7	0.3%
6A	Emporia loam, 0 to 2 percent slopes	3.9	1.6%
6B	Emporia loam, 2 to 6 percent slopes	55.5	22.2%
7D	Emporia-Nevarc complex, 6 to 15 percent slopes	6.9	2.7%
7F	Emporia-Nevarc complex, 15 to 45 percent slopes	3.3	1.3%
8	Eunola loam	5.2	2.1%
9A	Kempsville sandy loam, 0 to 2 percent slopes	3.2	1.3%
9B	Kempsville sandy loam, 2 to 6 percent slopes	17.7	7.1%
13	Myatt loam	2.6	1.0%
15	Ochlockonee silt loam	5.8	2.3%
18B	Rumford fine sandy loam, 2 to 6 percent slopes	3.1	1.3%
19A	Slagle silt loam, 0 to 2 percent slopes	39.3	15.7%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
19B	Slagle silt loam, 2 to 6 percent slopes	62.5	25.0%	
20A	Suffolk fine sandy loam, 0 to 2 percent slopes	0.5	0.2%	
20B	Suffolk fine sandy loam, 2 to 6 percent slopes	10.5	4.2%	
21D	Suffolk-Remlik complex, 6 to 15 percent slopes	1.0	0.4%	
21F	Suffolk-Remlik complex, 15 to 45 percent slopes	1.9	0.7%	
22B	Udorthents and Psamments, gently sloping	0.7	0.3%	
W	Water	4.8	1.9%	
Subtotals for Soil Survey Area		233.2	93.3%	
Totals for Area of Interest		250.0	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.

Mathews County, Virginia

Dr—Dragston fine sandy loam, shallow

Map Unit Setting

National map unit symbol: 40b8

Elevation: 0 to 120 feet

Mean annual precipitation: 40 to 48 inches Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Dragston and similar soils: 85 percent

Minor components: 7 percent

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

Description of Dragston

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam H2 - 8 to 25 inches: fine sandy loam H3 - 25 to 75 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat 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 12 to 18 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: A/D Hydric soil rating: No

Minor Components

Fallsington

Percent of map unit: 7 percent Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex Hydric soil rating: Yes

Fa—Fallsington fine sandy loam

Map Unit Setting

National map unit symbol: 40bb

Elevation: 0 to 200 feet

Mean annual precipitation: 40 to 48 inches Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Fallsington and similar soils: 85 percent

Minor components: 8 percent

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

Description of Fallsington

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam H2 - 8 to 37 inches: sandy clay loam H3 - 37 to 93 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: 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 0 to 12 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B/D Hydric soil rating: Yes

Minor Components

Elkton

Percent of map unit: 8 percent Landform: Marine terraces

Landform position (three-dimensional): Tread

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

KtA—Kempsville loamy fine sand, thick surface, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40bf Elevation: 100 to 400 feet

Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Kempsville and similar soils: 85 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: Loamy marine deposits

Typical profile

H1 - 0 to 11 inches: loamy fine sand H2 - 11 to 40 inches: sandy clay loam H3 - 40 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

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 supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A Hydric soil rating: No

SaA—Sassafras fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40bk

Elevation: 10 to 330 feet

Mean annual precipitation: 40 to 48 inches Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Sassafras and similar soils: 85 percent

Minor components: 2 percent

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

Description of Sassafras

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam H2 - 8 to 36 inches: sandy clay loam H3 - 36 to 70 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 1.98 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Fallsington

Percent of map unit: 2 percent Landform: Marine terraces

Landform position (three-dimensional): Tread

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

SdA—Sassafras loamy fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40bm

Elevation: 10 to 330 feet

Mean annual precipitation: 40 to 48 inches Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Sassafras and similar soils: 85 percent

Minor components: 2 percent

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

Description of Sassafras

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 8 inches: loamy fine sand

H2 - 8 to 36 inches: loam

H3 - 36 to 70 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 1.98 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Fallsington

Percent of map unit: 2 percent Landform: Marine terraces

Landform position (three-dimensional): Tread

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

StE—Steep sandy land

Map Unit Setting

National map unit symbol: 40bp

Mean annual precipitation: 40 to 48 inches Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: Not prime farmland

Map Unit Composition

Steep sandy land: 90 percent

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

Description of Steep Sandy Land

Setting

Landform: Marine terraces

Landform position (three-dimensional): Riser

Down-slope shape: Linear Across-slope shape: Convex

Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 6 inches: fine sand H2 - 6 to 60 inches: sand

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydric soil rating: No

W-Water

Map Unit Composition

Water: 100 percent

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

Wo—Woodstown fine sandy loam

Map Unit Setting

National map unit symbol: 40bv

Elevation: 10 to 120 feet

Mean annual precipitation: 40 to 48 inches Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 180 to 215 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Woodstown and similar soils: 85 percent

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

Description of Woodstown

Setting

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Loamy marine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam H2 - 9 to 35 inches: sandy clay loam H3 - 35 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 1.98 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C Hydric soil rating: No

Middlesex County, Virginia

3—Bethera and Daleville soils

Map Unit Setting

National map unit symbol: 40hl

Elevation: 0 to 120 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Bethera and similar soils: 40 percent Daleville and similar soils: 35 percent

Minor components: 5 percent

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

Description of Bethera

Setting

Landform: Depressions

Landform position (three-dimensional): Tread

Down-slope shape: Linear Across-slope shape: Linear Parent material: Marine deposits

Typical profile

H1 - 0 to 6 inches: silt loam H2 - 6 to 34 inches: clay H3 - 34 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None Frequency of ponding: Rare

Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D Hydric soil rating: Yes

Description of Daleville

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Parent material: Marine deposits

Typical profile

H1 - 0 to 9 inches: loam H2 - 9 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D Hydric soil rating: Yes

Minor Components

Myatt

Percent of map unit: 5 percent Landform: Marine terraces

Landform position (three-dimensional): Tread

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

4—Catpoint loamy sand

Map Unit Setting

National map unit symbol: 40hm

Elevation: 0 to 70 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Catpoint and similar soils: 85 percent

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

Description of Catpoint

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex Across-slope shape: Convex Parent material: Marine deposits

Typical profile

H1 - 0 to 11 inches: loamy sand H2 - 11 to 57 inches: loamy sand H3 - 57 to 72 inches: sand

Properties and qualities

Slope: 0 to 4 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat excessively drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95

to 19.98 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A Hydric soil rating: No

5B—Craven silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 40hp

Elevation: 0 to 120 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Craven and similar soils: 85 percent Minor components: 5 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 2 inches: silt loam H2 - 2 to 28 inches: clay

H3 - 28 to 66 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

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 supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: D Hydric soil rating: No

Minor Components

Bethera

Percent of map unit: 3 percent

Landform: Depressions

Landform position (three-dimensional): Tread

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

Daleville

Percent of map unit: 2 percent Landform: Depressions Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

6A—Emporia loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40hq

Elevation: 20 to 150 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Emporia and similar soils: 85 percent

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

Description of Emporia

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: loam
H2 - 14 to 31 inches: clay loam
H3 - 31 to 59 inches: sandy clay loam
H4 - 59 to 66 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 36 to 54 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: C Hydric soil rating: No

6B—Emporia loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 40hr Elevation: 20 to 150 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 47 to 70 degrees F Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Emporia and similar soils: 75 percent

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

Description of Emporia

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: loam
H2 - 14 to 31 inches: clay loam
H3 - 31 to 59 inches: sandy clay loam
H4 - 59 to 66 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 36 to 54 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C Hydric soil rating: No

7D—Emporia-Nevarc complex, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 40hs

Elevation: 20 to 300 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Emporia and similar soils: 50 percent Nevarc and similar soils: 30 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 14 inches: loam
H2 - 14 to 31 inches: clay loam
H3 - 31 to 59 inches: sandy clay loam
H4 - 59 to 66 inches: sandy clay loam

Properties and qualities

Slope: 6 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 36 to 54 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C Hydric soil rating: No

Description of Nevarc

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 14 inches: silt loam H2 - 14 to 51 inches: clay

H3 - 51 to 64 inches: sandy clay loam

Properties and qualities

Slope: 6 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Very 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 18 to 36 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D Hydric soil rating: No

7F—Emporia-Nevarc complex, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 40ht

Elevation: 20 to 300 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Emporia and similar soils: 50 percent Nevarc and similar soils: 30 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 14 inches: loam
H2 - 14 to 31 inches: clay loam
H3 - 31 to 59 inches: sandy clay loam
H4 - 59 to 66 inches: sandy clay loam

Properties and qualities

Slope: 15 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 36 to 54 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C Hydric soil rating: No

Description of Nevarc

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 14 inches: silt loam H2 - 14 to 51 inches: clay

H3 - 51 to 64 inches: sandy clay loam

Properties and qualities

Slope: 15 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Very 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 18 to 36 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D Hydric soil rating: No

8—Eunola loam

Map Unit Setting

National map unit symbol: 40hv Elevation: 120 to 450 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Eunola and similar soils: 80 percent

Minor components: 3 percent

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

Description of Eunola

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: loam
H2 - 9 to 28 inches: clay loam
H3 - 28 to 41 inches: sandy loam
H4 - 41 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C Hydric soil rating: No

Minor Components

Myatt

Percent of map unit: 3 percent Landform: Marine terraces

Landform position (three-dimensional): Tread

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

9A—Kempsville sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40hw Elevation: 100 to 400 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Kempsville and similar soils: 85 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 6 inches: sandy loam
H2 - 6 to 31 inches: sandy clay loam
H3 - 31 to 51 inches: sandy loam
H4 - 51 to 62 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B Hydric soil rating: No

9B—Kempsville sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 40hx Elevation: 100 to 400 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Kempsville and similar soils: 80 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 6 inches: sandy loam
H2 - 6 to 31 inches: sandy clay loam
H3 - 31 to 51 inches: sandy loam
H4 - 51 to 62 inches: sandy clay loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

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 supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B Hydric soil rating: No

13—Myatt loam

Map Unit Setting

National map unit symbol: 40h3

Elevation: 0 to 450 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Myatt and similar soils: 80 percent Minor components: 5 percent

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

Description of Myatt

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 11 inches: loam
H2 - 11 to 40 inches: clay loam
H3 - 40 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained Runoff class: Negligible

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 0 to 12 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B/D Hydric soil rating: Yes

Minor Components

Bibb

Percent of map unit: 3 percent Landform: Flood plains Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: Yes

Kinston

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

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

15—Ochlockonee silt loam

Map Unit Setting

National map unit symbol: 40h5

Elevation: 50 to 800 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Ochlockonee and similar soils: 75 percent

Minor components: 9 percent

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

Description of Ochlockonee

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear Across-slope shape: Linear Parent material: Marine deposits

Typical profile

H1 - 0 to 7 inches: silt loam H2 - 7 to 34 inches: loam

H3 - 34 to 62 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: About 36 to 60 inches Frequency of flooding: FrequentNone

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: B Hydric soil rating: No

Minor Components

Bibb

Percent of map unit: 5 percent Landform: Flood plains Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: Yes

Kinston

Percent of map unit: 4 percent Landform: Flood plains

Landform position (three-dimensional): Tread

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

18B—Rumford fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 40h9 Elevation: 80 to 150 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Rumford and similar soils: 80 percent

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

Description of Rumford

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 37 inches: fine sandy loam H3 - 37 to 60 inches: loamy fine sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A Hydric soil rating: No

19A—Slagle silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40hb

Elevation: 70 to 350 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 80 percent

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

Description of Slagle

Settina

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: silt loam H2 - 9 to 24 inches: loam H3 - 24 to 38 inches: loam H4 - 38 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C Hydric soil rating: No

19B—Slagle silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 40hc

Elevation: 70 to 350 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Slagle and similar soils: 80 percent

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

Description of Slagle

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: silt loam H2 - 9 to 24 inches: loam H3 - 24 to 38 inches: loam H4 - 38 to 60 inches: loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.57 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Hydric soil rating: No

20A—Suffolk fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 40hd

Elevation: 30 to 150 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Suffolk and similar soils: 85 percent

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

Description of Suffolk

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 12 inches: fine sandy loam
H2 - 12 to 38 inches: sandy clay loam
H3 - 38 to 62 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B Hydric soil rating: No

20B—Suffolk fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 40hf Elevation: 30 to 150 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Suffolk and similar soils: 80 percent

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

Description of Suffolk

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 12 inches: fine sandy loam H2 - 12 to 38 inches: sandy clay loam H3 - 38 to 62 inches: loamy sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B Hydric soil rating: No

21D—Suffolk-Remlik complex, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 40hg Elevation: 10 to 450 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Suffolk and similar soils: 45 percent Remlik and similar soils: 35 percent Minor components: 5 percent

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

Description of Suffolk

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 12 inches: fine sandy loam H2 - 12 to 38 inches: sandy clay loam H3 - 38 to 62 inches: loamy sand

Properties and qualities

Slope: 6 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B Hydric soil rating: No

Description of Remlik

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 27 inches: loamy sand H2 - 27 to 38 inches: sandy loam H3 - 38 to 70 inches: loamy fine sand

Properties and qualities

Slope: 6 to 15 percent

Depth to restrictive feature: More than 80 inches

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 5.95 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A Hydric soil rating: No

Minor Components

Bibb

Percent of map unit: 3 percent Landform: Flood plains Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: Yes

Kinston

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

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

21F—Suffolk-Remlik complex, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 40hh Elevation: 10 to 450 feet

Mean annual precipitation: 40 to 55 inches
Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Suffolk and similar soils: 45 percent Remlik and similar soils: 35 percent Minor components: 5 percent

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

Description of Suffolk

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 12 inches: fine sandy loam
H2 - 12 to 38 inches: sandy clay loam
H3 - 38 to 62 inches: loamy sand

Properties and qualities

Slope: 15 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B Hydric soil rating: No

Description of Remlik

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 27 inches: loamy sand H2 - 27 to 38 inches: sandy loam H3 - 38 to 70 inches: loamy fine sand

Properties and qualities

Slope: 15 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 5.95 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A Hydric soil rating: No

Minor Components

Bibb

Percent of map unit: 3 percent Landform: Flood plains Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: Yes

Kinston

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

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

22B—Udorthents and Psamments, gently sloping

Map Unit Setting

National map unit symbol: 40hj

Elevation: 0 to 100 feet

Mean annual precipitation: 40 to 55 inches Mean annual air temperature: 47 to 70 degrees F

Frost-free period: 182 to 210 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent Psamments and similar soils: 40 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 60 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Description of Psamments

Settina

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 6 inches: fine sand H2 - 6 to 60 inches: sand

Properties and qualities

Slope: 0 to 60 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95

to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A Hydric soil rating: No

W-Water

Map Unit Composition

Water: 100 percent

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

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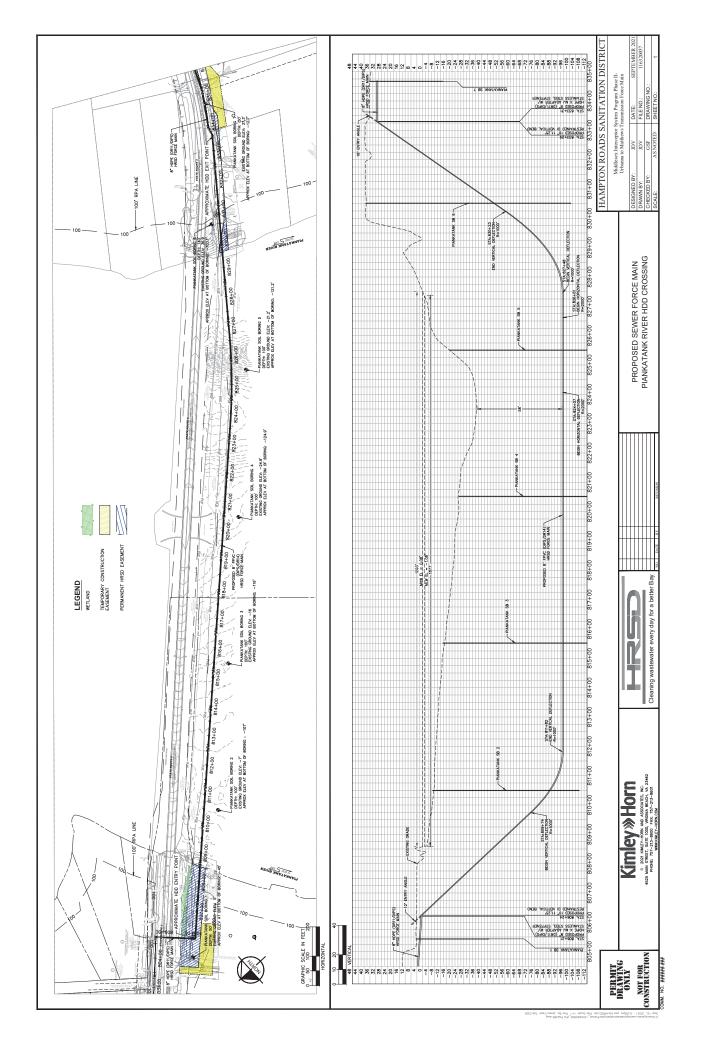
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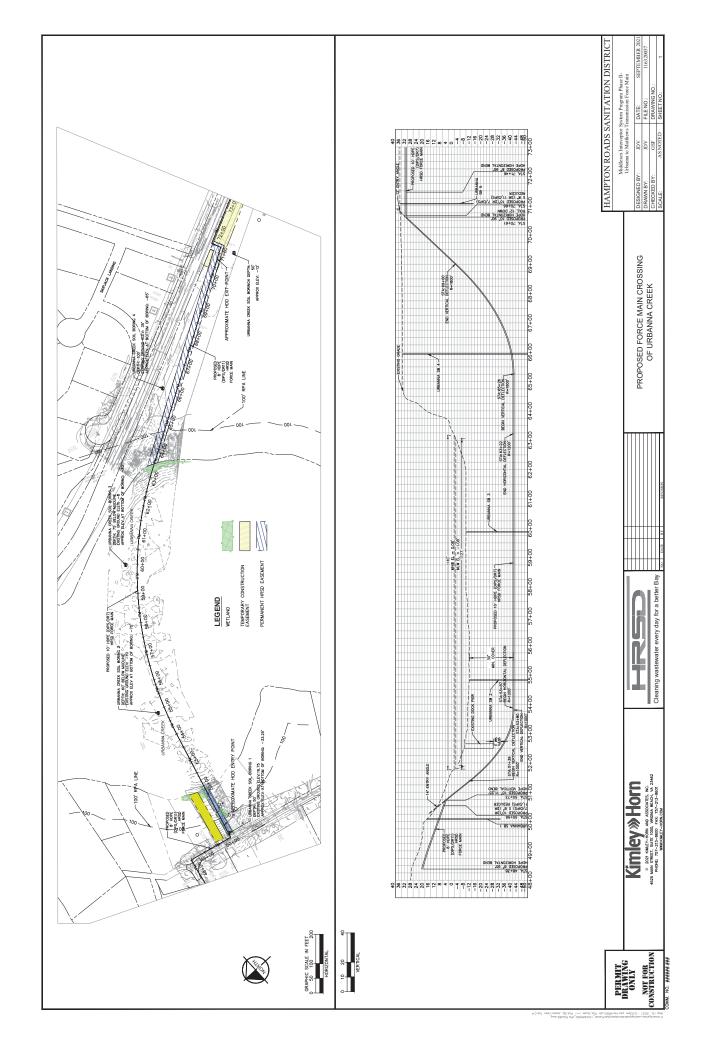
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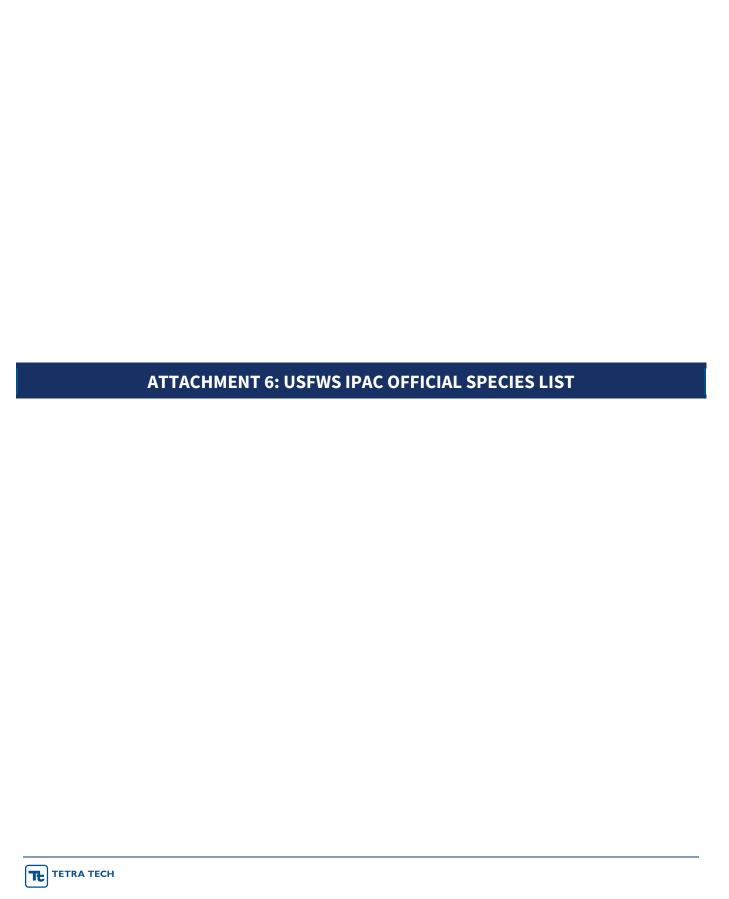
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United States Department of the Interior



FISH AND WILDLIFE SERVICE

Virginia Ecological Services Field Office 6669 Short Lane Gloucester, VA 23061-4410 Phone: (804) 693-6694 Fax: (804) 693-9032 http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: November 17, 2021

Consultation Code: 05E2VA00-2022-SLI-0804

Event Code: 05E2VA00-2022-E-02701

Project Name: HRSD Middlesex Interceptor Phase II Transmission Sanitary Sewer Force Main

Subject: List of threatened and endangered species that may occur in your proposed project

location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

2

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan

(http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office 6669 Short Lane Gloucester, VA 23061-4410 (804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2022-SLI-0804 Event Code: Some(05E2VA00-2022-E-02701)

Project Name: HRSD Middlesex Interceptor Phase II Transmission Sanitary Sewer Force

Main

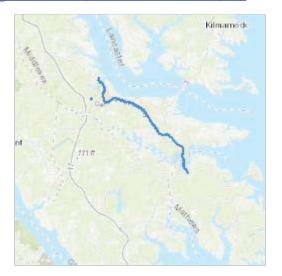
Project Type: WASTEWATER PIPELINE

Project Description: This Project proposes to construct a Sanitary Sewer Force Main in

Middlesex and Mathews Counties, VA, to serve Middlesex County.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4542212,-76.4683398930837,14z



Counties: Gloucester, Mathews, and Middlesex counties, Virginia

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME STATUS

Northern Long-eared Bat Myotis septentrionalis

Threatened

No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045

Insects

NAME STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Virginia Ecological Services Field Office 6669 Short Lane Gloucester, VA 23061-4410 Phone: (804) 693-6694 Fax: (804) 693-9032 http://www.fws.gov/northeast/virginiafield/

In Reply Refer To: November 17, 2021

Consultation code: 05E2VA00-2022-TA-0804 Event Code: 05E2VA00-2022-E-02702

Project Name: HRSD Middlesex Interceptor Phase II Transmission Sanitary Sewer Force Main

Subject: Verification letter for the 'HRSD Middlesex Interceptor Phase II Transmission

Sanitary Sewer Force Main' project under the January 5, 2016, Programmatic

Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities

Excepted from Take Prohibitions.

Dear Emily Foster:

The U.S. Fish and Wildlife Service (Service) received on November 17, 2021 your effects determination for the 'HRSD Middlesex Interceptor Phase II Transmission Sanitary Sewer Force Main' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) <u>only</u> for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

Monarch Butterfly Danaus plexippus Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

[1] Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

HRSD Middlesex Interceptor Phase II Transmission Sanitary Sewer Force Main

2. Description

The following description was provided for the project 'HRSD Middlesex Interceptor Phase II Transmission Sanitary Sewer Force Main':

This Project proposes to construct a Sanitary Sewer Force Main in Middlesex and Mathews Counties, VA, to serve Middlesex County.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4542212,-76.4683398930837,14z



Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require

ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

11/17/2021

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

- 1. Is the action authorized, funded, or being carried out by a Federal agency? *Yes*
- 2. Have you determined that the proposed action will have "no effect" on the northern longeared bat? (If you are unsure select "No")

No

3. Will your activity purposefully **Take** northern long-eared bats?

No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

Automatically answered

No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

7. Will the action involve Tree Removal?

Yes

- 8. Will the action only remove hazardous trees for the protection of human life or property? *No*
- 9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31 $\,$

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31 $\,$

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

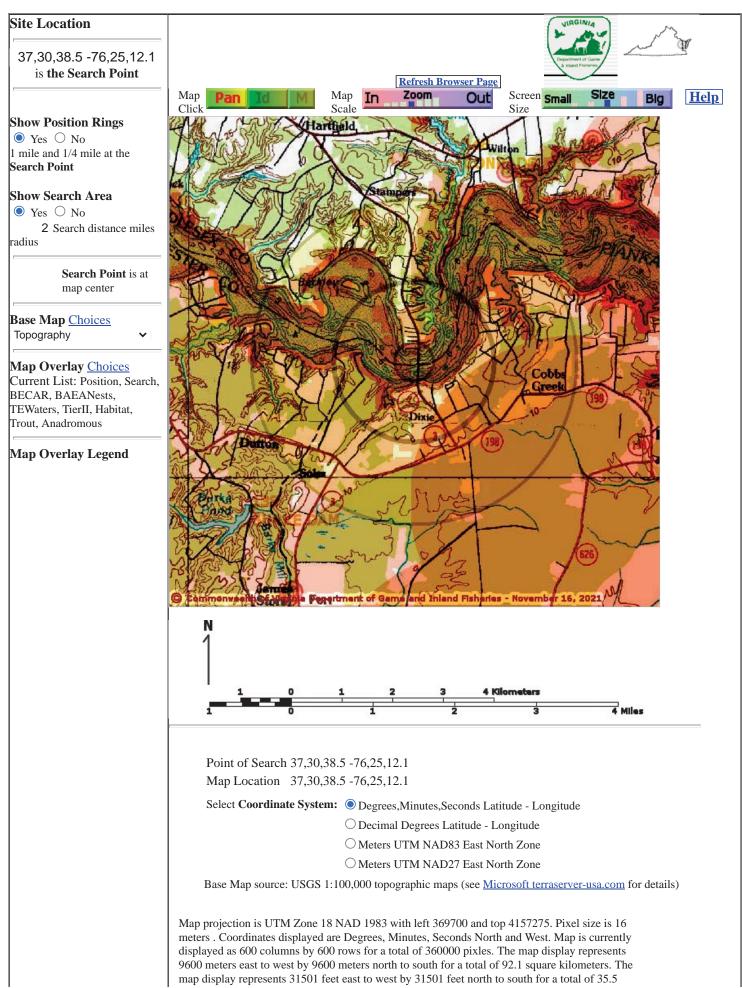
10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

ATTACHMENT 7: VDWR VAFWIS SEARCH REPORTS

TETRA TECH

11/16/21, 7:47 PM VaFWIS Map



11/16/21, 7:47 PM VaFWIS Map

square miles. T & E Waters Topographic maps and Black and white aerial photography for year 1990+-Federal are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia State Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo Predicted Habitat WAP Tier I & II All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries. Aquatic map assembled 2021-11-16 19:47:30 (qa/qc March 21, 2016 12:20 - tn=1148840.0 dist=3218.688 I) Terrestrial \$poi=37.5106944 -76.4200278 Trout Waters Class I - IV Class V - VI Anadromous Fish Reach Confirmed Potential Impediment Position Rings 1 mile and 1/4 mile at the Search Point 2 mile radius Search Area Bald Eagle Concentration Areas and Roosts

| <u>DGIF</u> | <u>Credits</u> | <u>Disclaimer</u> | Contact <u>vafwis support@dgif.virginia.gov</u> |Please view our <u>privacy policy</u> | © 1998-2021 Commonwealth of Virginia Department of Game and Inland Fisheries

VaFWIS Search Report Compiled on 11/16/2021, 7:46:23 PM

Help

Known or likely to occur within a 2 mile radius around point 37,30,38.5 -76,25,12.1 in 073 Gloucester County, 115 Mathews County, 119 Middlesex County, VA

View Map of Site Location

497 Known or Likely Species ordered by Status Concern for Conservation (displaying first 32) (32 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010031	FESE	Ia	Sturgeon, shortnose	Acipenser brevirostrum		BOVA
030074	FESE	Ia	Turtle, Kemp's ridley sea	Lepidochelys kempii		BOVA,HU6
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030075	FESE	Ic	Turtle, leatherback sea	Dermochelys coriacea		BOVA
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA,HU6
050022	FTST	Ia	Bat, northern long- eared	Myotis septentrionalis		BOVA
030072	FTST	Ib	Turtle, green sea	Chelonia mydas		BOVA
040120	FTST	IIa	Plover, piping	Charadrius melodus		BOVA
100361	FTST	IIa	Beetle, northeastern beach tiger	Cicindela dorsalis dorsalis		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum	<u>Potential</u>	BOVA,Habitat,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii		HU6
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Potential	BOVA,Habitat,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	<u>Potential</u>	BOVA,Habitat,HU6
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
040040		Ia	<u>Ibis, glossy</u>	Plegadis falcinellus		BOVA,HU6
020002		IIa	Treefrog, barking	Hyla gratiosa		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6

040033	IIa	Egret, snowy	Egretta thula	BOVA
040029	IIa	Heron, little blue	Egretta caerulea caerulea	BOVA
040036	IIa	Night-heron, yellow- crowned	Nyctanassa violacea violacea	BOVA
040114	IIa	Oystercatcher, American	Haematopus palliatus	BOVA,HU6
040181	IIa	Tern, common	Sterna hirundo	BOVA,HU6
040320	IIa	Warbler, cerulean	Setophaga cerulea	BOVA,HU6
040140	IIa	Woodcock, American	Scolopax minor	BOVA,HU6
040203	IIb	Cuckoo, black-billed	Coccyzus erythropthalmus	BOVA
040105	IIb	Rail, king	Rallus elegans	BOVA

To view **All 497 species** <u>View 497</u>

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier II - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;

IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Virginia Widlife Action Plan Conservation Opportunity Ranking:

- a On the ground management strategies/actions exist and can be feasibly implemented.;
- b On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
- c No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

<u>View Map of All Query Results from All Observation Tables</u>

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams (2 records)

<u>View Map of All</u> <u>Anadromous Fish Use Streams</u>

G ₄ ID	G ₄ N	D 1 C4 4	Anadro	X7° X.			
Stream ID	Stream Name	Reach Status	Different Species	Highest TE*	Highest Tier**	View Map	
C61	Piankatank river	Confirmed	5		IV	<u>Yes</u>	
P181	Wilton creek	Potential	0			Yes	

Impediments to Fish Passage

N/A

Colonial Water Bird Survey (3 records)

<u>View Map of All Query Results</u> <u>Colonial Water Bird Survey</u>

Colony_Name	N	Latest Date	N Species			View
	Obs					Map

			Different Species	Highest TE*	Highest Tier**	
Western Shore, Wilton, Gloucester	1	May 17 2013	1			<u>Yes</u>
Western Shore, Wilton, Mathews	1	May 17 2013	1			<u>Yes</u>
Dancing Creek	1	May 7 2003	1			Yes

Displayed 3 Colonial Water Bird Survey

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (10 records)

<u>View Map of All Query Results</u> <u>Species Observations</u>

obsID	Observed		Observer	Different Species	Highest TE*	Highest Tier**	View Map
425681	SppObs	Nov 8 2005	VCU - INSTAR	3		III	Yes
<u>1916</u>	SppObs	Oct 10 1990	Patricia L. Pies	1		III	<u>Yes</u>
333743	SppObs	Jan 1 1970	VIMS-B-VA. INST. MARINE SCI.	1		III	<u>Yes</u>
302878	SppObs	Oct 27 2003	Sheree Ruhl	1			<u>Yes</u>
302877	SppObs	Oct 24 2003	Sheree Ruhl	4			<u>Yes</u>
302873	SppObs	Oct 1 2003	Sheree Ruhl	3			<u>Yes</u>

302872	SppObs	Sep 30 2003	Sheree Ruhl	3		<u>Yes</u>
302871	SppObs	1	Sheree Ruhl	5		<u>Yes</u>
55374	SppObs	May 28 1998	R. Browder, , DEQ	3		Yes
366105	SppObs	Jan 1 1900		1		Yes

Displayed 10 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (3 Species)

<u>View Map of Combined Terrestrial Habitat Predicted for 3 WAP Tier I & II Species Listed Below</u>

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
020052	SE	IIa	Salamander, eastern tiger	Ambystoma tigrinum	<u>Yes</u>
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	<u>Yes</u>
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	Yes

Virginia Breeding Bird Atlas Blocks (4 records)

<u>View Map of All Query Results</u> <u>Virginia Breeding Bird Atlas Blocks</u>

BBA ID	Ad. O. I. Diel N	Breedin	X7: 3.4		
	Atlas Quadrangle Block Name	Different Species	Highest TE*	Highest Tier**	View Map
59082	Ware Neck, NE	60		III	Yes
59081	Ware Neck, NW	1			<u>Yes</u>
59096	Wilton, SE	67		III	<u>Yes</u>
59095	Wilton, SW	1			<u>Yes</u>

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
073	<u>Gloucester</u>	409	FESE	I
115	<u>Mathews</u>	372	FESE	I
119	<u>Middlesex</u>	386	FESE	I

USGS 7.5' Quadrangles:

Ware Neck Wilton

USGS NRCS Watersheds in Virginia:

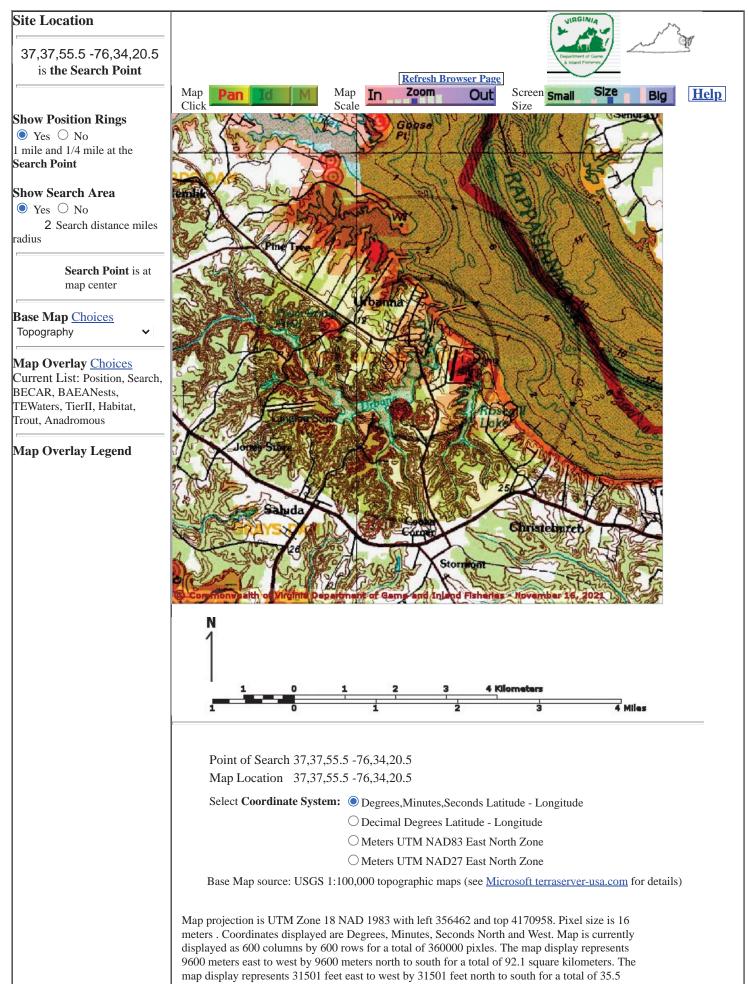
N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
CB10	Piankatank River-Carvers Creek	74	SS	I
CB11	<u>Piankatank River-Hills Bay</u>	69	FESE	I
CB12	Lower Chesapeake Bay-Milford Haven	67	FESE	I
CB16	North River	69	SE	I

 $PixelSize=64; Anadromous=0.022894; BBA=0.032128; BECAR=0.016991; Bats=0.017033; Buffer=0.062437; County=0.061158; HU6=0.058855; Impediments=0.018096; Init=0.090737; PublicLands=0.024298; Quad=0.032867; SppObs=0.239396; TEWaters=0.020556; TierReaches=0.021191; TierTerrestrial=0.037252; Total=0.927254; Tracking_BOVA=0.17916; Trout=0.020313; huva=0.030593$

11/16/21, 7:50 PM VaFWIS Map



11/16/21, 7:50 PM VaFWIS Map

square miles. T & E Waters Topographic maps and Black and white aerial photography for year 1990+-Federal are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia State Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo Predicted Habitat WAP Tier I & II All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries. Aquatic map assembled 2021-11-16 19:50:44 (qa/qc March 21, 2016 12:20 - tn=1148841.0 dist=3218.688 I) Terrestrial \$poi=37.6320833 -76.5723611 Trout Waters Class I - IV Class V - VI Anadromous Fish Reach Confirmed Potential Impediment Position Rings 1 mile and 1/4 mile at the Search Point 2 mile radius Search Area Bald Eagle Concentration Areas and Roosts

| <u>DGIF</u> | <u>Credits</u> | <u>Disclaimer</u> | Contact <u>vafwis support@dgif.virginia.gov</u> |Please view our <u>privacy policy</u> | © 1998-2021 Commonwealth of Virginia Department of Game and Inland Fisheries

VaFWIS Search Report Compiled on 11/16/2021, 7:50:22 PM

Help

Known or likely to occur within a 2 mile radius around point 37,37,55.5 -76,34,20.5 in 103 Lancaster County, 119 Middlesex County, VA

View Map of Site Location

461 Known or Likely Species ordered by Status Concern for Conservation (displaying first 27) (27 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010031	FESE	Ia	Sturgeon, shortnose	Acipenser brevirostrum		BOVA
030074	FESE	Ia	Turtle, Kemp's ridley sea	Lepidochelys kempii		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus	Yes	BOVA,TEWaters,Habitat,HU6
030071	FTST	Ia	Turtle, loggerhead sea	Caretta caretta		BOVA
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
030072	FTST	Ib	Turtle, green sea	Chelonia mydas		BOVA
100361	FTST	IIa	Beetle, northeastern beach tiger	Cicindela dorsalis dorsalis		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
030067	СС	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	<u>Potential</u>	BOVA,Habitat,HU6
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
040040		Ia	<u>Ibis, glossy</u>	Plegadis falcinellus		BOVA,HU6
070148		Ic	Amphipod, Lancaster County	Crangonyx baculispina		BOVA,HU6
020002		IIa	Treefrog, barking	Hyla gratiosa		HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6

040033	IIa	Egret, snowy	Egretta thula	BOVA
040029	IIa	Heron, little blue	Egretta caerulea caerulea	BOVA
040036	IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea	BOVA
040114	Па	Oystercatcher, American	Haematopus palliatus	BOVA
040181	IIa	Tern, common	Sterna hirundo	BOVA,HU6
040320	IIa	Warbler, cerulean	Setophaga cerulea	BOVA,HU6
040140	Па	Woodcock, American	Scolopax minor	BOVA,HU6
040203	IIb	Cuckoo, black- billed	Coccyzus erythropthalmus	BOVA
040105	IIb	Rail, king	Rallus elegans	BOVA

To view All 461 species View 461

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier II - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;

IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Virginia Widlife Action Plan Conservation Opportunity Ranking:

- a On the ground management strategies/actions exist and can be feasibly implemented.;
- b On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
- c No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

<u>View Map of All Query Results from All Observation Tables</u>

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

Stream ID		D 1	Anadro	mous Fish Sp	oecies	T 70
	Stream Name	Reach Status	Different Species	Highest TE*	Highest Tier**	View Map
C69	Rappahannock river 1	Confirmed	6		IV	Yes

Impediments to Fish Passage (3 records)

View Map of All Fish Impediments

ID	Name	River	View Map
75	LOWER ROSEGILL LAKE DAM	RAPPAHANNOCK RIVER	Yes
70	ROSEGILL UPPER DAM	TR-RAPPAHANNOCK	Yes
74	TOWN BRIDGE POND DAM	TOWN BRIDGE SWAMP	Yes

Colonial Water Bird Survey (4 records)

<u>View Map of All Query Results</u> <u>Colonial Water Bird Survey</u>

	N.T.			N Species		▼70
Colony_Name	N Obs	Latest Date	Different Species	Highest TE*	Highest Tier**	View Map
Western Shore, Saluda, Middlesex	1	May 10 2013	1			<u>Yes</u>
Western Shore, Urbanna, Middlesex	1	May 10 2013	1			Yes
Town Bridge Pond	1	May 7 2003	1			Yes
Urbanna Creek	2	May 7 2003	1			<u>Yes</u>

Displayed 4 Colonial Water Bird Survey

Threatened and Endangered Waters

(3 Reaches)

<u>View Map of All</u> Threatened and Endangered Waters

		T&E Waters Species					View
Stream Name	Highest TE*		BOVA Code, Status*, Tier**, Common & Scientific Name				
Rappahannock River (043895)	FESE	010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus	<u>Yes</u>
Rappahannock River (057307)	FESE	010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus	<u>Yes</u>
Rappahannock River (063157)	FESE	010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus	Yes

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (7 records)

<u>View Map of All Query Results</u> <u>Bald Eagle Nests</u>

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
MI0501	4	Apr 23 2006	HISTORIC	<u>Yes</u>
MI0602	7	Apr 30 2008	Unknown	<u>Yes</u>
MI0603	4	Apr 28 2007	Unknown	<u>Yes</u>

MI0809	1	Apr 30 2008	UNKNOWN	<u>Yes</u>
MI8002	5	May 11 1985	HISTORIC	<u>Yes</u>
MI8601	14	Apr 26 2000	HISTORIC	<u>Yes</u>
MI9201	14	Jan 1 2001	HISTORIC	<u>Yes</u>

Displayed 7 Bald Eagle Nests

Species Observations (21 records - displaying first 20)

View Map of All Query Results Species Observations

]			
obsID	class	Date Observed	Observer	Different Species	Highest TE*	Highest Tier**	View Map
425989	SppObs	Aug 15 2003	VCU - INSTAR	11		III	Yes
<u>52136</u>	SppObs	Sep 18 1997	Carroll VanLandingham, DOH	1		III	Yes
9152	SppObs	Sep 27 1996	Harold O. Leinbach, Alliance for the Chesapeake Bay			III	Yes
9166	SppObs	Jul 14 1996	Russ Russell, Alliance for the Chesapeake Bay	1		III	Yes
615464	SppObs	May 21 2011	David; Perry Kevin; Hopkins	1			Yes
609129	SppObs	Oct 22 2010	Yancey; Powell	3			Yes
609127	SppObs	Oct 21 2010	Yancey; Powell	2			Yes
609124	SppObs	Oct 20 2010	Yancey; Powell	ancey; Powell 2			Yes
609121	SppObs	Oct 19 2010	Yancey; Powell	2			Yes
609118	SppObs	Oct 18 2010	Yancey; Powell	3			Yes
609115	SppObs	Oct 15 2010	Yancey; Powell	2			Yes
609113	SppObs	Oct 14 2010	Yancey; Powell	1			Yes
609110	SppObs	Oct 13 2010	Yancey; Powell	3			Yes
609108	SppObs	Oct 12 2010	Yancey; Powell	2			Yes
316486	SppObs	Jul 24 2006	Rick Browder	4			Yes
<u>67855</u>	SppObs	Jun 28 2001	Rick Browder (Principle Permittee)	3			Yes
10136	SppObs	Nov 13 1976	M. Murray and Van Hoose	3			Yes

335629	SppObs	Jan 1 1976	ODU-B-OLD DOMINION UNIV.	5		<u>Yes</u>
335630	SppObs	Jan 1 1976	ODU-B-OLD DOMINION UNIV.	4		<u>Yes</u>
365776	SppObs	Jan 1 1900		1		Yes

Displayed 20 Species Observations

Selected 21 Observations View all 21 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species (1 Reach)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

			Tier Species				T 70
Stream Name	Highest TE*	DOVA COUC. Status . Her .					View Map
Rappahannock River (20801041)	FESE	010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus	<u>Yes</u>
Rappahannock River (20801041)	FESE	010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin	<u>Yes</u>

Virginia Breeding Bird Atlas Blocks (4 records)

<u>View Map of All Query Results</u> <u>Virginia Breeding Bird Atlas Blocks</u>

DD A ID	Ad a O a la sala Di al Na		Breeding Bird Atlas Species			
BBA ID	Atlas Quadrangle Block Name	Different Species	Highest TE*	Highest Tier**	View Map	
58092	Saluda, NE	1			Yes	
58091	Saluda, NW	2			Yes	
58106	<u>Urbana, SE</u>	70		III	Yes	
58105	<u>Urbana, SW</u>	1			Yes	

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
103	Lancaster	361	FESE	I
119	Middlesex	386	FESE	I

USGS 7.5' Quadrangles:

Saluda Urbana

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
CB09	<u>Dragon Swamp-Meggs Bay</u>	67	SS	II
CB10	Piankatank River-Carvers Creek	74	SS	I
RA69	Rappahannock River-Lagrange Creek	53	FESE	I

Compiled on 11/16/2021, 7:50:22 PM I1148841.0 report=all searchType= R dist= 3218.688 poi= 37,37,55.5 -76,34,20.5

PixelSize=64; Anadromous=0.023512; BBA=0.033242; BECAR=0.01837; Bats=0.017591; Buffer=0.062124; County=0.059343; HU6=0.061168; Impediments=0.020169; Init=0.091569; PublicLands=0.023538; Quad=0.032841; SppObs=0.277645; TEWaters=0.02833; TierReaches=0.042481; TierTerrestrial=0.034678; Total=1.018315; Tracking_BOVA=0.197042; Trout=0.02175; huva=0.031085



Natural Heritage Resources

Your Criteria

Taxonomic Group: Select All

Global Conservation Status Rank: Select All

State Conservation Status Rank: Select All

Federal Legal Status: Select All

State Legal Status: Select All

Watershed (8 digit HUC): 02080102 - Great Wicomico-Piankatank

Subwatershed (12 digit HUC): CB10 - Piankatank River-Carvers Creek, CB11 - Piankatank River-Hills Bay

Search Run: 11/16/2021 19:55:10 PM

Result Summary

Total Species returned: 1

Total Communities returned: 0

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common	Scientific Name	Scientific Name	Global Conservation	State Conservation	Federal Legal Status State Legal Status	Statewide	Virginia Coastal
Name/Natural		Linked	Status Rank	Status Rank		Occurrences	Zone
Community							
7. Wich	Prost Wicomico Disabatan	tonk					

ואמוווכ/ ואמנתו מו		LIINGO	Status Mally	Olalus Ivalin		Cocalidition	207
Community							
Great Wicon	Great Wicomico-Piankatank	atank					
Piankatank River-Hills Bay	s Bay						
COLEOPTERA (BEETLES)	TLES)						
Northeastern Beach Cicindela dorsalis	Cicindela dorsalis	Cicindela dorsalis	G3G4T2	S2	 占	18	>
Tiger Beetle	dorsalis	dorsalis					

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an <u>information request.</u>

Natural Heritage Resources

Your Criteria

Taxonomic Group: Select All

Global Conservation Status Rank: Select All

State Conservation Status Rank: Select All

Federal Legal Status: Select All

State Legal Status: Select All

Watershed (8 digit HUC): 02080104 - Lower Rappahannock River

Subwatershed (12 digit HUC): RA69 - Rappahannock River-Lagrange Creek

Search Run: 11/16/2021 19:56:57 PM

Result Summary

Total Species returned: 1

Total Communities returned: 0

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Virginia Coastal Zone		>
Statewide Occurrences		22
State Legal Status		LT
Federal Legal Status State Legal Status		<u></u>
State Conservation Status Rank		S2
Global Conservation Status Rank		
0,00,		G2
Scientific Name Linked		Aeschynomene virginica
Scientific Name	ahannock -agrange Creek	Aeschynomene virginica
Common Name/Natural Community	Lower Rappahannock Rappahannock Rappahannock River-Lagrange Creek VASCULAR PLANTS	Sensitive Joint-vetch Aeschynomene virginica

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an <u>information request.</u>



19 November 2021

Virginia Marine Resource Commission

Tidewater Joint Permit Application For VMRC subaqueous Crossing Piankatank River and Urbanna Creek Middlesex and Mathews, Virginia

Applicant: Mr. Edward Henifin

Hampton Roads Sanitation District

P.O. Box 5911

Virginia Beach, VA, 23471

Agent: Ms. Emily Foster

Tetra Tech

5700 Lake Wright Drive Norfolk, VA, 23502

Subject: HRSD - Middlesex Interceptor System Program Phase II; Urbanna to Mathews

Transmission Force Main project (MISPPII); NAO-2020-02102

To Whom It May Concern,

On behalf of the Hampton Roads Sanitation District (HRSD), Tetra Tech, Inc. has enclosed a completed Tidewater Joint Permit Application and Jurisdictional Determination Request in support of a proposed project to construct a sewage conveyance system through Mathews and Middlesex Counties, Virginia (HUCs).

The Middlesex Interceptor System Program Phase II — Urbanna to Mathews Transmission Force Main project (MISPPII) includes the design and construction of a sewage conveyance system to serve Middlesex County. A small diameter transmission force main will serve as the system backbone and extend 3.2 miles from Urbanna to Cook's Corner and approximately 13 miles along Route 33 from Cook's Corner to the connection to HRSD's Mathews Transmission force main near the intersection of Twiggs Ferry Road and Buckley Hall Road (Route 3/198). The Project will consist of a new force main to convey wastewater from Middlesex County to HRSD's York River Treatment Plant and enable decommissioning of both the HRSD Urbanna and Central Middlesex Treatment Plants. The Project also includes installation of pump stations and equalizer tanks.

The Project is predominantly co-located within existing roads and easements, and no impacts to wetlands are currently proposed. A wetland delineation was performed for the Project during the 2021 growing season, and a Jurisdictional Determination Request is attached to this application. All wetlands are to be avoided and silt fence will be installed adjacent to wetland boundaries prior to the start of construction. As HRSD intends to utilize funding from the Virginia Clean Water Revolving Loan Fund (CWRLF), an Environmental Assessment (EA) is also being prepared for this Project in accordance with CWRLF requirements.

This Joint Permit Application pertains specifically to the proposed crossings at the Piankatank River and Urbanna Creek, as the design of these Project components are less likely to be significantly altered as the planning and design phase moves forward. Because the Project includes subaqueous crossings of the Piankatank River and Urbanna Creek via Horizontal Direction Drill (HDD), HRSD is requesting VMRC authorization for the subaqueous crossings and requests concurrence from USACE and VADEQ that no



additional CWA Section 401/404 permits are required for these crossing locations. If any impacts to wetlands or waters of the U.S. are anticipated within the linear route or pump station location as design progresses, additional JD requests and JPAs for those locations will be submitted.

To assist the entities involved with the review and approval of this activity, please find the enclosed Tidewater JPA, Jurisdictional Determination Request, Figures, site photos and additional supporting information. Upon receipt and review of this package, please feel free to contact me by phone or e-mail at (540) 841-4752 or emily.foster@tetratech.com.

Respectfully submitted,

Emily Foster, PWS #2718 Environmental Scientist Tetra Tech, Inc

Enclosure

CC Edward Henifin, HRSD Scott Funk, P.E., Kimley-Horn Tim Moore, P.E., Tetra Tech Brad Sweeney, P.E., Tetra Tech

Attachments:

- 1. Tidewater JPA Form and Signatures
- 2. Property Owner Information
- 3. Jurisdictional Determination Request
- 4. Proposed Sewer Force Main Piankatank River HDD Crossing (Project Drawings)
- 5. Proposed Sewer Force Main Urbanna Creek HDD Crossing (Project Drawings)
- 6. USFWS IPaC Official Species List
- 7. VDWR VaFWIS Search Report
- 8. VDCR Natural Heritage Database Explorer Resources Report

ATTACHMENT 1: TIDEWATER JPA

Regulatory Agency Contact Information



Virginia Marine Resources Commission (VMRC)

Habitat Management Division 380 Fenwick Road, Building 96 Fort Monroe, VA 23651

Phone: (757) 247-2200, Fax: (757) 247-8062

Website: http://www.mrc.virginia.gov/hmac/hmoverview.shtm



United States Army Corps of Engineers (USACE)

Norfolk District

803 Front Street, ATTN: CENAO-WR-R

Norfolk, Virginia 23510-1011 Phone: (757) 201-7652, Fax: (757) 201-7678

Website: http://www.nao.usace.army.mil/Missions/Regulatory.aspx



Virginia Department of Environmental Quality (DEQ)

Virginia Water Protection Permit Program Post Office Box 1105 Richmond, Virginia 23218 Phone: (804) 698-4000

Website: http://www.deq.virginia.gov/



LOCAL WETLANDS BOARD (LWB) CONTACT INFORMATION:

Links to LWB information on the Web can be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html
In addition, the phone numbers listed below can be used to contact the LWB. Please be advised that these phone numbers are subject to change at any time.

Accomack County (757) 787-5721, Cape Charles (757) 331-3259, Charles City County (804) 829-9296, Chesapeake (757) 382-6248, Colonial Heights (804) 520-9275, Essex County (804) 443-4951, Fairfax County (703) 324-1364, Fredericksburg (540) 372-1179, Gloucester County (804) 693-2744, Hampton (757) 727-6140, Hopewell (804) 541-2267, Isle of Wight County (757) 365-6211, James City County (757) 253-6673, King and Queen County (804) 769-4978, King George County (540) 775-7111, King William County (804) 769-4927, Lancaster County (804) 462-5220, Mathews County (804) 725-5025, Middlesex County (804) 758-0500, New Kent County (804) 966-9690, Newport News (757) 247-8437, Norfolk (757) 664-4368, Northampton County (757) 678-0442, Northumberland County (804) 580-8910, Poquoson (757) 868-3040, Portsmouth (757) 393-8836, Prince William County (703) 792-6984, Richmond County (804) 333-3415, Stafford County (540) 658-8668, Suffolk (757) 923-3650, Virginia Beach (757) 427-8246, Westmoreland County (804) 493-0120, West Point (804) 843-3330, Williamsburg (757) 220-6130, York County (757) 890-3538

Tidewater Joint Permit Application (JPA) For Projects Involving Tidal Waters, Tidal Wetlands and/or Dunes and Beaches in Virginia

This application may be used for most commercial and noncommercial projects involving **tidal waters**, **tidal wetlands and/or dunes and beaches in Virginia** which require review and/or authorization by Local Wetlands Boards (LWB), the Virginia Marine Resources Commission (VMRC), the Department of Environmental Quality (DEQ), and/or the U. S. Army Corps of Engineers (USACE). This application can be used for:

- <u>Access-related activities</u>, including piers, boathouses, boat ramps (without associated dredging or excavation*), moorings, marinas.
- <u>Shoreline stabilization projects</u> including living shorelines, riprap revetments, marsh toe stabilization, bulkheads, breakwaters, beach nourishment, groins, and jetties. It is the policy of the Commonwealth that living shorelines are the preferred alternative for stabilizing tidal shorelines (Va. Code § 28.2-104.1).
- <u>Crossings</u> over or under tidal waters and wetlands including bridges and utility lines (water, sewer, electric).
- Aquaculture structures, including cages and floats except "oyster gardening"**

*Note: for all dredging, excavation, or surface water withdrawal projects you <u>MUST</u> use the Standard JPA form; for noncommercial, riparian shellfish aquaculture projects (i.e., "oyster gardening") you must use the abbreviated JPA found at https://mrc.virginia.gov/forms/2019/
VGP3 Aquaculture form 2019.pdf or call VMRC for a form.

The DEQ and the USACE use this form to determine whether projects qualify for certain General, Regional, and/or Nationwide permits. If your project does not qualify for these permits and you need a DEQ Virginia Water Protection permit or an individual USACE permit, you must submit the Standard Joint Permit application form. You can find this application at

http://www.nao.usace.army.mil/Missions/Regulatory/JPA.aspx. Please note that some health departments and local agencies, such as local building officials and erosion and sediment control authorities, do not use the Joint Permit Application process or forms and may have different informational requirements. The applicant is responsible for contacting these agencies for information regarding those permitting requirements.

HOW TO APPLY

Submit one (1) completed copy of the Tidewater JPA to VMRC:

- 1. If by mail or courier, use the VMRC address provided on page 1.
- 2. If by electronic mail, address the package to: <u>JPA.permits@mrc.virginia.gov</u>. The application must be provided in the .pdf format and should not exceed 10 MB. If larger than 10 MB you may provide a file transfer protocol (ftp) site for download purposes.

The Tidewater JPA should include the following:

- 1. **Part 1** General Information
- 2. **Part 2** Signatures
- 3. Part 3 Appendices (A, B, C, and/or D as applicable to your project)
- 4. **Part 4** Project Drawings.

The drawings shall include the following for ALL projects:

- Vicinity Map (USGS topographic map, road map or similar showing project location)
- Plan View Drawing (overhead, to scale or with dimensions clearly marked)
- Section View Drawing (side-view, to scale or with dimensions clearly marked)

Sample drawings are included at the end of Part 4 of this application to show examples of the information needed to consider your application complete and allow for the timely processing.

When completing this form, use the legal name of the applicant, agent, and/or property owner. For DEQ application purposes, *legal name* means the full legal name of an individual, business, or other organization. For an individual, the legal name is the first name, middle initial, last name, and suffix. For an entity authorized to do business in Virginia, the legal name is the exact name set forth in the entity's articles of incorporation, organization or trust, or formation agreement, as applicable. Also provide the name registered with the State Corporation Commission, if required to register. DEQ issues a permit or grants coverage to the so-named individual or business, who becomes the 'permittee'. Correspondence from some agencies, including permits, authorizations, and/or coverage, may be provided via electronic mail. If the applicant and/or agent wishes to receive their permit via electronic mail, please remember to include an e-mail address at the requested place in the application.

In order for projects requiring LWB authorization to be considered complete (Virginia Code § 28.2-1302); "The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances of facilities, including those on the adjacent uplands; a description of the type of equipment to be used and the means of access to the activity site; the names and addresses of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; and secondary purpose of the proposed project; a complete description of measures to be taken during and after alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require."

You may include signed Adjacent Property Owner (APO) Acknowledgement Forms found at the end of this Short Form. You must provide these addresses in Part 1 whether or not you use the APO forms. VMRC will request comments from APOs for projects that require permits for encroachment over state-owned submerged lands. VMRC or your local wetlands board must notify all APO's of public hearings required for all proposals involving tidal wetlands and dunes/beaches that are not authorized by statute. This information will not be used by DEQ to meet the requirements of notifying riparian land owners.

Regional Permit 17 (RP-17), authorizes the installation and/or construction of open-pile piers, mooring structures/devices, fender piles, covered boathouses/boatslips, boatlifts, osprey pilings/platforms, accessory pier structures, and certain devices associated with shellfish gardening, for private use, subject to strict compliance with all conditions and limitations further set out in the RP-17 enclosure located at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/. In addition to the information required in this JPA, prospective permittees seeking authorization under RP-17 must complete and submit the 'Regional Permit 17 Checklist' with their JPA. A copy of the 'Regional Permit 17 Checklist' is found on pages 13 and 14 of this application package. If the prospective permittee answers "yes" (or "N/A", where applicable) to all of the questions on the 'Regional Permit 17 Checklist', the permittee is in compliance with RP-17 and will not receive any other written authorization from the Corps but may not proceed with construction until they have obtained all necessary state and local permits. Note: If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work.

Note: Land disturbance (grading, filling, etc.) or removal of vegetation associated with projects located in Chesapeake Bay Preservation Areas will require approval from local governments. Certain localities utilize this application during their Bay Act review. Part 5 of this application is included to provide assistance for the applicant to comply with Bay Act /or Erosion and Sediment Control requirements concurrent with this application.

WHAT HAPPENS NEXT

Upon receipt of an application, VMRC will assign a permit application number to the JPA and will then distribute a copy of the application and any original plan copies submitted to the other regulatory agencies that are involved in the JPA process. All agencies will conduct separate but concurrent reviews of your project. Please be aware that each agency must issue a separate permit (or a notification that no permit is required). Note that in some cases, DEQ may be taking an action on behalf of the USACE, such as when the State Program General Permit (SPGP) applies. Make sure that you have received all necessary authorizations, or documentation that no permit is required, from each agency prior to beginning the proposed work.

During the JPA review process, site inspections may be necessary to evaluate a proposed project. Failure to allow an authorized representative of a regulatory agency to enter the property, or to take photographs of conditions at the project site, may result in either the withdrawal or denial of your permit application.

For certain federal and state permit applications, a public notice is published in a newspaper having circulation in the project area, is mailed to adjacent and/or riparian property owners, and/or is posted on the agency's web page. The public may comment on the project during a designated comment period, if applicable, which varies depending upon the type of permit being applied for and the issuing agency. In certain circumstances, the project may be heard by a governing board, such as a Local Wetlands Board, the State Water Control Board, or VMRC in cases where a locality does not have a wetlands board and with certain subaqueous cases. You may be responsible for bearing the costs for advertisement of public notices.

Public hearings that are held by VMRC occur at their regularly scheduled monthly commission meetings under the following situations: Protested applications for VMRC permits which cannot be resolved; projects costing over \$500,000 involving encroachment over state-owned subaqueous land; and all projects affecting tidal wetlands and dunes/beaches in localities without a LWB. All interested parties will be officially notified regarding the date and time of the hearing and Commission meeting procedures. The Commission will usually make a decision on the project at the meeting unless a decision for continuance is made. If a proposed project is approved, a permit or similar agency correspondence is sent to the applicant. In some cases, notarized signatures, as well as processing fees and royalties, are required before the permit is validated. If the project is denied, the applicant will be notified in writing.

PERMIT APPLICATION OR OTHER FEES

Do not send any fees with the JPA. VMRC is not responsible for accounting for fees required by other agencies. Please consult agency websites or contact agencies directly for current fee information and submittal instructions.

❖ USACE: Permit application fees are required for USACE Individual (Standard) permits. A USACE project manager will contact you regarding the proper fee and submittal requirements.

- ❖ DEQ: Permit application fees required for Virginia Water Protection permits while detailed in 9VAC25-20 are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions to the address listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- ❖ VMRC: An application fee of \$300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are \$25.00 for projects costing \$10,000 or less and \$100 for projects costing more than \$10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- ❖ LWB: Permit fees vary by locality. Contact the LWB for your project area or their website for fee information and submittal requirements. Contact information for LWBs may be found at http://ccrm.vims.edu/permits web/guidance/local wetlands boards.html.

FOR AGENC	CY USE ONLY
1	Notes:
J	JPA#

APPLICANTS Part 1 – General Information

PLEASE PRINT OR TYPE ALL ANSWERS: If a question does not apply to your project, please print N/A (not applicable) in the space provided. If additional space is needed, attach 8-1/2 x 11 inch sheets of paper.

	Check all that apply				
		Check all that apply			
NWP # (For Nation	uction Notification (PCN) unwide Permits ONLY - No DEQ- it writer will be assigned)	Regional Permit 17 (RP-17)□	VMRC	Subaqueous Permit	
	or City in which the project site: Piankatank Rive	ct is located: Mathews and Middlesex County er and Urbanna Creek			
PREVIOU	PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)				
Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - https://ccrm.vims.edu/perms/newpermits.html					
Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial	
USACE	Pre-Application Request	NAO-2020-02102	10/30/2020	N/A	

Part 1 - General Information (continued)

1.	Applicant's legal name* and complete mailing address:	Contact	t Information:
	Edward Henifin, HRSD Project Manager 1434 Air Rail Avenue	Home Work	()
		Fax	()
	Virginia Beach, VA 23445	Cell	(757)460-2261
		e-mail	ehenifin@hrsd.com
	State Corporation Commission Name and ID Number (if applic	able)
2. 1	Property owner(s) legal name* and complete address, if of	different	from applicant: Contact Information:
		Home	()
		Work	()
		Fax	()
		Cell	()
		e-mail	
	State Corporation Commission Name and ID Number (if applic	able)
3.	Authorized agent name* and complete mailing address (if applicable):	Contact	t Information:
	Tetra Tech c/o Emily Foster	Work	()
	5700 Lake Wright Dr.	Fax	()
	Norfolk VA, 23502	Cell	(540)841-4752
	·		emily.foster@tetratech.com
	State Corporation Commission Name and ID Number (if applic	able)

* If multiple applicants, property owners, and/or agents, each must be listed and each must sign the applicant signature page.

4. Provide a <u>detailed</u> description of the project in the space below, including the type of project, its dimensions, materials, and method of construction. Be sure to include how the construction site will be accessed and whether tree clearing and/or grading will be required, including the total acreage. If the project requires pilings, please be sure to include the total number, type (e.g. wood, steel, etc), diameter, and method of installation (e.g. hammer, vibratory, jetted, etc). If additional space is needed, provide a separate sheet of paper with the project description.

On behalf of HRSD, Tetra Tech, Inc. is submitting this Joint Permit Application in support of planned project to design and construct a sewage conveyance system to serve Middlesex County, Virginia (the Project).

Middlesex Interceptor System Program Phase II – Urbanna to Mathews Transmission Force Main project (MISPPII) includes the design and construction of a sewage conveyance system to serve Middlesex County. A small diameter transmission force main will serve as the system backbone and extend 3.2 miles from Urbanna to Cook's Corner and approximately 13 miles along Route 33 from Cook's Corner to the connection to HRSD's Mathews Transmission force main near the intersection of Twiggs Ferry Road and Buckley Hall Road (Route 3/198). The Project will consist of a new force main to convey wastewater from Middlesex County to HRSD's York River Treatment Plant and enable decommissioning of both the HRSD Urbanna and Central Middlesex Treatment Plants. The Project also includes installation of pump stations and equalizer tanks.

Because the Project includes crossings under the Piankatank River and Urbanna Creek via Horizontal Direction Drill (HDD) with no proposed impacts to adjacent delineated wetlands, Tetra Tech is anticipating the need for a subaqueous permit from VMRC and requests concurrence from USACE and VADEQ that no Section 401/404 permits are required. This Joint Permit Application pertains specifically to the proposed crossings at the Piankatank River and Urbanna Creek, as the design of these Project components are less likely to be significantly altered as the planning and design phase moves forward.

Part 1 - General Information (continued)

5.	Have you obtained a contractor for the project? Yes* × No. *If your answer is "Yes" complete the remainder of this question and submit the Applicant's and Contractor's Acknowledgment Form (enclosed)						
	Contractor's name* and complete mailing address:	Contact Information:					
	N/A	Home ()					
	IN/A	Work ()					
		Fax ()					
		Cell ()					
		email					
	State Corporation Commission Name and ID Number	er (if applicable)					
* I	f multiple contractors, each must be listed and each must sig	n the applicant signature page.					
6.	List the name, address and telephone number of the of the project. Failure to complete this question may						
	Name and complete mailing address:	Telephone number					
	N/A	()					
	14// (
7.	Street Address (911 address if available)						
	City / County_ Latitude and Longitude at Center Point of Project Si	ZIP Code					
	Latitude and Longitude at Center Point of Project Si	te (Decimal Degrees): (Example: 36.41600/-76.30733)					
	If the project is located in a rural area, please provide best and nearest visible landmarks or major intersect subdivision or property, clearly stake and identify project. A supplemental map showing how the property.	ions. Note: if the project is in an undeveloped coperty lines and location of the proposed					
	N/A - linear project						
8.	What are the <i>primary and secondary purposes of and</i> primary purpose <u>may</u> be "to protect property from en purpose <u>may</u> be "to provide safer access to a pier."						
	See attached property owner information						

Part 1 - General Information (continued)

9.	Proposed use (check one):			
	Single user (private, non-commercial, residential)			
	X Multi-user (community, commercial, industrial, government)			
10.	Describe alternatives considered and the measures that will be taken to avoid and minimize impacts, to the maximum extent practicable, to wetlands, surface waters, submerged lands, and buffer areas associated with any disturbance (clearing, grading, excavating) during and after project construction. Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation.			
	Piankatank River, Urbanna Creek			
11.	Is this application being submitted for after-the-fact authorization for work which has already begun or been completed?Yes ×_No. If yes, be sure to clearly depict the portions of the project which are already complete in the project drawings.			
12.	Approximate cost of the entire project (materials, labor, etc.): \$\(\frac{27,000,000}{}{}			
	Approximate cost of that portion of the project that is channelward of mean low water: \$ 900,000			
13.	Completion date of the proposed work: January2025			
14.	Adjacent Property Owner Information: List the name and complete mailing address , including zip code, of each adjacent property owner to the project. (NOTE: If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.) Failure to provide this information may result in a delay in the processing of your application by VMRC.			
	See attached property owner information.			

Part 2 - Signatures

1. Applicants and property owners (if different from applicant). NOTE: REQUIRED FOR ALL PROJECTS

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for all permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

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

Edward Henifin, HRSD Project Manager	
Applicant's Legal Name (printed/typed)	(Use if more than one applicant)
Applicant's Signature	(Use if more than one applicant)
Date	
Property Owner's Legal Name (printed/typed) (If different from Applicant)	(Use if more than one owner)
Property Owner's Signature	(Use if more than one owner)
Date	

Part 2 – Signatures (continued)

2. Applicants having agents (if applicable)

CERTIFICATION OF AUTHORIZATION	- "	
I (we), Edward Henifin: HRSD , hereby certify t	that I (we) have authorized Emily M Foster: Tetra Tech	
(Applicant's legal name(s))	(Agent's name(s))	
	to the processing, issuance and acceptance of this permit and any an	d all
standard and special conditions attached.		
We handry contify that the information submitted	in this application is two and accounts to the heat of our Impervious	
we hereby certify that the information submitted	in this application is true and accurate to the best of our knowledge.	
(Agent's Signature)	(Use if more than one agent)	
	,	
(Date)		
(Applicant's Signature)	(Use if more than one applicant)	
(Applicant's Signature)	(Ose if more than one applicant)	
(Date)		
3. Applicant's having contractors (if applicable		
CONTRACTOR ACKNOWLEDGEMENT		
I (we),, have contract	atad	
(Applicant's legal name(s))	(Contractor's name(s))	
to perform the work described in this Joint Permi		
to perform the work described in this John Fermi	t rippireution, signed and dated	
We will read and abide by all conditions set forth	in all Federal, State and Local permits as required for this project. V	Vе
	f the permits may constitute a violation of applicable Federal, state an	
	vil and/or criminal penalties imposed by these statutes. In addition, v	
	ny regulatory representative visiting the project to ensure permit	
	permit upon request, we understand that the representative will have t	
	determined that we have a properly signed and executed permit and a	are
in full compliance with all terms and conditions.		
Contractor's name or name of firm		
Contractor 5 hame of hame of him	Contractor's or firms address	
	Continuous of mane and to	
Contractor's signature and title	Contractor's License Number	
	<u> </u>	
Applicant's signature	(use if more than one applicant)	
Date		
L are		

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we),	, own land next to (across the water
(Print adjacent/nearby property ow	own land next to (across the water vner's name)
from/on the same cove as) the land of	(Print applicant's name(s))
((Print applicant's name(s))
I have reviewed the applicant's project dra	awings dated(Date)
to be submitted for all necessary federal, s	state and local permits.
I HAVE NO COMMENT ABOU	JT THE PROJECT.
I DO NOT OBJECT TO THE PR	OJECT.
I OBJECT TO THE PROJECT.	
The applicant has agreed to conta prior to construction of the project	act me for additional comments if the proposal changes et.
(Before signing this form be sure yo	ou have checked the appropriate option above).
Adjacent/nearby property owner's signatu	ure(s)
Date	

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 2 – Signatures (continued)

ADJACENT PROPERTY OWNER'S ACKNOWLEDGEMENT FORM

I (we),	, own land next to (across the water
(Print adjacent/nearby property ow	ner's name), own land next to (across the water
from/on the same cove as) the land of	(Print applicant's name(s))
	(Print applicant's name(s))
I have reviewed the applicant's project dr	rawings dated(Date)
	(Date)
to be submitted for all necessary federal,	state and local permits.
I HAVE NO COMMENT ABOU	UT THE PROJECT.
I DO NOT OBJECT TO THE PR	ROJECT.
I OBJECT TO THE PROJECT.	
The applicant has agreed to conta prior to construction of the proje	act me for additional comments if the proposal changes ct.
(Before signing this form, be sure y	you have checked the appropriate option above).
Adjacent/nearby property owner's signate	$\overline{\operatorname{ure}(s)}$
Date	

Note: If you object to the proposal, the reason(s) you oppose the project must be submitted in writing to VMRC. An objection will not necessarily result in denial of the project; however, valid complaints will be given full consideration during the permit review process.

Part 3 – Appendices (continued)

Appendix C: Crossings in, on, over, or under, waters, submerged lands, tidal wetlands and/or dunes and beaches, including but not limited to, bridges, walkways, pipelines and utility lines.

1.	What is the purpose and method of installation of the	crossing?			
	Purpose: To install a new transmission force main to provide sani cross the Piankatank River and Urbanna Creek.	tary sewer serv	vice to Middlesex C	County, using HD	D methods to
2.	What is the width of the waterway and/or wetlands to	be crossed			
	from mean high water to mean high water	(tidal water	rs)? 1,140/1,893	feet. Urbanna Ci	reek/Piankatank Rive
	from mean low water to mean low water (`	/		reek/Piankatank Rive
	from ordinary high water to ordinary high	,		N/A	_ feet.
3.	For bridges (footbridges, golf cart bridges, roadway be tidal wetlands, dunes/beaches and/or submerged lands	•			acture over the
4.	For overhead crossings: a. What will be the height above mean high vib. If there are other overhead crossings in the c. If the proposed crossing is an electrical line circuits: N/A	e area, what	is the minimun		
5.	For buried crossings, what will be the depth below the provide empty conduits for any additional utilities that X No. Urbanna	it may propo		at a later date	e?Yes
6.	Will there be any excavation or fill required for place structures on State-owned submerged lands, tidal wet		-		-
	If yes, please provide the following:				
	a. Amount of excavation in wetlands	0	cubic yards		
		0	square feet		
	b. Amount of excavation in submerged land	0	cubic yards		
		0	square feet		
	c. Amount of excavation in dune/beach	0	cubic yards		
		0	square feet		
	d. Amount of fill in wetlands	0	cubic yards		
		0	square feet		
	e. Amount of fill in submerged lands	0	cubic yards		
		0	square feet		
	f. Amount of fill in dune/beach	0	_ cubic yards		
		0	_ square feet		

Part 4 - Project Drawings

Plan view and cross-sectional view drawings are required for all projects. Application drawings do not need to be prepared by a professional draftsman, but they must be clear, accurate, and should be to an appropriate scale. If a scale is not used, all dimensions must be clearly depicted in the drawings. If available, a plat of the property should be included, with the existing and proposed structures clearly indicated. Distances from the proposed structure(s) to fixed points of reference (benchmarks) and to the adjacent property lines must be shown. A vicinity map (County road map, USGS Topographic map, etc.) must also be provided to show the location of the property. **NOTE:** The sample drawings have been included at the end of this section to provide guidance on the information required for different types of projects. Clear and accurate drawings are essential for project review and compliance determination. Incomplete or unclear drawings may cause delays in the processing of your application.

The following items must be included on <u>ALL</u> project drawings: (plan and cross-sectional, as appropriate)

- name of project
- north arrow
- scale
- waterway name
- existing and proposed structures, labeled as such
- dimensions of proposed structures
- mean high water and mean low water lines
- all delineated wetlands and all surface waters on the site, including the Cowardin classification (i.e., emergent, scrub-shrub, or forested) for those surface waters (if applicable)
- limits of proposed impacts to surface waters, such as fill areas, riprap scour protection placement, and dredged areas, and the amount of such impacts in square feet and acres
- ebb/flood direction
- adjacent property lines and owner's name
- distances from proposed structures to fixed points of reference (benchmarks) and adjacent property lines

Part 5 - Chesapeake Bay Preservation Act Information

All proposed development, redevelopment, land disturbance, clearing or grading related to this Tidewater JPA must comply with the Chesapeake Bay Preservation Area Designation and Management Regulations, which are enforced through locally adopted Chesapeake Bay Preservation Area (CBPA) ordinances. Compliance with state and local CBPA requirements mandates the submission of a Water Quality Impact Assessment (WQIA) for the review and approval of the local government. Contact the appropriate local government office to determine if a WQIA is required for the proposed activity(ies).

Because the 84 local governments within Tidewater Virginia are responsible for enforcing the CBPA Regulations, the completion of the JPA process does not constitute compliance with the Bay Act Regulations nor does it guarantee that the local government will approve encroachments into the RPA that may result from this project. Applicants should contact their local government as early in the design process as possible to ensure that the final design and construction of the proposed project meets all applicable CBPA requirements. Early cooperation with local government staff can help applicants avoid unnecessary and costly delays to construction. Applicants should provide local government staff with information regarding existing vegetation within the Resource Protection Area (RPA) as well as a description and site drawings of any proposed land disturbance, construction, or vegetation clearing. As part of their review and approval processes, local government staff will evaluate the proposed project and determine whether or not approval can be granted. Once the locality has made a decision on the project, they will advise the Local Wetlands Boards and other appropriate parties of applicable CBPA concerns or issues.

Resource Protection Areas (RPAs) are composed of the following features:

- 1. Tidal wetlands;
- 2. Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;
- 3. Tidal shores;
- 4. Other lands considered by the local government to meet the provisions of subsection A of 9VAC25-830-80 and to be necessary to protect the quality of state waters; and
- 5. A buffer area not less than 100 feet in width located adjacent to and landward of the components listed in subdivisions 1 through 4 above, and along both sides of any water body with perennial flow.

Notes for all projects in RPAs

Development, redevelopment, construction, land disturbance, or placement of fill within the RPA features listed above requires the approval of the locality and may require an exception or variance from the local Bay Act ordinance. Please contact the appropriate local government to determine the types of development or land uses that are permitted within RPAs.

Pursuant to 9VAC25-830-110, on-site delineation of the RPA is required for all projects in CBPAs. Because USGS maps are not always indicative of actual "in-field" conditions, they may not be used to determine the site-specific boundaries of the RPA.

Notes for shoreline erosion control projects in RPAs

Re-establishment of woody vegetation in the buffer will be required by the locality to mitigate for the removal or disturbance of buffer vegetation associated with your proposed project. Please contact the local government to determine the mitigation requirements for impacts to the 100-foot RPA buffer.

Part 5 - Chesapeake Bay Preservation Act Information (continued)

Pursuant to 9VAC25-830-140 5 a (4) of the Virginia Administrative Code, shoreline erosion projects are a permitted modification to RPAs provided that the project is based on the "best technical advice" and complies with applicable permit conditions. In accordance with 9VAC25-830-140 1 of the Virginia Administrative Code, the locality will use the information provided in this Part V, in the project drawings, in this permit application, and as required by the locality, to make a determination that:

- 1. Any proposed shoreline erosion control measure is necessary and consistent with the nature of the erosion occurring on the site, and the measures have employed the "best available technical advice"
- 2. Indigenous vegetation will be preserved to the maximum extent practicable
- 3. Proposed land disturbance has been minimized
- 4. Appropriate mitigation plantings will provide the required water quality functions of the buffer (9VAC25-830-140 3)
- 5. The project is consistent with the locality's comprehensive plan
- 6. Access to the project will be provided with the minimum disturbance necessary.

JURISDICTIONAL BOUNDARIES

