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July 9, 2024
15.0166500.49

Mr. Mark P. Reed
HERITAGE Land Surveying & Engineering, Inc.
241 College Highway
PO Box 90
Southampton, MA 01073

Re: Wetland Assessment and Delineation Letter Report
Map 19, Lot 141 & Map 24, Lot 15, College Highway
Southampton, MA

Dear Mark,

In accordance with our contract, GZA conducted a wetland assessment and delineation within a 41.5-acre property that is located at Map 19, Lot 141 and a 3.4-acre parcel located at Map 24, Lot 15, College Highway, Southampton, MA ("Site"). The intention of the assessment was to determine if regulated wetland resources are present within the Site. This letter report provides an overview of our assessment methodology and findings.

Assessment Findings

Desktop Survey

GZA reviewed MassGIS to assess if State-regulated wetland resources are present on the Site (**Table 1**).

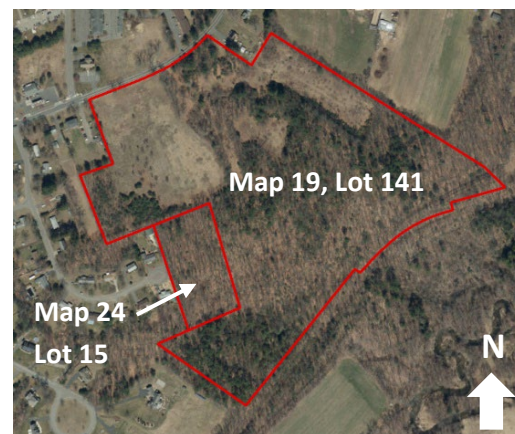


Figure 1: Approximate Site limits provided by HERITAGE.

Table 1. Summary of Massachusetts On-Site Wetland Resources from MassGIS

Resource	Present
Areas of Critical Environmental Concern (ACEC)	No
Outstanding Resource Water (ORW)	No
Priority Habitat for Rare and Endangered Species	No
Certified Vernal Pools	No
FEMA Floodplain, 100-year	No
Riverfront Area	No
Bank	No
Bordering Vegetated Wetland	No

Site Observations

On Tuesday July 2, 2024, two Environmental Scientists from GZA conducted a wetland assessment and resource area delineation at the above referenced Site. Our wetland assessment and delineation methodology are consistent with the Massachusetts *Handbook for Delineating Bordering Vegetated Wetlands*, Second Edition, Jackson, S.D, D.J. Henson, D.



Hilgeman, M. McHugh, and L. Rhodes, 2022, Boston, MA., Massachusetts Department of Environmental Protection, Bureau of Water resources, Wetlands Program; and *Corps of Engineers Wetland Delineation Manual, Environmental Laboratory. Technical Report Y-87-1*. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS; 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J.S. Wakely, R.W. Lichvar, and C. C. Noble; *ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center (Version 2.0)*. The wetlands observed on the Site are presumed to be under the jurisdiction of the Wetlands Protection Act (WPA; M.G.L. c. 131, § 40), its companion regulations (310 CMR 10.00), and Section 404 of the federal Clean Water Act as administered by the U.S. Army Corps of Engineers (Corps).

The Site consists of two lots. The northern portion of the Map 19, Lot 141 section generally consists of open fields that appear to be transitioning to shrub communities. The southern portion of that lot consists of a mature forest community and borders on a railroad right-of-way. A review of the MassMapper online portal indicated that there are no previously identified wetland resources present within this lot.

The portion of the Site located at Map 24, Lot 15 consists of a mature forest community with tree, shrub, and groundcover species including red oak, red maple, white oak (*Quercus alba*), sugar maple (*Acer saccharum*), black birch (*Betula lenta*), witch hazel (*Hamamelis virginiana*), white pine (*Pinus strobus*), lowbush blueberry (*Vaccinium angustifolium*), Pennsylvania sedge (*Carex pensylvanica*), mountain laurel (*Kalmia latifolia*), striped wintergreen (*Chimaphila maculate*), bracken fern (*Pteridium aquilinum*), and swallowwort (*Vincetoxicum sp.*). The topography is relatively flat in the central and northern portion of the property and slopes down at the southern end of the property. A review of the MassMapper online portal also indicated that there are no previously identified wetland resources present within this lot.

However, based upon our field review we observed and delineated two potential wetland resources including two Bordering Vegetated Wetlands (BVW) and observed the presence of Bank resource area within the southern portion of the Map 19, Lot 141 parcel.

Wetland Descriptions

Map 19, Lot 141

BVW (Flags A-1 to A-8, A-10 to A-15, and B-1 to B-14)

The A series wetland flags demarcate a BVW located near the railroad right-of-way (ROW) located in the eastern portion of the Site. The delineated BVW was observed to border on a granite block culvert that is assumed to convey flow under the railroad ROW and would qualify as a Bank resource. The Bank connects to an off-site wetland complex to the east. The predominant wetland vegetation was sparsely arranged and included wild raisin (*Viburnum cassinoides*), sensitive fern (*Onoclea sensibilis*), and cinnamon fern (*Osmundastrum cinnamomeum*). The wetland soils were observed to have hydric characteristics including a reduced soil matrix with obvious redoximorphic features that indicates periods of saturation within the upper part of the soil strata.



Figure 2: A typical view of the field portion of Map 19, Lot 141.



Figure 3: A typical view of Map 24, Lot 15.



The B series BVW is in the eastern portion of the Site and extends off-property to the east. A Bank resource was identified within the B series BVW that may convey flow during periods of inundation. The predominant shrub community vegetation within the BVW is red maple (*Acer rubrum*), winterberry (*Ilex verticillata*), mountain laurel (*Kalmia latifolia*), and red oak (*Quercus rubra*). Ground cover species observed in the BVW include skunk cabbage (*Symplocarpus foetidus*), jewelweed (*Impatiens capensis*), interrupted fern (*Osmunda claytonia*), and cinnamon fern (*Osmundastrum cinnamomeum*). The wetland soils were observed to have hydric characteristics like those in the A series BVW.

The delineated BVW resources are assumed to support five of the eight interests of the Wetland Protection Act Regulations described in the Preamble at 310 CMR 10.55(1), including protection of wildlife habitat and flood control.



Figure 5: View of the A series BVW facing south.



Figure 4: View of the B series BVW facing east.



Summary of Findings

Based upon our desktop survey and field assessment, GZA delineated two BVW resources, each bordering on a Bank resource. The BVW and Bank resources project a 100-foot jurisdictional Buffer Zone (not depicted on attached sketch map) that extends landward from the delineated boundaries. The resource areas and their Buffer Zones are jurisdictional under the WPA and its companion Regulations. The BVW resources may qualify as Waters of the U.S. and may also be regulated by the Corps under Section 404 of the Federal Clean Water Act. The Corps jurisdiction does not include Buffer Zones.

Alteration of the soil or vegetation within a wetland resource or its Buffer Zone requires approval, at a minimum, from the Southampton Conservation Commission and adherence to specific performance standards.

Should you have any questions, please feel free to contact Joseph Rogers at 413-726-2109.

Sincerely,

GZA GeoEnvironmental, Inc.

A handwritten signature in blue ink, reading "Joseph Rogers".

Joseph Rogers, PWS, CESSWI
Senior Project Manager

A handwritten signature in blue ink, reading "Robin J. Casioppo".

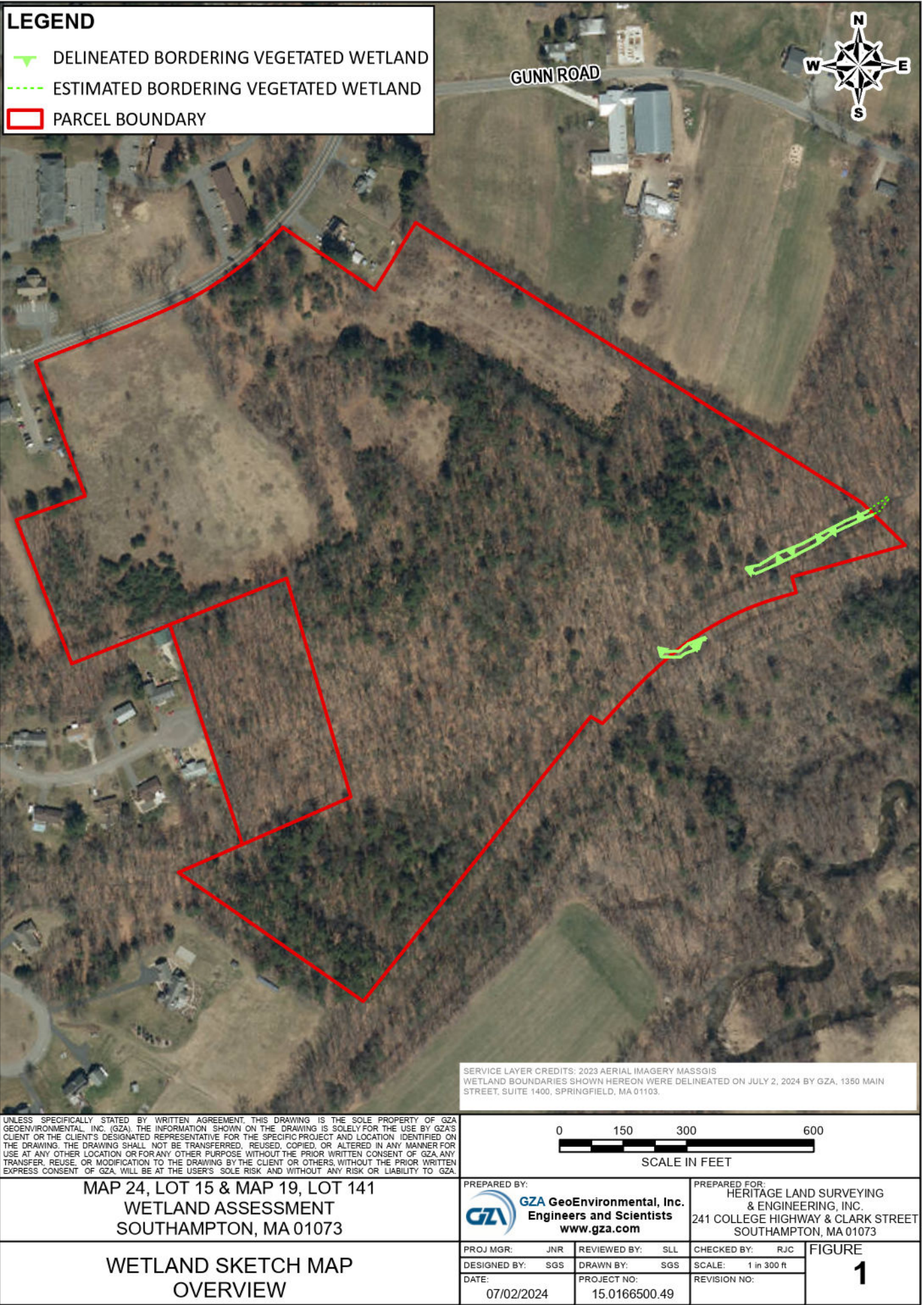
Robin Casioppo, PWS, CESSWI
Consultant / Reviewer

A handwritten signature in black ink, reading "Stephen Lecco".

Stephen Lecco, AICP, CEP, PWS
Principal-in-Charge

Encl: Natural Resource Survey and Assessment Limitations
Wetland Determination Data Forms

© 2024 - GZA GeoEnvironmental, Inc. J:\0 166500 - 0 166599\15.0166500.49 Lot 15 Banas Delineation, Map 19 Lot 141 Report\GIS\mxd\BanasLot.aprx, July 02, 2024 - 12:40 PM, Susanna Sousa



LEGEND

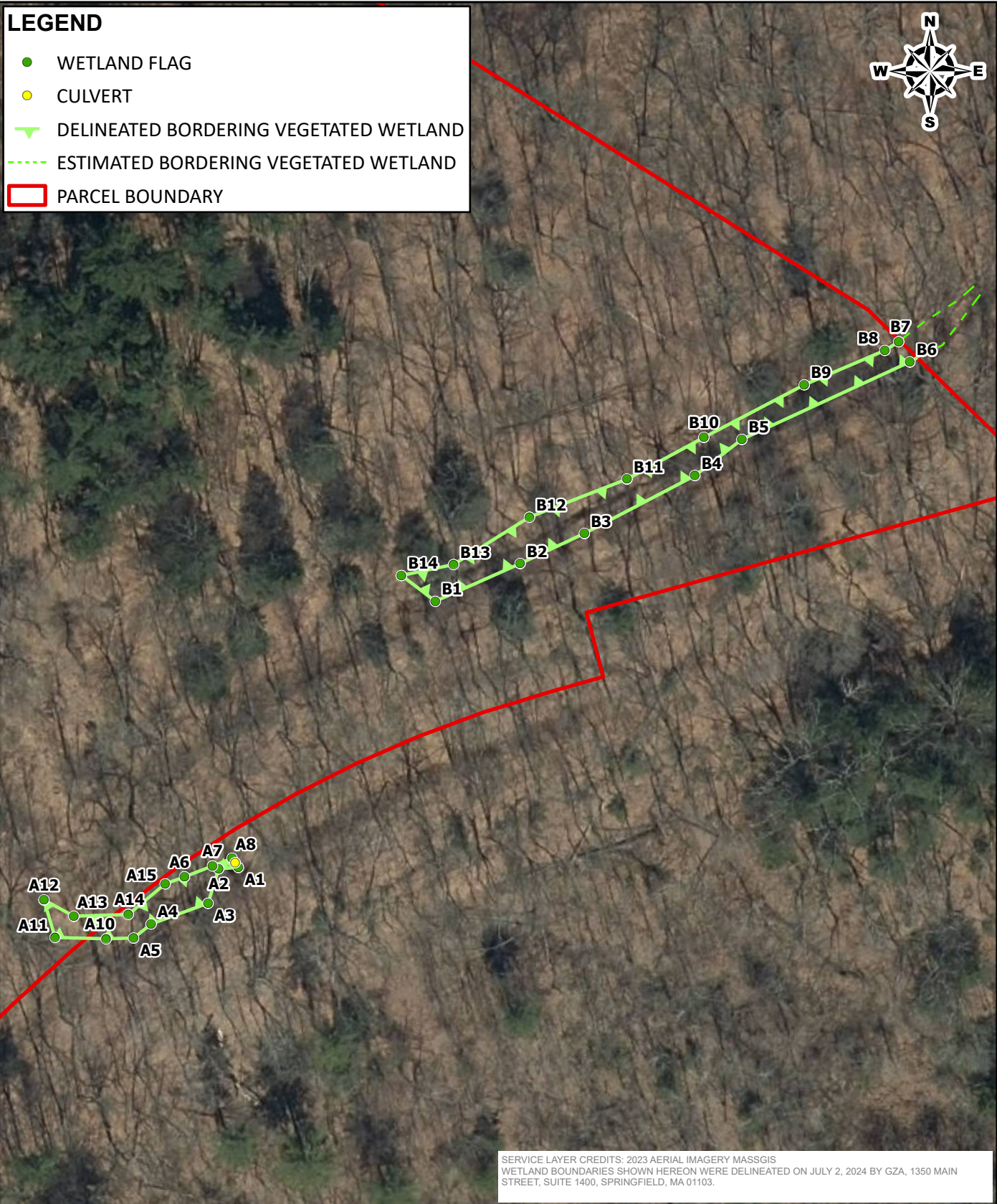
● WETLAND FLAG

● CULVERT

▼ DELINEATED BORDERING VEGETATED WETLAND

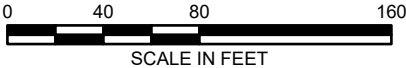
--- ESTIMATED BORDERING VEGETATED WETLAND

▭ PARCEL BOUNDARY



SERVICE LAYER CREDITS: 2023 AERIAL IMAGERY MASSGIS
WETLAND BOUNDARIES SHOWN HEREON WERE DELINEATED ON JULY 2, 2024 BY GZA, 1350 MAIN STREET, SUITE 1400, SPRINGFIELD, MA 01103.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR THE USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.



MAP 24, LOT 15 & MAP 19, LOT 141 WETLAND ASSESSMENT SOUTHAMPTON, MA 01073	PREPARED BY: GZA GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: HERITAGE LAND SURVEYING & ENGINEERING, INC. 241 COLLEGE HIGHWAY & CLARK STREET SOUTHAMPTON, MA 01073	FIGURE 2
	PROJ MGR: JNR	REVIEWED BY: SLL	CHECKED BY: RJC	
	DESIGNED BY: SGS DATE: 07/03/2024	DRAWN BY: SGS PROJECT NO: 15.0166500.49	SCALE: 1 in 80 ft REVISION NO:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: College Highway Map 19, Lot 141 City/County: Southampton Sampling Date: 7/2/2024
Applicant/Owner: Heritage Land Surveying & Engineering, Inc. State: MA Sampling Point: SP-1
Investigator(s): GZA GeoEnvironmental, Inc. Joe Rogers and Susanna Sousa Section, Township, Range: _____
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope %: 3-8
Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.23706 Long: -72.71205 Datum: WGS 84
Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are “Normal Circumstances” present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
---	---

Remarks: (Explain alternative procedures here or in a separate report.)
Sample Plot 1 is an upland plot near flag B-12.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ____ Surface Water (A1) ____ Water-Stained Leaves (B9) ____ High Water Table (A2) ____ Aquatic Fauna (B13) ____ Saturation (A3) ____ Marl Deposits (B15) ____ Water Marks (B1) ____ Hydrogen Sulfide Odor (C1) ____ Sediment Deposits (B2) ____ Oxidized Rhizospheres on Living Roots (C3) ____ Drift Deposits (B3) ____ Presence of Reduced Iron (C4) ____ Algal Mat or Crust (B4) ____ Recent Iron Reduction in Tilled Soils (C6) ____ Iron Deposits (B5) ____ Thin Muck Surface (C7) ____ Inundation Visible on Aerial Imagery (B7) ____ Other (Explain in Remarks) ____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ____ Surface Soil Cracks (B6) ____ Drainage Patterns (B10) ____ Moss Trim Lines (B16) ____ Dry-Season Water Table (C2) ____ Crayfish Burrows (C8) ____ Saturation Visible on Aerial Imagery (C9) ____ Stunted or Stressed Plants (D1) ____ Geomorphic Position (D2) ____ Shallow Aquitard (D3) ____ Microtopographic Relief (D4) ____ FAC-Neutral Test (D5)
---	--

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

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

Remarks:

Sampling Point: SP-1

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Fagus grandifolia</i>	3	No	FACU
2. <i>Acer rubrum</i>	5	Yes	FAC
3. <i>Betula lenta</i>	10	Yes	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	18	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Tsuga canadensis</i>	20	Yes	FACU
2. <i>Acer rubrum</i>	3	No	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	23	=Total Cover	

Herb Stratum (Plot size: 5 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Dryopteris carthusiana</i>	20	Yes	FACW
2. <i>Dennstaedtia punctilobula</i>	63	Yes	UPL
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	83	=Total Cover	

Woody Vine Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____	=Total Cover	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point SP-1

[illegible]

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: College Highway Map 19, Lot 141 City/County: Southampton Sampling Date: 7/2/2024
Applicant/Owner: Heritage Land Surveying & Engineering, Inc. State: MA Sampling Point: SP-2
Investigator(s): GZA GeoEnvironmental, Inc. Joe Rogers and Susanna Sousa Section, Township, Range: _____
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope %: 3-8
Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.23705 Long: -72.71204 Datum: WGS 84
Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are “Normal Circumstances” present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
---	---

Remarks: (Explain alternative procedures here or in a separate report.)
Sample Plot 2 is an wetland plot near flag B-12.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply) <u>X</u> Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) Aquatic Fauna (B13) <u>X</u> Saturation (A3) Marl Deposits (B15) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Drift Deposits (B3) Presence of Reduced Iron (C4) Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6) Iron Deposits (B5) Thin Muck Surface (C7) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) <u>X</u> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators</u> (minimum of two required) Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
--	--

Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
---	---

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

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: SP-2

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B) Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>8</u></td> <td>x 2 = <u>16</u></td> </tr> <tr> <td>FAC species <u>11</u></td> <td>x 3 = <u>33</u></td> </tr> <tr> <td>FACU species <u>6</u></td> <td>x 4 = <u>24</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>25</u> (A)</td> <td><u>73</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.92</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>8</u>	x 2 = <u>16</u>	FAC species <u>11</u>	x 3 = <u>33</u>	FACU species <u>6</u>	x 4 = <u>24</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>25</u> (A)	<u>73</u> (B)	Prevalence Index = B/A = <u>2.92</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>8</u>	x 2 = <u>16</u>																			
FAC species <u>11</u>	x 3 = <u>33</u>																			
FACU species <u>6</u>	x 4 = <u>24</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>25</u> (A)	<u>73</u> (B)																			
Prevalence Index = B/A = <u>2.92</u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
	<u>3</u>	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)																				
1. <u>Kalmia latifolia</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Acer rubrum</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Ilex verticillata</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>																	
4. <u>Quercus rubra</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
	<u>14</u>	=Total Cover																		
Herb Stratum (Plot size: <u>5 ft radius</u>)																				
1. <u>Osmundastrum cinnamomeum</u>	<u>3</u>	<u>Yes</u>	<u>FACW</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
2. <u>Osmunda claytoniana</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
	<u>8</u>	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
	_____	=Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point SP-2

[illegible]

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: College Highway Map 19, Lot 141 City/County: Southampton Sampling Date: 7/2/2024
Applicant/Owner: Heritage Land Surveying & Engineering, Inc. State: MA Sampling Point: SP-3
Investigator(s): GZA GeoEnvironmental, Inc. Joe Rogers and Susanna Sousa Section, Township, Range: _____
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope %: 5
Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.23658 Long: -72.71271 Datum: WGS 84
Soil Map Unit Name: Windsor loamy sand, silty substratum, 5 to 8 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
---	---

Remarks: (Explain alternative procedures here or in a separate report.)
Sample Plot 3 is an upland plot near flag A-6.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ____ Surface Water (A1) ____ Water-Stained Leaves (B9) ____ High Water Table (A2) ____ Aquatic Fauna (B13) ____ Saturation (A3) ____ Marl Deposits (B15) ____ Water Marks (B1) ____ Hydrogen Sulfide Odor (C1) ____ Sediment Deposits (B2) ____ Oxidized Rhizospheres on Living Roots (C3) ____ Drift Deposits (B3) ____ Presence of Reduced Iron (C4) ____ Algal Mat or Crust (B4) ____ Recent Iron Reduction in Tilled Soils (C6) ____ Iron Deposits (B5) ____ Thin Muck Surface (C7) ____ Inundation Visible on Aerial Imagery (B7) ____ Other (Explain in Remarks) ____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ____ Surface Soil Cracks (B6) ____ Drainage Patterns (B10) ____ Moss Trim Lines (B16) ____ Dry-Season Water Table (C2) ____ Crayfish Burrows (C8) ____ Saturation Visible on Aerial Imagery (C9) ____ Stunted or Stressed Plants (D1) ____ Geomorphic Position (D2) ____ Shallow Aquitard (D3) ____ Microtopographic Relief (D4) ____ FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: SP-3

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Fagus grandifolia</u>	3	No	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B) Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>43</u></td> <td>x 4 = <u>172</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>43</u> (A)</td> <td><u>172</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>4.00</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>43</u>	x 4 = <u>172</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>43</u> (A)	<u>172</u> (B)	Prevalence Index = B/A = <u>4.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>43</u>	x 4 = <u>172</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>43</u> (A)	<u>172</u> (B)																			
Prevalence Index = B/A = <u>4.00</u>																				
2. <u>Populus grandidentata</u>	10	Yes	FACU																	
3. <u>Quercus alba</u>	20	Yes	FACU																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
33 =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)																				
1. <u>Berberis thunbergii</u>	10	Yes	FACU	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
10 =Total Cover																				
Herb Stratum (Plot size: <u>5 ft radius</u>)																				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ =Total Cover																				
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)																				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point SP-3

[illegible]

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: College Highway Map 19, Lot 141 City/County: Southampton Sampling Date: 7/2/2024
Applicant/Owner: Heritage Land Surveying & Engineering, Inc. State: MA Sampling Point: SP-4
Investigator(s): GZA GeoEnvironmental, Inc. Joe Rogers and Susanna Sousa Section, Township, Range: _____
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope %: 5-8
Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.23646 Long: -72.71277 Datum: WGS 84
Soil Map Unit Name: Windsor loamy sand, silty substratum, 5 to 8 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
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Remarks: (Explain alternative procedures here or in a separate report.)
Sample Plot 4 is a wetland plot near flag A-6.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators</u> (minimum of one is required; check all that apply) ____ Surface Water (A1) ____ Water-Stained Leaves (B9) ____ High Water Table (A2) ____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) ____ Marl Deposits (B15) ____ Water Marks (B1) ____ Hydrogen Sulfide Odor (C1) ____ Sediment Deposits (B2) ____ Oxidized Rhizospheres on Living Roots (C3) ____ Drift Deposits (B3) ____ Presence of Reduced Iron (C4) ____ Algal Mat or Crust (B4) ____ Recent Iron Reduction in Tilled Soils (C6) ____ Iron Deposits (B5) ____ Thin Muck Surface (C7) ____ Inundation Visible on Aerial Imagery (B7) ____ Other (Explain in Remarks) <u>X</u> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators</u> (minimum of two required) ____ Surface Soil Cracks (B6) ____ Drainage Patterns (B10) ____ Moss Trim Lines (B16) ____ Dry-Season Water Table (C2) ____ Crayfish Burrows (C8) ____ Saturation Visible on Aerial Imagery (C9) ____ Stunted or Stressed Plants (D1) ____ Geomorphic Position (D2) ____ Shallow Aquitard (D3) ____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: SP-4

Tree Stratum (Plot size: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	10	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B) Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 60%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>40</u></td> <td>x 2 = <u>80</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>50</u></td> <td>(A) <u>110</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.20</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>40</u>	x 2 = <u>80</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>50</u>	(A) <u>110</u> (B)	Prevalence Index = B/A = <u>2.20</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
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FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
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Column Totals: <u>50</u>	(A) <u>110</u> (B)																			
Prevalence Index = B/A = <u>2.20</u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	10	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)																				
1. _____																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
		=Total Cover																		
Herb Stratum (Plot size: <u>5 ft radius</u>)																				
1. <u>Viburnum nudum</u>	20	Yes	FACW	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
2. <u>Osmundastrum cinnamomeum</u>	20	Yes	FACW																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	40	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)																				
1. _____																				
2. _____																				
3. _____																				
4. _____																				
		=Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point SP-4

[illegible]



USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) has prepared this report on behalf of, and for the exclusive use of HERITAGE Land Surveying and Engineering, Inc., ("Client") for the stated purpose(s) and location(s) identified in the report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the data gathered and observations made during the course of our work. Conditions other than described in this report may be found at the subject location(s).
3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

LIMITS TO OBSERVATIONS

4. Natural resource characteristics are inherently variable. Biological community composition and diversity can be affected by seasonal, annual or anthropogenic influences. In addition, soil conditions are reflective of subsurface geologic materials, the composition and distribution of which vary spatially.
5. The observations described in this report were made on the dates referenced and under the conditions stated therein. Conditions observed and reported by GZA reflect the conditions that could be reasonably observed based upon the visual observations of surface conditions and/or a limited observation of subsurface conditions at the specific time of observation. Such conditions are subject to environmental and circumstantial alteration and may not reflect conditions observable at another time.
6. The conclusions and recommendations contained in this report are based upon the data obtained from a limited number of surveys performed during the course of our work on the site, as described in the Report. There may be variations between these surveys and other past or future surveys due to inherent environmental and circumstantial variability.

RELIANCE ON INFORMATION FROM OTHERS

7. Preparation of this Report may have relied upon information made available by Federal, state and local authorities; and/or work products prepared by other professionals as specified in the report. Unless specifically stated, GZA did not attempt to independently verify the accuracy or completeness of that information.

COMPLIANCE WITH REGULATIONS AND CODES

8. GZA's services were performed to render an opinion on the presence and/or condition of natural resources as described in the Report. Standards used to identify or assess these resources as well as regulatory jurisdiction, if any, are stated in the Report. Standards for identification of jurisdictional resources and regulatory control over them may vary between



governmental agencies at Federal, state and local levels and are subject to change over time which may affect the conclusions and findings of this report.

NEW INFORMATION

9. In the event that the Client or others authorized to use this report obtain information on environmental regulatory compliance issues at the site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this work, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

10. GZA recommends that we be retained to provide further investigation, if necessary, which would allow GZA to (1) observe compliance with the concepts and recommendations contained herein; (2) evaluate whether the manner of implementation creates a potential new finding; and (3) evaluate whether the manner of implementation affects or changes the conditions on which our opinions were made.