PSEG LONG ISLAND LLC

on Behalf of and as Agent for the

LONG ISLAND LIGHTING COMPANY d/b/a LIPA

Southampton to Deerfield Transmission Project

ENVIRONMENTAL MANAGEMENT AND CONSTRUCTION PLAN

Appendix S

Final Geotechnical Engineering Report

POZ Engineering & Environmental Consulting, P.C.

Geotechnical Investigation Report

To

Burns & McDonnell Consultants, P.C.

For

PSEGLI Southampton to Deerfield

P.O. 154527

69kV XLPE Underground Transmission Cable Project

June 26, 2024

1. **EXECUTIVE SUMMARY** The results of the drilling delineated the expected for glacial deposits as shown in the reference literature. Most of the boreholes recovered fine to coarse grained sand with various colors. The moisture content in all of the boreholes were dry, because these soil groups are well drained consisting mostly of fine to coarse grained sand. The blow counts for all the boreholes were loose to medium. The chemical analysis shows that the most significant trend was the resistivity values in BH1 and BH3 to increase with depth. The other values were consistent with minor fluctuations with depth and between boreholes. The thermal resistivity samples shows that the native soils range from 76 to 165C^{o}cm/W (0.75 to1.65C^{o}m/W) for wet soils and 192 to 348 C^{o}cm/W (1.92 to 3.48 C^{o}m/W) for dry, which are typical for sand high in quartz in a dry environment. The most significant trend in the study shows the values for each borehole drops in the 7-foot (S1) depth with the exception of BH1, which is at the Southampton Station. The values in both wet and dry conditions at this depth were not in the range of the other BH values.
2. **PURPOSE AND SCOPE** - POZ Engineering was contracted under a purchase order by Burns and McDonnell Engineering Company, Inc. to perform geo-technical services to drill five (5) borings (See Appendix A-Figure #1) prior to the installation of approximately 4 miles of 69kV underground cable for PSEGLI from the Southampton Substation to the Deerfield Substation in Suffolk County, New York. These services included core samples (physical content), chemical analysis and soil resistivity of soil along the proposed path of the cable.
3. ***Scope of Services***

3.1. ***Field Exploration –***

3.1.1. The route was along Municipal and County rights-of-way. Permits were acquired through Southampton and approved in a timely manner.

3.1.2. Borings were advanced to a 15-foot depth as shown in Appendix A, Table #1 (Boring Schedule) under the direction of a qualified field geotechnical engineer to the designated depths. Prior to any drilling, a utility check was conducted for both the public and private utilities, and marked accordingly. The five (5) borings were drilled in the unpaved areas along the streets/routes in the proposed path of the underground cable. The field engineer recorded blows counts, logged the soil conditions and types encountered (see Appendix B, Field Logs), and retrieve bulk and undisturbed soil samples from within the borings as conditions dictate. Soil samples were collected at the designated depths for thermal resistivity, chemical samples in three boreholes, and soil physical analysis (standard proctor). The thermal resistivity samples were collected in 3” brass cylinders and the soil samples in plastic bags.

3.2. ***Laboratory –*** The physical samples were taken to Midlantic Engineering for analysis, chemical samples were shipped to Long Island Analytical, and the thermal resistivity samples were shipped to Geotherm USA.

3.2.1. The samples collected for physical analysis consisted of a standard proctor. These samples were collected as a composite of each borehole. The following geotechnical laboratory analyses were performed on samples retrieved from the

borings: Visually classified per ASTM D-2488; Selected samples were tested for gradation and classification per ASTM D-2487; Moisture Content per ASTM D-221; Unconfined Compressive Strength ASTM D-2166. See Appendix C for sampling results.

3.2.2. The samples collected for chemical analysis were at three boreholes (1, 3, and 5) at two depths (7 and 11 feet). The parameters for analysis were: pH, soluble sulfates, chloride ion, electrical resistivity, redox potential, and sulfides.

3.2.3. The samples collected for thermal resistivity consisted of taking the bottom brass cylinder filled with soil (undisturbed) at each sampling depth for shipment to Geotherm. The testing for these samples were in accordance with IEEE Standard 442-2017. The results of this sampling are listed in Appendix C.

4. **SOIL –** A soil report was generated from the NRCS WebSoil GIS site and is listed in Appendix D. The soil profile was taken along the BH route from the Southampton to Deerfield substations. The variation of soil groups is significantly broad ranging in silty sand to loamy soils but mostly sand.
5. **SITE GEOLOGY-** The geology of Long Island consists of three categories: pre-glacial, glacial, and post-glacial.
   - **5.1. Pre-glacial** consists of metamorphic bedrock from the pre-Cretaceous period. The bedrock slopes to the south and east and does not form any significant landforms on Long Island. Resting on the bedrock are Cretaceous sediments of sand, clay and gravels. This sediment is over 2,000 feet thick at Fire Island and thins out to the north and west, pinching out at Long Island Sound.
   - **5.2. Glacial** deposits significantly formed the Long Island land mass and rests on the metamorphic bedrock. This occurred in the Wisconsin stage of the Pleistocene Epoch. The ice mass encompassed all or most of Long Island carrying large amounts of sediment including large boulders.
   - **5.3. Post-glacial** period consisted of Kane moraines, glacial outwash, and the formation of kettle lakes. In addition, costal waves and currents have eroded and reshaped the soft glacial sediment to form numerous sandy shorelines features.
6. **TOPOGRAPHY –** The project is on an island (Long Island NY, See Appendix A). The topography of the project area is relatively flat with a local relief of 55 feet throughout the project, according to Google Earth.
7. **Hydrology** –
   - **7.1.** The surface drainage on Long Island is limited to small streams and runoff with pocket of wetlands, estuaries, and kettle lakes. The drainage pattern is mostly trellis.
   - **7.2.** Ground water consists of the water table and aquifers.
     - **7.2.1.** Water table data was taken from the USGA GIS website and included three wells as shown in Figure #1 and 2 in Appendix E. The water table is proportionate to the rainfall amount and the infiltration rate of the soil. These wells are as follows:

7.2.1.1. 58836.1 –This well is southeast and adjacent to BH#1. The water table at this well was recorded on 04/17/2016 to be 11.4 feet below the surface. According to Google Earth, the surface elevation is 21’ ASL and the groundwater elevation should be at 9.6’ above sea level (ASL).

7.2.1.2. 46550.1 –This well is NNW and adjacent to BH#2. The water table at this well was recorded on 04/17/2016 to be 26.8 feet below the surface. According to Google Earth, the surface elevation is at 38’ ASL and the groundwater elevation should be at 11.2’ above sea level (ASL).

7.2.1.3. 46529.2 –This well is SE and adjacent to BH#5. The water table at this well was recorded on 04/17/2016 to be 55 feet below the surface. According to Google Earth, the surface elevation is at 88’ ASL and the groundwater elevation should be at 33’ above sea level (ASL).

7.2.2. Glacial Aquifer is the main source of water for most wells. Virtually all private wells and less than half of the Suffolk County Water Authority draws from this aquifer (SCWA). The USGS reporting on the groundwater in Section 7.2.1 was in this aquifer.

7.2.3. Magothy Aquifer is the largest of the three aquifers and holds the most water. A little more than half is used by the SCWA.

7.2.4. Lloyd Aquifer is largely untapped and is separated from the Magothy Aquifer by the Raritan aquiclude, which is a clay layer from the Cretaceous formation.

8. PROPOSED DEVELOPMENT – No above ground structures will be constructed along the path of the underground line. Underground cable vaults will be installed at various places along the line.

9. DISCUSSION OF RESULTS

9.1. BH Logs and Soil Classification –

9.1.1. Drilling (BH1 to 5) was done with a Geoprobe 7800 using 3-inch split-spoon lined with 3-inch Shelby tubes with the exception of BH1. The drilling occurred from April 30 to May 2, 2024.The logs for these boreholes consisted of sand ranging in color from brown to orange. Some of the soil consisted of a gravel/pebble mix. The top five feet of these BHs were soft dug with an air-knife and vacuum truck. Logs are in Appendix B.

9.1.1.1. BH1 was to the west in a clearing adjacent to an access road at the Southampton Substation (see Figure #1 in Appendix A). The drilling encountered mostly light brown to orange fine-grained sand. The depth of the hole was to 15 feet with no water or wet zones. The blow counts for this BH were medium at 5 to 7 feet with 68% (S1) of the sample recovered. The sample at 9 to 11 feet (S2) was also medium with 100% recovery. Blow counts were taken every 2 feet below the 5-foot soft dig. These blow counts were considered loose. Lab samples were taken at

two sampling depths S1 (5 to 7 feet) and S2 (9 to 11 feet) for chemical (Section 9.2 Table #1), and thermal resistivity analysis (Section 9.3, Table #2). A standard proctor that also collected as a composite of the BH 1 (Appendix C, Exhibit 1). The analysis was poorly graded sand (SP) with 2.7% moisture and a maximum dry density of 107.5 pounds per square foot (PDF) consisting of brown (light to medium) to orange fine grained sand. The depth of the hole was to 15 feet (at the targeted depth). No ground water was encountered during the drilling and the samples were dry. BH1 is above the ground water table (see Figure #2 in Appendix E). The blow counts for this BH were loose to medium throughout the drilling run.

9.1.1.2. BH 2 was to the east of BH 1 in route to the Deerfield Substation at an elevation of 65 feet (see Figure #1 in Appendix A). The drilling encountered mostly light brown to orange fine-grained sand except for the top 5 feet that was soft dug with an air-knife consisting of a dark brown sand. The depth of the hole was to 15 feet with no water or wet zones. The blow counts for this BH were loose at 5 to 7 feet with 79% (S1) of the sample recovered. The sample at 9 to 11 feet (S2) was also loose with 86% recovery. Blow counts were taken every 2 feet below the 5-foot soft dig. These blow counts were considered loose. Lab samples (Section 9.3 Table #2) were taken at two sampling depths S1 (5 to 7 feet) and S2 (9 to 11 feet) for thermal resistivity analysis. A standard proctor that also collected as a composite of the BH 2. The analysis was poorly graded sand (SP) with 2.7% moisture and a maximum dry density of 111.2 pcf consisting of light brown to orange fine grained sand (Appendix C, Exhibit 1). The depth of the hole was to 15 feet (at the targeted depth). No ground water was encountered during the drilling and the samples were dry. BH 2 is above the ground water table (see Figure #2 in Appendix E). The blow counts for this BH were loose throughout the drilling run.

9.1.1.3. BH 3 was to the north of BH 2 in route to the Deerfield Substation at an elevation of 70 feet (see Figure #1 in Appendix A). The drilling encountered mostly light brown to orange fine-grained sand except for the top 5 feet that was soft dug with an air-knife consisting of a medium brown sand. The depth of the hole was to 15 feet with no water or wet zones. The blow counts for this BH were medium at 5 to 7 feet with 100% (S1) of the sample recovered. The sample at 9 to 11 feet (S2) was also medium with 100% recovery. Blow counts were taken every 2 feet below the 5-foot soft dig. These blow counts were considered loose to medium. Lab samples were taken at two sampling depths S1 (5 to 7

feet) and S2 (9 to 11 feet) for chemical (Section 9.2 Table #1), and thermal resistivity analysis (Section 9.3, Table #2). A standard proctor that also collected as a composite of the BH 3. The analysis was poorly graded sand (SP) with silt and gravel (SP-SM), 2.9% moisture and a maximum dry density of 115.3 pcf consisting of light brown to orange fine grained sand (Appendix C, Exhibit 1). The depth of the hole was to 15 feet (at the targeted depth). No ground water was encountered during the drilling and the samples were dry. BH 3 is above the ground water table (see Figure #2 in Appendix E). The blow counts for this BH were loose throughout the drilling run.

9.1.1.4. BH 4 was to the north of BH 3 in route to the Deerfield Substation at an elevation of 81 feet (see Figure #1 in Appendix A). The drilling encountered mostly light fine-grained sand except for the top 5 feet that was soft dug with an air-knife consisting of a medium brown sand. The depth of the hole was to 15 feet with no water or wet zones. The blow counts for this BH were medium at 5 to 7 feet with 92% (S1) of the sample recovered. The sample at 9 to 11 feet (S2) was also medium with 63% recovery. Blow counts were taken every 2 feet below the 5-foot soft dig. These blow counts were considered loose to medium. Lab samples were taken at two sampling depths S1 (5 to 7 feet) and S2 (9 to 11 feet) for thermal resistivity analysis (Section 9.3). A standard proctor that also collected as a composite of the BH 4. The analysis was poorly graded brown sand (SP), 3% moisture and a maximum dry density of 107.5 pcf consisting of light brown fine-grained sand. The depth of the hole was to 15 feet (at the targeted depth). No ground water was encountered during the drilling and the samples were dry. BH 4 is above the ground water table (see Figure #2 in Appendix E). The blow counts for this BH were loose to medium throughout the drilling run.

9.1.1.5. BH 5 was to the north of BH 4 at the Deerfield Substation that had an elevation of 99 feet (see Figure #1 in Appendix A). The drilling encountered mostly light fine-grained sand with intermittent laminated dark brown sand except for the top 5 feet that was soft dug with an air-knife consisting of a medium brown sand. The depth of the hole was to 15 feet with no water or wet zones. The blow counts for this BH were medium at 5 to 7 feet with 75% (S1) of the sample recovered. The sample at 9 to 11 feet (S2) was also medium with 83% recovery. Blow counts were taken every 2 feet below the 5-foot soft dig. These blow counts were considered loose to medium. Lab samples were taken at two sampling depths S1 (5 to 7 feet) and S2 (9 to 11 feet) for chemical

(Section 9.2 Table #1), and thermal resistivity analysis (Section 9.3, Table #2). A standard proctor was also collected as a composite of the BH 5. The analysis was poorly graded brown sand (SP), 3% moisture and a maximum dry density of 107.9 pcf (Appendix C, Exhibit 1). The depth of the hole was to 15 feet (at the targeted depth). No ground water was encountered during the drilling and the samples were dry. BH 5 is above the ground water table (see Figure #2 in Appendix E). The blow counts for this BH were loose to medium throughout the drilling run.

9.2. Chemical Analysis Three boreholes (BH1, BH3, and BH5) were chosen to sample for chloride, Oxidation-Reduction Potential, pH, Resistivity, Specific Conductance, Sulfate, and Sulfide at the top of the core run. These parameters were chosen to determine the corrosivity of the soil.

Table #1 General Chemistry Parameters BH1 Through BH5

BH1, S1

Parameter	Date Analyzed	Method	LOQ	Result	Units	Flags
Sulfide	05/08/2024 16:50	EPA 90342.00	2	<2.00	mg/kg dry	
Corrosivity (pH)	05/10/2024 15:03	EPA 9045D	NA	7.26	units	1.C
Oxidation-Reduction Potential (ORP)	06/03/2024 11:44	EPA 9045D	1.00	415.0	mV	
Temperature @ pH in C	05/10/2024 15:03	EPA 9045D	NA	22.20	units	1.C
Resistivity	06/03/2024 11:44	EPA 9050 A	0.5	63690	ohm-cm	
Specific Conductance	05/10/2024 15:02	EPA 9050 A	2.0	15.7	umhos/cm @ 25 Deg C	
Chloride	05/15/2024 10:56	EPA 9056A	25.0	<25.0	mg/kg dry	3.A
Sulfate as SO4	05/15/2024 10:56	EPA 9056A	25.0	<25.0	mg/kg dry	3.A

BH1, S2

Parameter	Date Analyzed	Method	LOQ	Results	Units	Flags
Sulfide	05/08/2024 16:50	EPA 90342.00		<2.00	mg/kg dry	
Corrosivity (pH)	05/10/2024 15:03	EPA 9045D	NA	7.03	units	1.C
Oxidation-Reduction Potential (ORP)	06/03/2024 11:44	EPA 9045D	1.00	398.0	mV	
Temperature @ pH in C	05/10/2024 15:03	EPA 9045D	NA	22.10	units	1.C
Resistivity	06/03/2024 11:44	EPA 9050 A	0.5	113600	ohm-cm	
Specific Conductance	05/10/2024 15:02	EPA 9050 A	2.0	8.8	umhos/cm @ 25 Deg C	
Chloride	05/15/2024 11:15	EPA 9056A	25.0	<25.0	mg/kg dry	3.A
Sulfate as SO4	05/15/2024 11:15	EPA 9056A	25.0	<25.0	mg/kg dry	3.A

BH3, S1

Parameter	Date Analyzed	Method	LOQ	Results	Units	Flags
Sulfide	05/08/2024 16:50	EPA 90342.00		<2.00	mg/kg dry	
Corrosivity (pH)	05/10/2024 15:03	EPA 9045D	NA	6.43	units	1.C
Oxidation-Reduction Potential (ORP)	06/03/2024 11:44	EPA 9045D	1.00	427.0	mV	
Temperature @ pH in C	05/10/2024 15:03	EPA 9045D	NA	22.00	units	1.C
Resistivity	06/03/2024 11:44	EPA 9050 A	0.5	14260	ohm-cm	
Specific Conductance	05/10/2024 15:02	EPA 9050 A	2.0	70.1	umhos/cm @ 25 Deg C	
Chloride	05/15/2024 11:35	EPA 9056A	25.0	25.6	mg/kg dry	3.E
Sulfate as SO4	05/15/2024 11:35	EPA 9056A	25.0	<25.0	mg/kg dry	3.A

BH3, S2

Parameter	Date Analyzed	Method	LOQ	Results	Units	Flags
Sulfide	05/08/2024 16:50	EPA 90342.00		<2.00	mg/kg dry	
Corrosivity (pH)	05/10/2024 15:03	EPA 9045D	NA	6.00	units	1.C
Oxidation-Reduction Potential (ORP)	06/03/2024 11:44	EPA 9045D	1.00	406.0	mV	
Temperature @ pH in C	05/10/2024 15:03	EPA 9045D	NA	21.90	units	1.C
Resistivity	06/03/2024 11:44	EPA 9050 A	0.5	100000	ohm-cm	
Specific Conductance	05/10/2024 15:02	EPA 9050 A	2.0	10.0	umhos/cm @ 25 Deg C	
Chloride	05/15/2024 12:14	EPA 9056A	25.0	<25.0	mg/kg dry	3.A
Sulfate as SO4	05/15/2024 12:14	EPA 9056A	25.0	<25.0	mg/kg dry	3.A

BH5, S1

Parameter	Date Analyzed	Method	LOQ	Results	Units	Flags
Sulfide	05/08/2024 16:50	EPA 90342.00		<2.00	mg/kg dry	
Corrosivity (pH)	05/10/2024 15:03	EPA 9045D	NA	5.97	Units	1.C
Oxidation-Reduction Potential (ORP)	06/03/2024 11:44	EPA 9045D	1.00	386.0	mV	
Temperature @ pH in C	05/10/2024 15:03	EPA 9045D	NA	22.00	Units	1.C
Resistivity	06/03/2024 11:44	EPA 9050 A	0.5	65360	ohm-cm	
Specific Conductance	05/10/2024 15:02	EPA 9050 A	2.0	15.3	umhos/cm @ 25 Deg C	
Chloride	05/15/2024 12:34	EPA 9056A	25.0	<25.0	mg/kg dry	3.A
Sulfate as SO4	05/15/2024 12:34	EPA 9056A	25.0	<25.0	mg/kg dry	3.A

BH5, S2

Parameter	Date Analyzed	Method	LOQ	Results	Units	Flags
Sulfide	05/08/2024 16:50	EPA 90342.00		<2.00	mg/kg dry	
Corrosivity (pH)	05/10/2024 15:03	EPA 9045D	NA	7.10	Units	1.C
Oxidation-Reduction Potential (ORP)	06/03/2024 11:44	EPA 9045D	1.00	377.0	mV	
Temperature @ pH in C	05/10/2024 15:03	EPA 9045D	NA	22.10	Units	1.C
Resistivity	06/03/2024 11:44	EPA 9050 A	0.5	65790	ohm-cm	
Specific Conductance	05/10/2024 15:02	EPA 9050 A	2.0	15.2	umhos/cm @ 25 Deg C	
Chloride	05/15/2024 13:34	EPA 9056A	25.0	<25.0	mg/kg dry	3.A
Sulfate as SO4	05/15/2024 13:34	EPA 9056A	25.0	<25.0	mg/kg dry	3.A

Data Qualifiers Key Reference:

1.C Holding time exceeded, analyze immediate parameter.
3.A Reporting limit raised due to matrix interference.
3.E Compound reported at a dilution factor.
MDL Minimum Detection Limit
LOQ Limit of Quantitation
H Holding Time Exceeded

9.3. **Thermal Resistivity** - Soil samples were collected at two levels (S1, 7-foot depth and S2, 11-foot depth) taking the bottom of the core run. These samples were sent to Geotherm USA to determine the thermal resistivity of the soil at depths corresponding to the logs. The following is the report of thermal dry out characterization tests conducted on two bulk samples and eight tube samples of native soil. The tube samples were tested ‘as is’. The bulk samples were tested at the ‘as received’ moisture content and at the specified standard Proctor dry density *provided by POZ.* The tests were conducted in accordance with the IEEE standard 442-2017. The results are tabulated below and the thermal dry-out curves are presented in Exhibit 2 in Appendix C. The thermal characteristic depicted in the dry-out curves apply for the soils at their respective test dry density. The samples were compacted at the best possible density at standard Proctor effort.

TABLE 2 – Thermal Resistivity Test Results of Soil Samples

Sample ID	Depth (ft)	Effort (%)	Description (POZ)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
				Wet	Dry		
BH1 S-1	7	68	Orange Fine Grained Sand	165	384	2	73
BH1 S-2	11	100	Laminated Brown Fine Grained Sand	73	239	4	111
BH2 S-1	7	Tube	Orange Coarse Grained Sand	97	209	4	106
BH2 S-2	11	Tube	Light Brown Coarse Grained Sand	104	243	5	98
BH3 S-1	7	Tube	Light Brown Coarse Sand with Pebbles	76	208	4	106
BH3 S-2	11	Tube	Light Brown Coarse Grained Sand	100	239	3	100
BH4 S-1	7	Tube	Light to Dark Brown Coarse Grained Sand	79	213	4	105
BH4 S-2	11	Tube	Light Brown Coarse Grained Sand with Pebbles	96	269	4	94
BH5 S-1	7	Tube	Medium Brown Coarse Sand	95	192	3	108
BH5 S-2	11	Tube	Dark Brown Sand on top Light Brown Coarse	94	231	5	102

10. CONCLUSIONS

10.1. BH Logs – The results of the drilling delineated the expected for glacial deposits as shown in the reference literature. Most of the boreholes recovered fine to coarse grained sand with various colors (orange and light to dark brown). The moisture content in all of the boreholes were dry. The blow counts for all the boreholes were loose to medium.

10.2. Groundwater- The ground water levels agreed with the average USGS measurement (see Figures 1 to 2 in Appendix E). USGS did not monitor the stations, as listed. Rather only documented one reading for each of the stations as listed in the mapping on the USGS site. It is not known what the maximum level would be, but during this sampling, no water was encountered. As stated in Section 5.2.2, the glacial water is the main source of residential water and is a significant water supply.

10.3. Laboratory Results

10.3.1. Physical Analysis - The ASTM soil analysis did verify the field observations. The drilling required a standard proctor for each BH. However, each proctor required approximately 5 gallons of soil. In order to collect these samples, soil was collected at different depths to create a composite of the BH. In most cases, the soil was similar throughout except for color that ranged from light to dark brown, reddish brown, and orange. Some samples were laminated with various color shades.

10.3.2. Chemical Analysis

10.3.2.1. BH1 – The results of the sampling were at two levels:

10.3.2.1.1. S1 – Samples were taken in the 6-foot depth (top of the core run) the results of the analysis showed the soil to be near neutral at 7.26 pH in an oxidizing zone with typical resistivity values for sand and low conductivity. This sample showed values below the LOQ for Sulfides, chlorides, and sulfates as shown in Table #1, Section 9.2.

10.3.2.1.2. S2- Samples were taken in the 11-foot depth (top of the core run) the results of the analysis showed the soil to be near neutral at 7.03 pH in an oxidizing zone with slightly higher resistivity values for sand and low soluble salts and low conductivity. This sample showed values below the LOQ for Sulfides, chlorides, and sulfates as shown in as shown in Table #1, Section 9.2.

10.3.2.2. BH3 – The results of the sampling were at two levels

10.3.2.2.1. S1 – Samples were taken in the 6-foot depth (top of the core run) the results of the analysis showed the soil to be slightly acidic at 6.43 pH in an oxidizing zone with slightly higher resistivity values for sand and higher soluble salts in conductivity with a slightly

saline condition. The chloride concentrations were just above the LOQ and the values for Sulfides, and sulfates were below the LOQ as shown in as shown in Table #1, Section 9.2.

10.3.2.2.2. S2- Samples were taken in the 11-foot depth (top of the core run) the results of the analysis showed the soil to be acidic at 6.0 pH in an oxidizing zone with expected resistivity values for sand and a non-saline condition with low values of conductivity. The values for Chlorides, Sulfides, and sulfates were below the LOQ as shown in as shown in Table #1, Section 9.2.

10.3.2.3. BH5 – The results of the sampling were at two levels

10.3.2.3.1. S1 – Samples were taken in the 6-foot depth (top of the core run) the results of the analysis showed the soil to be acidic at 5.97 pH in an oxidizing zone with normal resistivity values for sand and non-saline with little soluble salts and low conductivity. Chlorides, sulfides, and sulfates were below the LOQ as shown in as shown in Table #1, Section 9.2.

10.3.2.3.2. S2- Samples were taken in the 11-foot depth (top of the core run) the results of the analysis showed the soil to be near neutral acidic at 7.1 pH in an oxidizing zone with expected resistivity values for sand and a non-saline condition with low values of conductivity. The values for Chlorides, Sulfides, and sulfates were below the LOQ as shown in as shown in Table #1, Section 9.2.

10.3.3. Thermal Resistivity - The thermal resistivity samples shows that the native soils range from 76 to 165C^{o}cm/W (0.75 to1.65C^{o}m/W) for wet soils and 192 to 348 C^{o}cm/W (1.92 to 3.48 C^{o}m/W) for dry, which are typical for sand high in quartz in a dry environment. A comparative analysis of these values are presented in Figure #1 of Appendix C that shows the values for each borehole drops in the 7-foot (S1) depth with the exception of BH1, which is at the Southampton Station. This could be due to slightly more moisture filling the void spacing or smaller void spacing between the interstitial sand particles. In any event, the S2 (11-foot) depth was consistently lower in values than the S1 depth. values in both wet and dry conditions at the 7-foot depth were not in the range of the other BHs at the same depth. When compared to FTBTM which has a thermal resistivity of 75C^{o}cm/W dry and a wet resistance of 50C^{o}cm/W, these values are high. Looking at the soils map from NRCS (see Appendix E), the BH logs, and the Lab results (Section 8.3.1), the soil groups are well drained consisting of mostly glacial parent material, which is mostly fine to coarse grained sand. The groundwater is discussed in Section 8.2 above that is well below the 15-foot depth that was sampled, and was indicative of the drilling results.

11. REFERENCES

11.1. Long Island's Aquifer – Peconic Estuary Partnership, https://www.peconicestuary.org/projects/clean-waters-2/long_island_aquifer

11.2. Garvies Point Museum & Preserve, Geology of Long Island, https://www.graviespointmuseum.com/gelolgy.php.

11.3. USGS, Water Information, https://maps.waterdata.usgs.gov/mapper/index.html

11.4. USGS, Topo Builder, https://topobuilder.nationalmap.gov/

11.5. ICT International, http://ictinternational.com/casestudies/underground-power-cable-installat...

12. SIGNATORY

June 25, 2024

EMANUEL T. POSLUSZNY, P.E. **DATE**

PRESIDENT

APPENDIX A

Location and Project Information


Southampton to Deerfield
Boring Locations
Legend
Bore
Pellegrino's Pizza Bar & Restaurant
North Sea Beach
Scallop Pond Preserve
North Sea
Southampton Youth Services
Bore 5
Bore 4
Bore 3
Bore 2
Bore 1
The Watermill Center
Edge of Woods Rd
N Sea Mecox Rd
7 Ponds Rd
Lower 7 Ponds Rd
Kissaki Sushi
Parrish Art Museum
Hank's Pumpkintown
Lobster Roll Southampton
Southampton Bypass
Tuckahoe
McDonald's
Major's Path
N Sea Rd
David Whites Ln
27
27A
Google Earth
1 mi
N

Project Name: PSEGLI Southampton to Deerfield
Project Number: 154527

Boring/Sounding	Northing	Easting	Minimum Depth (ft)	Sample Depths for Thermal Resistivity Testing (ft)	Notes
B-1	268555.81	1426968.44	15	4'-6', 9'-11'	Chem
B-2	272263.79	1428620.46	15	4'-6', 9'-11'	
B-3	275606.32	1430251.21	15	4'-6', 9'-11'	Chem
B-4	279360.76	1432969.15	15	4'-6', 9'-11'	
B-5	284078.87	1433581.42	15	4'-6', 9'-11'	Chem

*Chem (3) = Chemical Suite at Depth of 15 feet below ground

USGS Topographic Map of Borehole Locations

APPENDIX B

Borehole Logs

DIVISION DRILLING LOG	INSTALLATION SHEET 1 OF 1 SHEETS
1. PROJECT; PSEG-LI Southampton to Deerfield	10. SIZE AND TYPE OF BIT: 2.5”
2. LOCATION (Coordinates or Station) 40d53’33.77”N, 72d23’55.74”W	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Google Earth
3. DRILLING AGENCY LAWES	12. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe 7800
4. HOLE NO. (As shown on drawing title and title number); BH-01	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: 2 — UNDISTURBED:
4. NAME OF DRILLER Scott Pedersen	14. TOTAL NUMBER CORE BOXES: N/A
6. DIRECTION OF HOLE XVERTICAL INCLINED_____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: not determined
	16. DATE HOLE — STARTED: 05/02/2024 — COMPLETED: 05/02/2024
	17. ELEVATION TOP OF HOLE: 46’ ASL
7. THICKNESS OF OVERBURDEN: not determined’	18. TOTAL CORE RECOVERY FOR BORING: 0
8. DEPTH DRILLED INTO ROCK: Not determined	19. SIGNATURE OF INSPECTOR: Emanuel T Posluszny
9. TOTAL DEPTH OF HOLE 15’	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
46	0	-	Medium Brown sandy clay loam	N/A	N/A	Hand dug to 5 feet 1. Dry
	1	--				
44	2	--				
	3	--				
42	4	--				
	5	--				
40	6	--	Orange fine grained sand	68%	S-1	9-12-15-19, 5 to 7 feet, Dry. Chem and Thermal sample at 7’
	7	--	Light Brown fine grained sand	63%	N/A	7-7-9-10, Dry
38	8	--				
	9	--	Laminated Brown fine grained sand	100%	S-2	5-10-12-11, 9 to 11 feet, Dry Chem & Thermal sample at 11’
36	10	--				
	11	--	Light Brown fine grained sand	63%	NA	6-5-8-8, Dry
34	12	--				
	13	--	Light Brown fine sand on top Orange sand on bottom	75%	NA	7-7-8-9, Dry
32	14	--				
31	15	--				
	16	--				EOH

DIVISION: DRILLING LOG

INSTALLATION

SHEET 1 OF 1 SHEETS

1. PROJECT; PSEG-LI Southampton to Deerfield
2. LOCATION (Coordinates or Station) 40d54'9.94"N, 72d23'32.82"W
3. DRILLING AGENCY LAWES
4. HOLE NO. (As shown on drawing title and title number); BH-02
4. NAME OF DRILLER Scott Pedersen
6. DIRECTION OF HOLE X VERTICAL INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: not determined'
8. DEPTH DRILLED INTO ROCK: Not determined
9. TOTAL DEPTH OF HOLE 15'
10. SIZE AND TYPE OF BIT: 2.5"
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Google Earth
12. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe 7800
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: ; UNDISTURBED: 2
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: not determined
16. DATE HOLE STARTED 05/01/2024 COMPLETED 05/01/2024
17. ELEVATION TOP OF HOLE: 64' ASL
18. TOTAL CORE RECOVERY FOR BORING: 0
19. SIGNATURE OF INSPECTOR: Emanuel T Posluszny

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
64	0	-	Dark Brown sand with some pebbles	N/A	N/A	Hand dug to 5 feet with an air knife. Dry, 1 shovel for proctor
	1	--				
62	2	--				
	3	--				
60	4	--				
	5	--				
58	6	--	Orange coarse grained sand	79%	S-1	3-7-8-10 5 to 7 feet Dry, Thermal sample taken at 7'
	7	--	Light Brown coarse grained sand	67%	N/A	3-5-5-7, Dry
56	8	--				
	9	--	Light Brown coarse grained sand	86%	S-2	4-9-9-11, Dry 9 to 11 feet Thermal Sample taken at 11 feet
54	10	--				
	11	--	Light Brown coarse grained sand	58%	NA	5-7-9-9, Dry
52	12	--				
	13	--	Light Brown coarse sand	67%	NA	9-9-10-9, Dry
50	14	--				
49	15	--				
	16	--				EOH

DIVISION
DRILLING LOG

INSTALLATION
OF 1

SHEET 1
SHEETS

1. PROJECT;
PSEG-LI Southampton to Deerfield

2. LOCATION (Coordinates or Station)
40d54'43.14"N, 72d23'10.66"W

3. DRILLING AGENCY
LAWES

4. HOLE NO. (As shown on drawing title and title number); BH-03

4. NAME OF DRILLER
Scott Pedersen

6. DIRECTION OF HOLE
X VERTICAL INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN: not determined'

8. DEPTH DRILLED INTO ROCK: Not determined

9. TOTAL DEPTH OF HOLE 15'

10. SIZE AND TYPE OF BIT: 2.5"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
Google Earth

12. MANUFACTURERS DESIGNATION OF DRILL:
Geoprobe 7800

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: 2 — UNDISTURBED:

14. TOTAL NUMBER CORE BOXES: N/A

15. ELEVATION GROUND WATER: not determined

16. DATE HOLE — STARTED 05/01/2024 — COMPLETED 05/01/2024

17. ELEVATION TOP OF HOLE: 70' ASL

18. TOTAL CORE RECOVERY FOR BORING: 0

19. SIGNATURE OF INSPECTOR:
Emanuel T Posluszny

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
70	0	-	Medium Brown sandy clay loam	N/A	N/A	Hand dug on 4/30/2024 with air knife to 5 feet. Dry
	1	--				
68	2	--				
	3	--				
66	4	--				
	5	--				
64	6	--	Light Brown coarse sand w/ pebbles	100%	S-1	7-11-10-13, 5 to 7 feet, Dry. Thermal & Chem sample at 7'
	7	--	Light Brown coarse grained sand	63%	N/A	5-6-10-11, Dry Proctor composite
62	8	--				
	9	--	Light Brown coarse grained sand	100%	S-2	9-13-14-18, 9 to 11 feet, Dry Thermal & Chem sample at 11' Proctor composite
60	10	--				
	11	--	Orange coarse grained sand	50%	NA	7-8-8-9, Dry Proctor composite
58	12	--				
	13	--	Orange to Light Brown coarse sand	63%	NA	5-5-7-9, Dry Proctor composite
56	14	--				
55	15	--				
	16	--				EOH

Hole No. 04

DIVISION	INSTALLATION	SHEET
DRILLING LOG	OF 1	SHEETS

1. PROJECT; PSEG-LI Southampton to Deerfield
2. LOCATION (Coordinates or Station) 40d55'21.55"N, 72d22'32.48"W
3. DRILLING AGENCY LAWES
4. HOLE NO. (As shown on drawing title and title number); BH-04
4. NAME OF DRILLER Scott Pedersen
6. DIRECTION OF HOLE X VERTICAL INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: not determined'
8. DEPTH DRILLED INTO ROCK: Not determined
9. TOTAL DEPTH OF HOLE 15'

10. SIZE AND TYPE OF BIT: 2.5"
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) Google Earth
12. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe 7800
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: ; UNDISTURBED: 2
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: not determined
16. DATE HOLE — STARTED 05/01/2024 COMPLETED 05/01/2024
17. ELEVATION TOP OF HOLE: 81' ASL
18. TOTAL CORE RECOVERY FOR BORING: 0
19. SIGNATURE OF INSPECTOR: Emanuel T Posluszny

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
81	0	-	Medium Brown coarse sand	N/A	N/A	Hand dug to 5 feet with an air knife on 4/30/2024. Dry,
		-				
	1	--				
		-				
79	2	--				
		-				
	3	--				
		-				
77	4	--				
		-				
	5	--				
		-	Light to dark brown coarse grained sand	92%	S-1	7-9-10-10 5 to 7 feet Dry, Thermal sample taken at 7'
75	6	--				
		-				
	7	--	Light Brown coarse grained sand w/ pebbles	71%	N/A	4-4-6-7, Dry Proctor composite taken
		-				
73	8	--				
		-				
	9	--	Light Brown coarse grained sand W/pebbles	63%	S-2	8-13-11-11, Dry 9 to 11 feet Thermal Sample taken at 11 feet
		-				
71	10	--				
		-				
	11	--	Light Brown fine grained sand	63%	NA	4-6-6-6, Dry Proctor composite taken
		-				
69	12	--				
		-				
	13	--	Light Brown fine grained sand	67%	NA	4-4-3-6, Dry Proctor composite taken
		-				
67	14	--				
		-				
66	15	--				
		-				EOH
	16	--				

DIVISION: DRILLING LOG	INSTALLATION OF 1 SHEET 1 SHEETS
1. PROJECT: PSEG-LI Southampton to Deerfield	10. SIZE AND TYPE OF BIT: 2.5”
2. LOCATION (Coordinates or Station): 40d56’5.88”N, 72d22’25.17”W	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): Google Earth
3. DRILLING AGENCY: LAWES	12. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe 7800
4. HOLE NO. (As shown on drawing title and title number): BH-05	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: 2; UNDISTURBED:
4. NAME OF DRILLER: Scott Pedersen	14. TOTAL NUMBER CORE BOXES: N/A
6. DIRECTION OF HOLE: X VERTICAL INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: not determined
	16. DATE HOLE — STARTED: 05/01/2024 COMPLETED: 05/01/2024
	17. ELEVATION TOP OF HOLE: 99’ ASL
7. THICKNESS OF OVERBURDEN: not determined’	18. TOTAL CORE RECOVERY FOR BORING: 0
8. DEPTH DRILLED INTO ROCK: Not determined	19. SIGNATURE OF INSPECTOR: Emanuel T Posluszny
9. TOTAL DEPTH OF HOLE 15’	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
99	0	-	Medium Brown fine grained sand	N/A	N/A	Hand dug on 4/30/2024 with air knife to 5 feet. Dry
	1	--				
97	2	--				
	3	--				
95	4	--				
	5	--				
93	6	--	Med. Brown coarse sand	75%	S-1	6-12-17-16, 5 to 7 feet, Dry. Thermal & Chem sample at 7’
	7	--	Laminated light w/ dark Brown fine grained sand	63%	N/A	5-6-8-8, Dry Proctor composite
91	8	--				
	9	--	Dark Brown sand on top Light Brown coarse grained sand on bottom	83%	S-2	5-9-13-17, 9 to 11 feet, Dry Thermal & Chem sample at 11’ Proctor composite
89	10	--				
	11	--	Laminated light brown fine grained sand w/ redish brown sand	67%	NA	7-6-7-9, Dry Proctor composite
87	12	--				
	13	--	Laminated Light Brown fine sand w/ redish brown sand	71%	NA	9-10-8-11, Dry Proctor composite
85	14	--				
84	15	--				
	16	--				EOH

APPENDIX C

Laboratory Results

MIDLANTIC ENGINEERING INC.
120 Commerce Road • Pittston Twp., PA 18640-9552
570/655-2200 (phone) • midlaneng@aol.com

LABORATORY TEST DATA - #24090

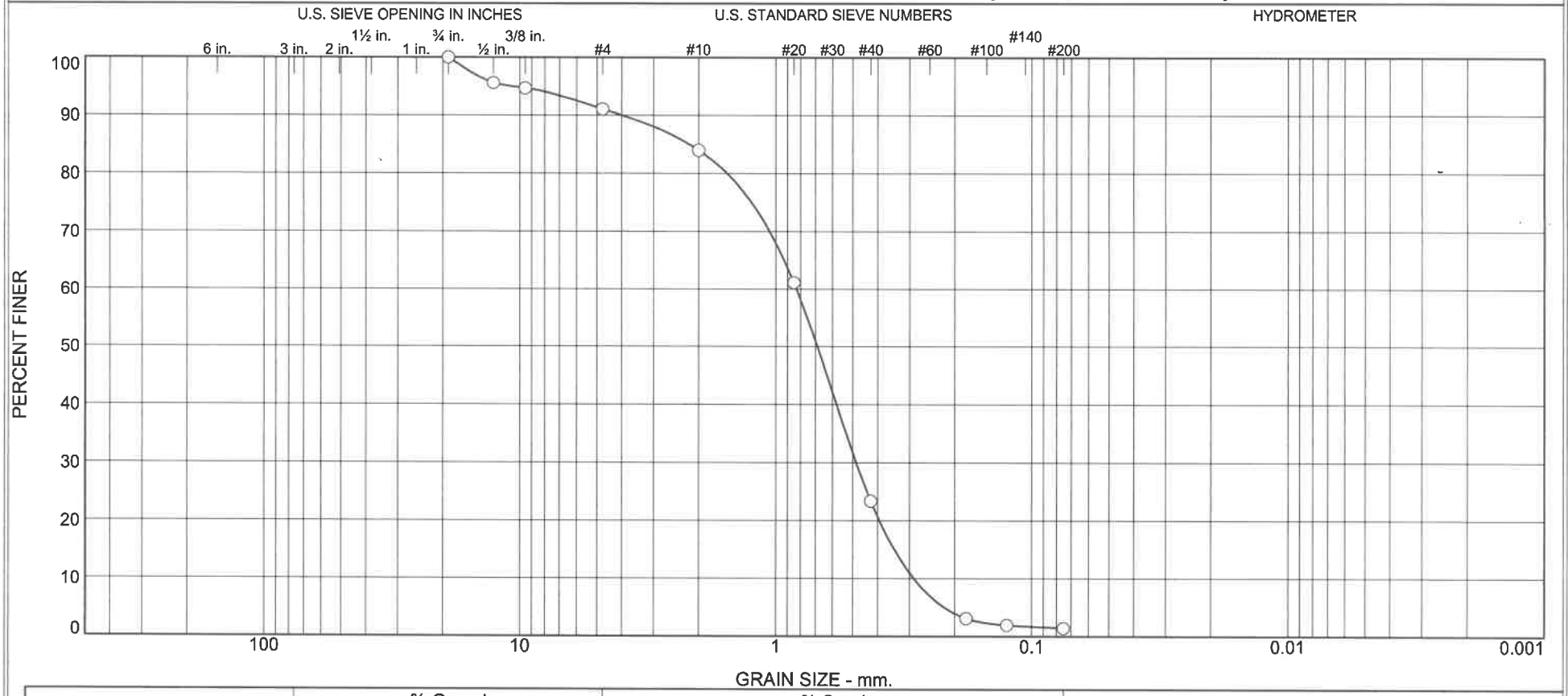
- Soil Classifications Summary (BH-1)
- Gradation and Classification
- Moisture-Density Relationship

SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

Test Boring BH-1 Sample No.	Classification (ASTM D-2487)	% Moisture (D-2216)	Combined Silt/Clay (%<#200) (D-1140)	Max. Dry Density (D-698)	Opt. Moisture % (D-698)	Specific Gravity (D-854)
S-1	brown poorly graded SAND (SP)	2.7%	1.4%	107.5 pcf	6.4%	2.658

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	9.0	7.0	60.6	22.0	1.4	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Southampton to Deerfield	BH-1		5/3/24	SP	brown poorly graded SAND	2.7	NV	NP

Client POZ Engineering & Environmental, PC

Project Materials Testing 2024

Project No. 24090

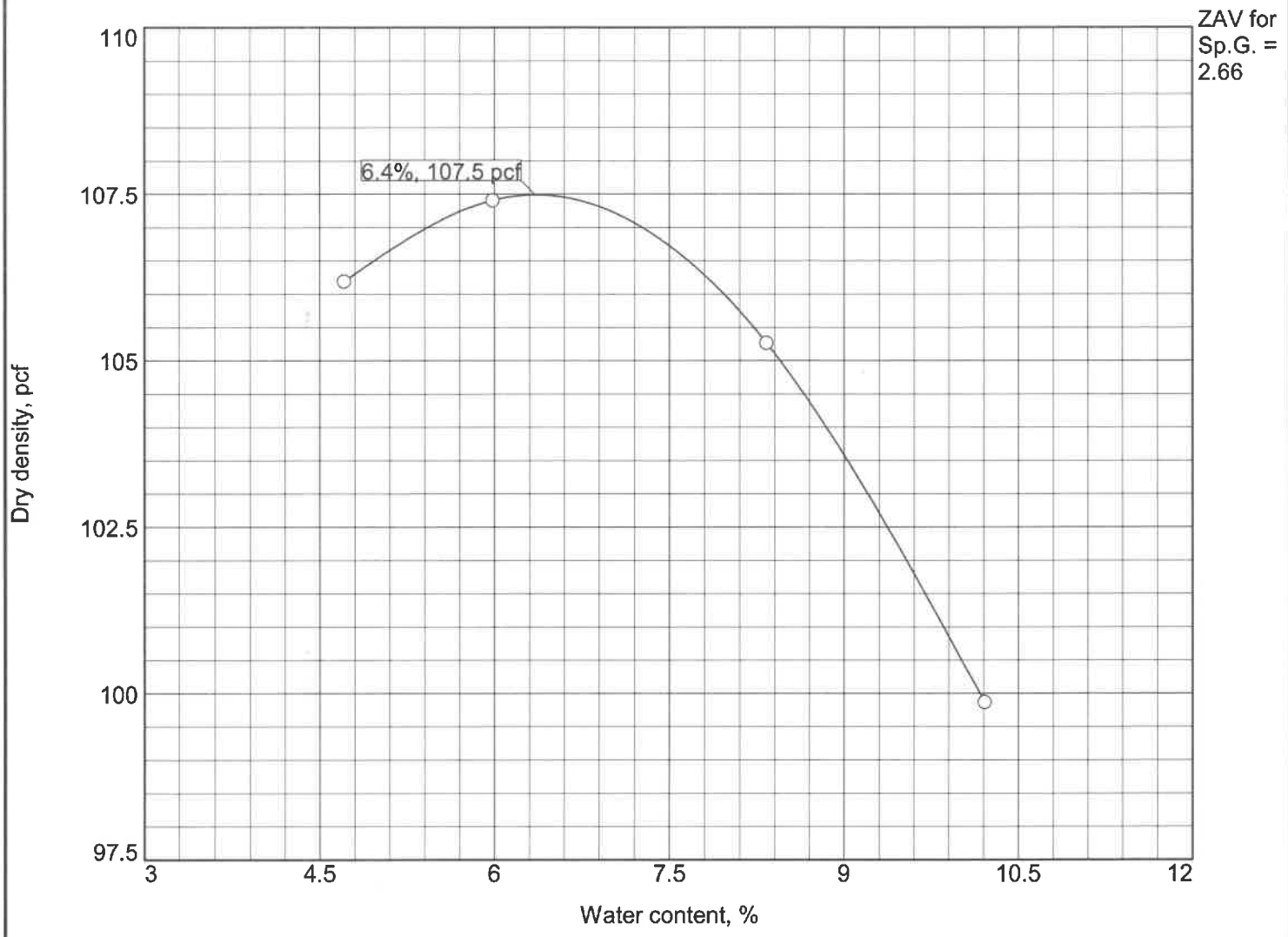
MIDLANTIC ENGINEERING

○ Specific Gravity= 2.658 (ASTM D854)

Enclosure (1)

Tested By: MJ **Checked By:** TB

MOISTURE-DENSITY RELATIONSHIP



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP	A-1-b	2.7	2.658	NV	NP	5.3	1.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 107.5 pcf Optimum moisture = 6.4 %	brown poorly graded SAND

Project No. 24090 **Client:** POZ Engineering & Environmental, PC
Project: Materials Testing 2024

○ **Source of Sample:** Southampton to Deerfield **Sample Number:** BH-1

MIDLANTIC ENGINEERING

Remarks:
Proctor No. 1
BH-1
5-3-24
Specific Gravity= 2.658 (ASTM D854)

Tested By: MJ **Checked By:** TB

MIDLANTIC ENGINEERING INC.
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570/655-2200 (phone) • midlaneng@aol.com

LABORATORY TEST DATA - #24090

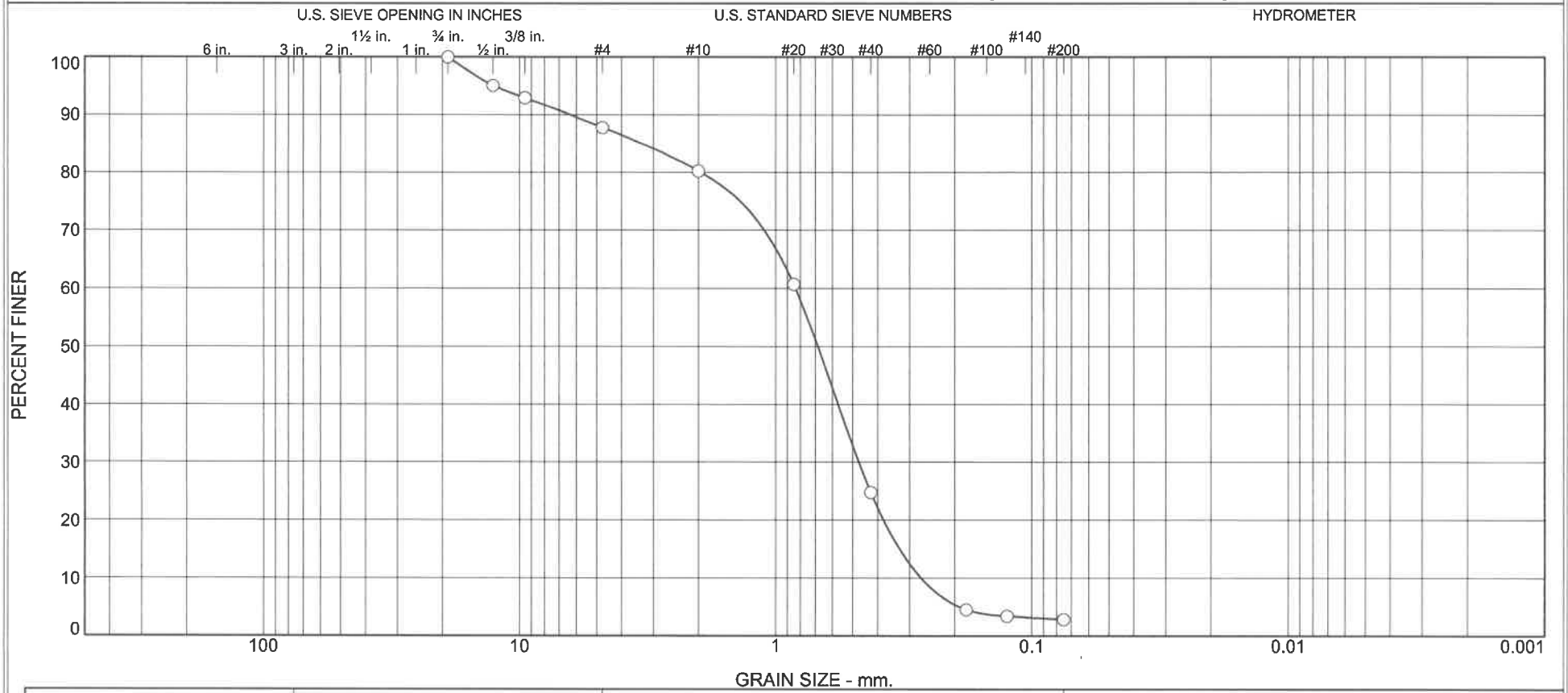
- Soil Classifications Summary (BH-2)
- Gradation and Classification
- Moisture-Density Relationship

SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

Test Boring BH-2 Sample No.	Classification (ASTM D-2487)	% Moisture (D-2216)	Combined Silt/Clay (%<#200) (D-1140)	Max Dry Density (D-698)	Opt. Moisture % (D-698)	Specific Gravity (D-854)
S-1	brown poorly graded SAND (SP)	3.3%	2.8%	111.2 pcf	7.0%	2.659

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	12.2	7.6	55.4	22.0	2.8	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Southampton to Deerfield	BH-2		5/3/24	SP	brown poorly graded SAND	3.3	NV	NP

Client POZ Engineering & Environmental, PC

Project Materials Testing 2024

Project No. 24090

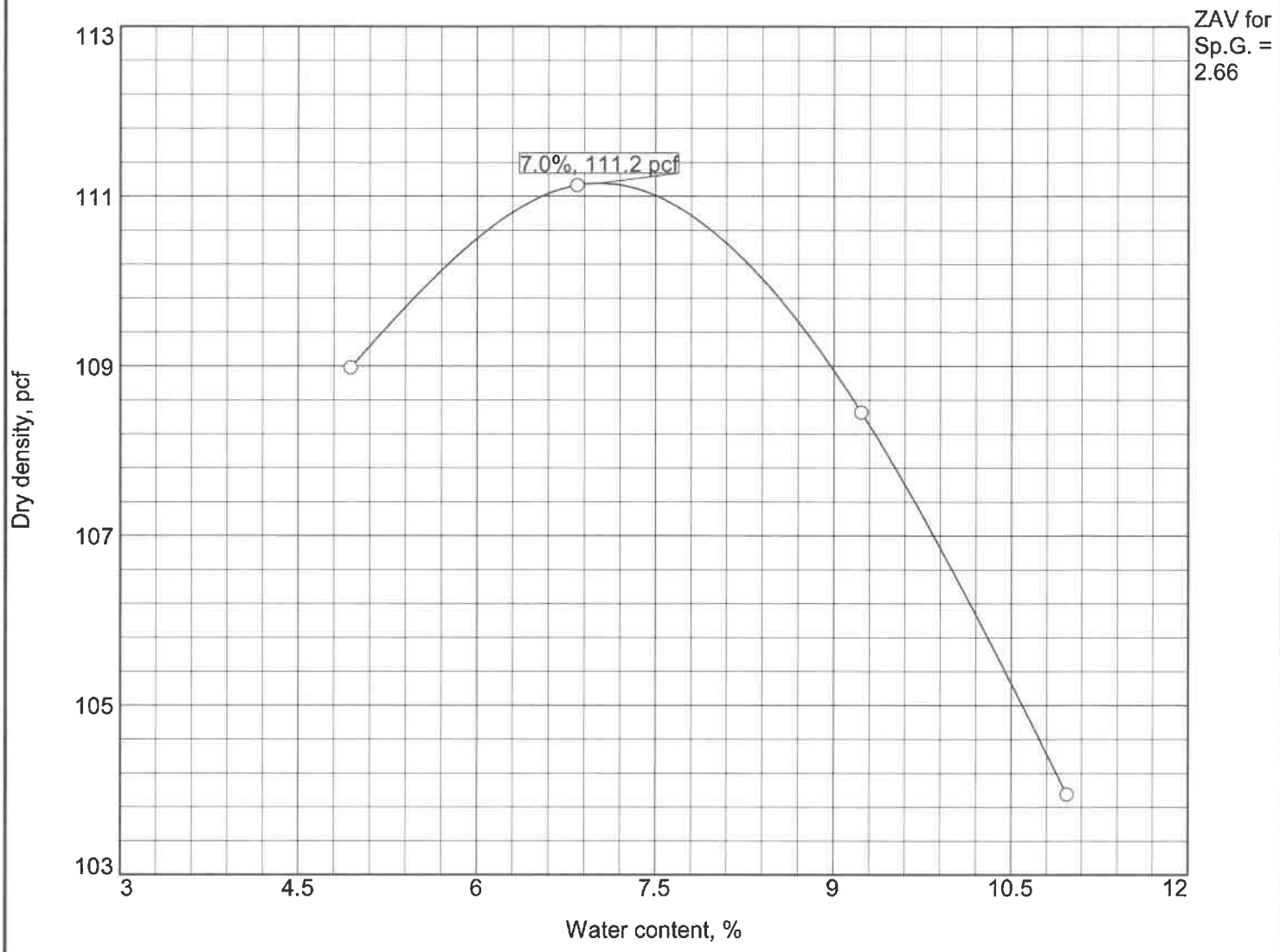
MIDLANTIC ENGINEERING

○ Specific Gravity= 2.659 (ASTM D854)

Enclosure (2)

Tested By: MJ **Checked By:** TB

MOISTURE-DENSITY RELATIONSHIP



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP	A-1-b	3.3	2.659	NV	NP	7.1	2.8

TEST RESULTS

Maximum dry density = 111.2 pcf

Optimum moisture = 7.0 %

MATERIAL DESCRIPTION

brown poorly graded SAND

Project No. 24090 **Client:** POZ Engineering & Environmental, PC

Project: Materials Testing 2024

○ **Source of Sample:** Southampton to Deerfield **Sample Number:** BH-2

Remarks:

Proctor No. 2
BH-2
5-3-24
Specific Gravity= 2.659 (ASTM D854)

MIDLANTIC ENGINEERING

Tested By: MJ **Checked By:** TB

MIDLANTIC ENGINEERING INC.
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570/655-2200 (phone) • midlaneng@aol.com

LABORATORY TEST DATA - #24090

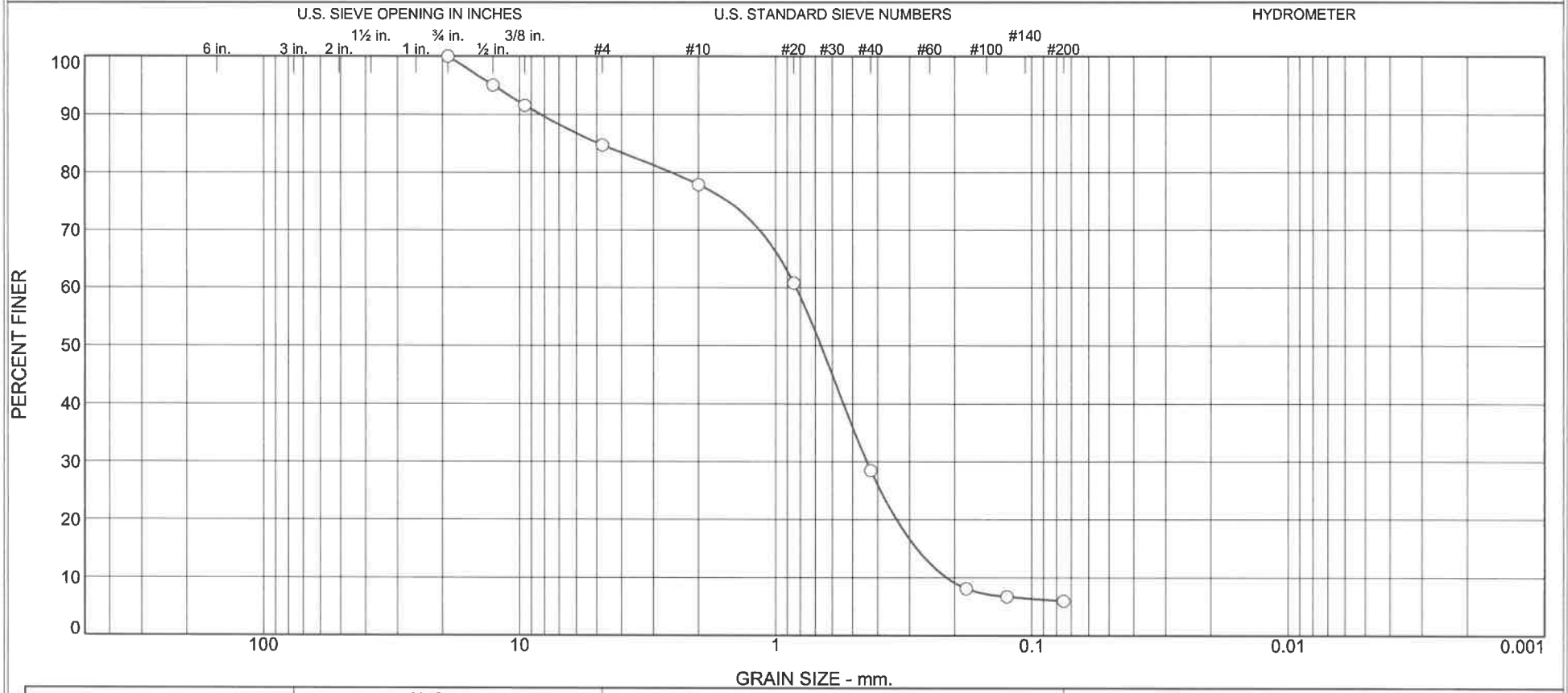
- Soil Classifications Summary (BH-3)
- Gradation and Classifications
- Moisture-Density Relationship

SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

Test Boring BH-3 Sample No.	Classification (ASTM D-2487)	% Moisture (D-2216)	Combined Silt/Clay (%<#200) (D-1140)	Max Dry Density (D-698)	Opt. Moisture % (D-698)	Specific Gravity (D-854)
S-1	brown poorly graded SAND with silt and gravel (SP-SM)	2.9%	6.0%	115.3 pcf	7.9%	2.648

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	15.3	6.8	49.4	22.5	6.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Southampton to Deerfield	BH-3		5/3/24	SP-SM	brown/orange poorly graded SAND with silt and gravel	2.9	NV	NP

Client POZ Engineering & Environmental, PC

Project Materials Testing 2024

Project No. 24090

MIDLANTIC ENGINEERING

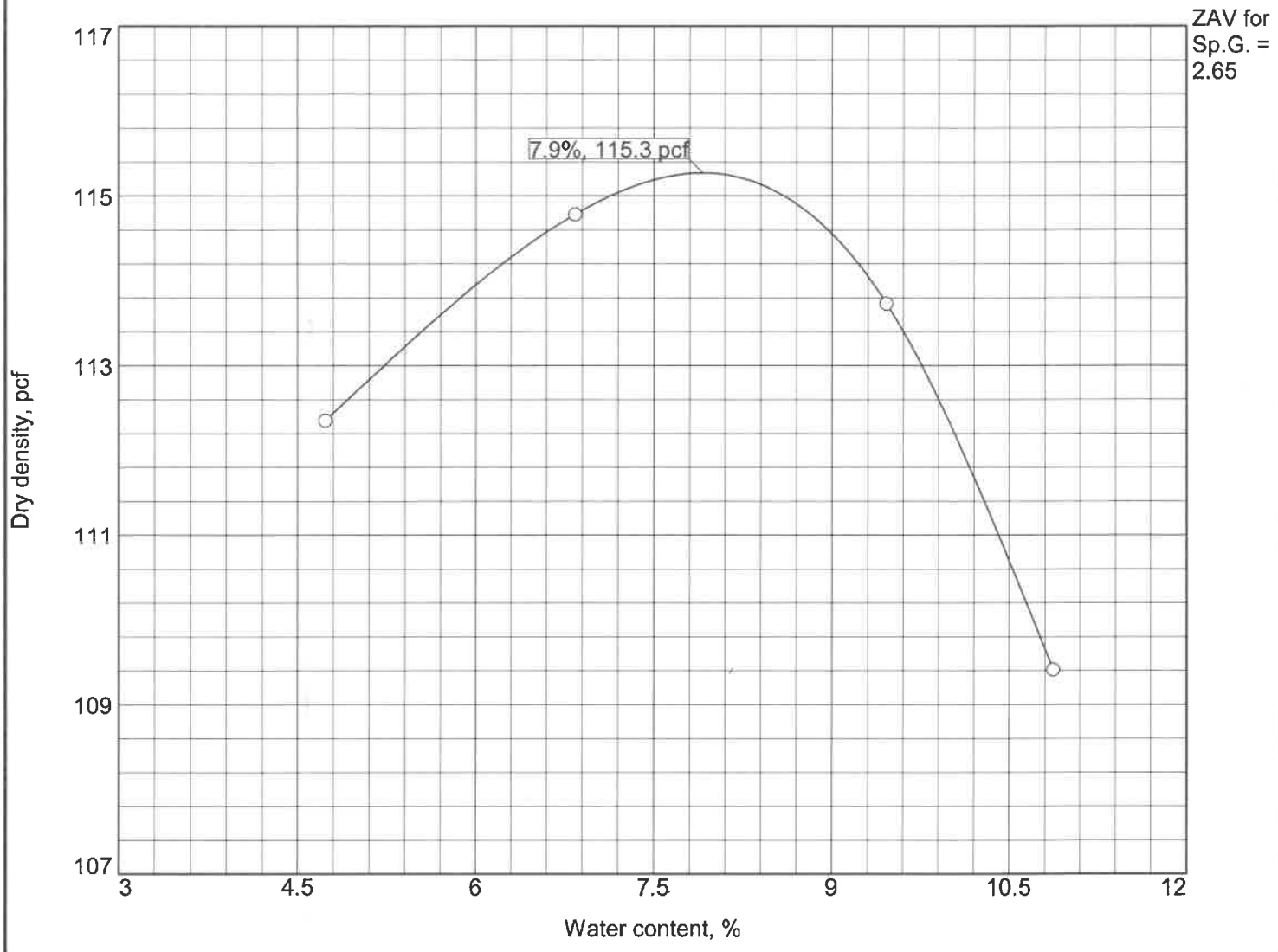
○ Specific Gravity= 2.648 (ASTM D854)

Enclosure (3)

2 of 3

Tested By: MJ **Checked By:** TB

MOISTURE-DENSITY RELATIONSHIP



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP-SM	A-1-b	2.9	2.648	NV	NP	8.4	6.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 115.3 pcf Optimum moisture = 7.9 %	brown/orange poorly graded SAND with silt and gravel

Project No. 24090 **Client:** POZ Engineering & Environmental, PC
Project: Materials Testing 2024

○ **Source of Sample:** Southampton to Deerfield **Sample Number:** BH-3

MIDLANTIC ENGINEERING

Remarks:
Proctor No. 3
BH-3
5-3-24
Specific Gravity= 2.648 (ASTM 854)

Tested By: MJ **Checked By:** TB

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LABORATORY TEST DATA - #24090

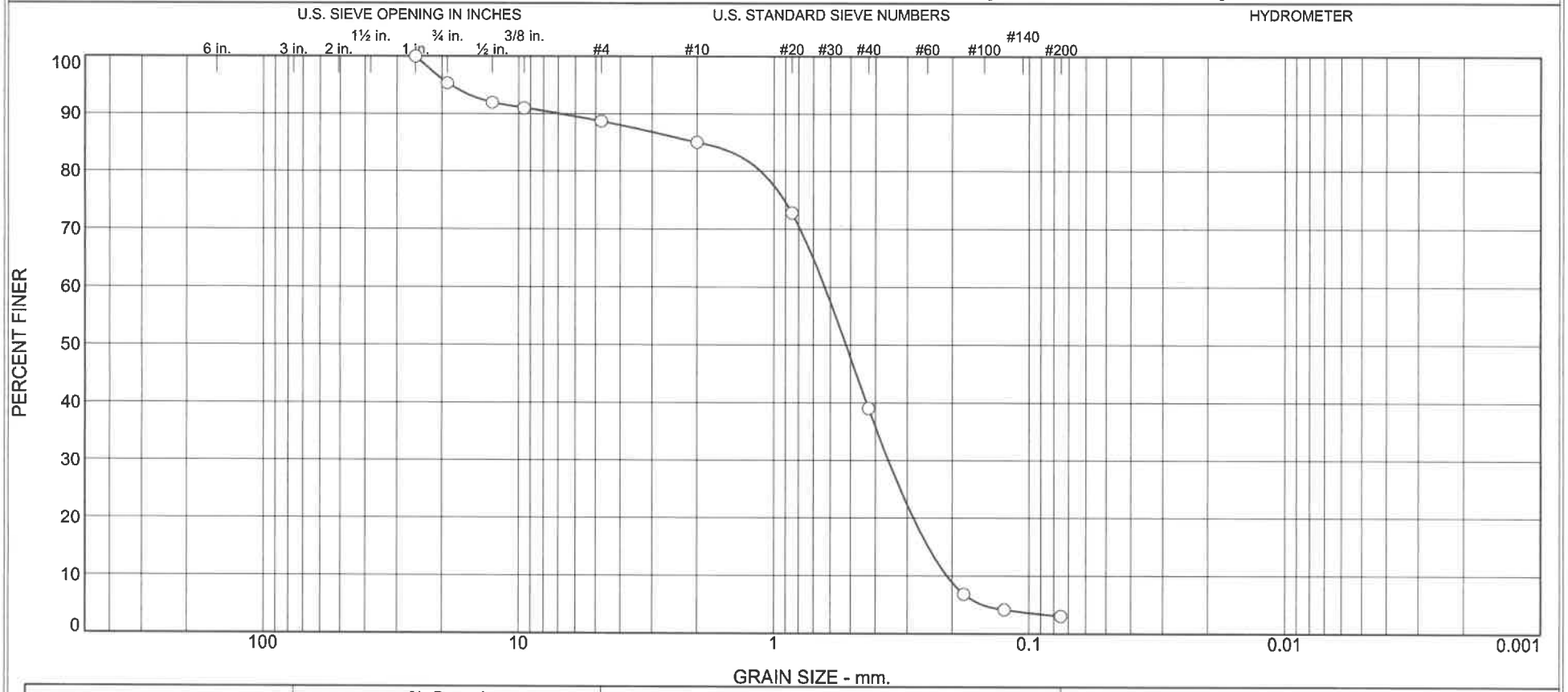
- Soil Classifications Summary (BH-4)
- Gradation and Classification
- Moisture-Density Relationship

SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

Test Boring BH-4 Sample No.	Classification (ASTM D-2487)	% Moisture (D-2216)	Combined Silt/Clay (%<#200) (D-1140)	Max Dry Density (D-698)	Opt. Moisture % (D-698)	Specific Gravity (D-854)
S-1	brown poorly graded SAND (SP)	3.6%	3.0%	107.5 pcf	5.8%	2.574

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	4.7	6.6	3.7	45.9	36.1	3.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Southampton to Deerfield	BH-4		5/3/24	SP	brown poorly graded SAND	3.6	NV	

Client POZ Engineering & Environmental, PC

Project Materials Testing 2024

Project No. 24090

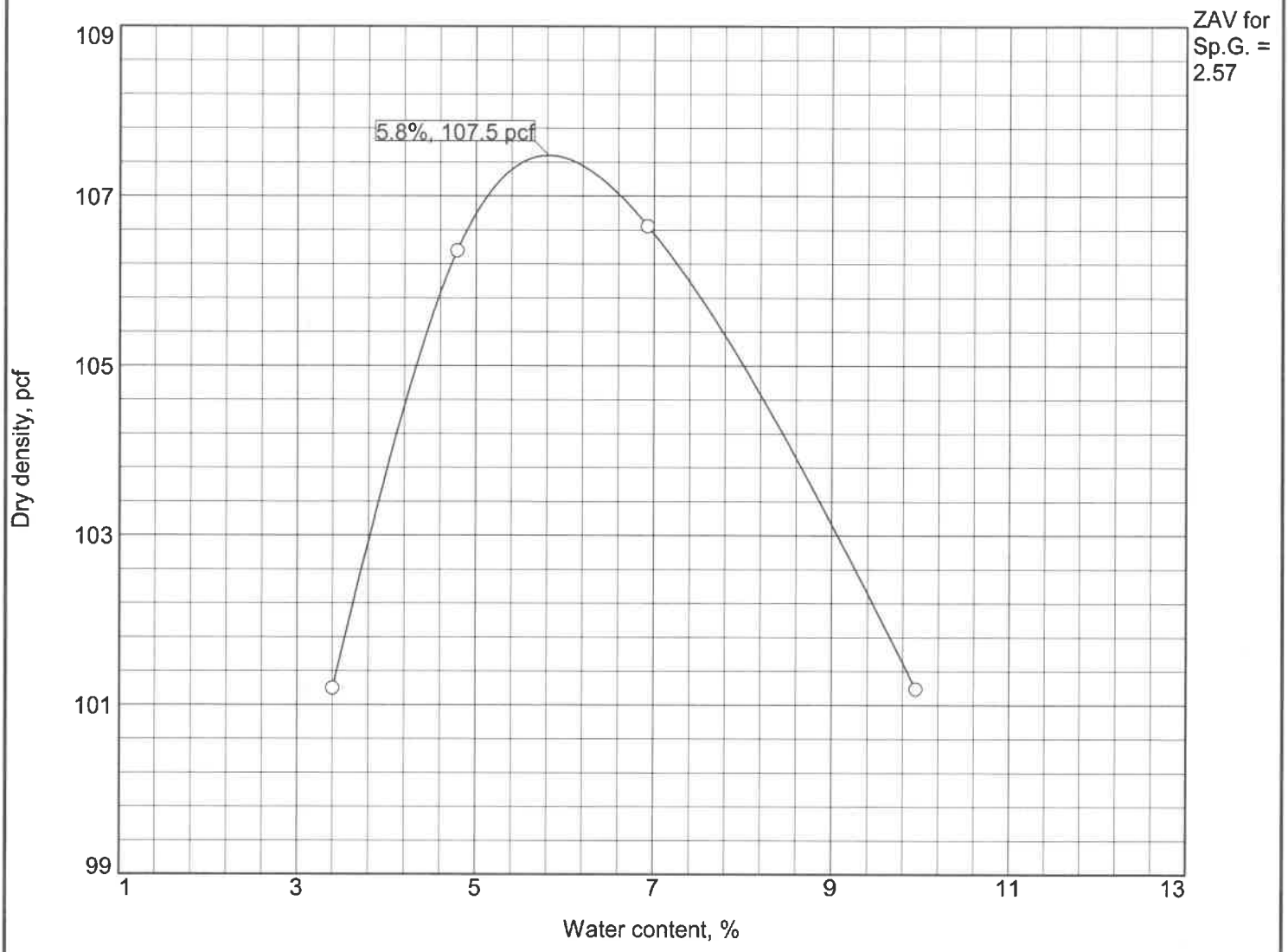
MIDLANTIC ENGINEERING

○ Specific Gravity= 2.574 (ASTM D854)

Enclosure (4)

Tested By: MJ **Checked By:** TB

MOISTURE-DENSITY RELATIONSHIP



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP		3.6	2.574	NV		9.0	3.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 107.5 pcf Optimum moisture = 5.8 %	brown poorly graded SAND

Project No. 24090 **Client:** POZ Engineering & Environmental, PC
Project: Materials Testing 2024

○ **Source of Sample:** Southampton to Deerfield **Sample Number:** BH-4

MIDLANTIC ENGINEERING

Remarks:
Proctor No. 4
BH-4
5-3-24
Specific Gravity= 2.574 (ASTM D854)

Tested By: MJ **Checked By:** TB

MIDLANTIC ENGINEERING INC.
120 Commerce Road • Pittston Twp., PA 18640-9552
570/655-2200 (phone) • midlaneng@aol.com

LABORATORY TEST DATA - #24090

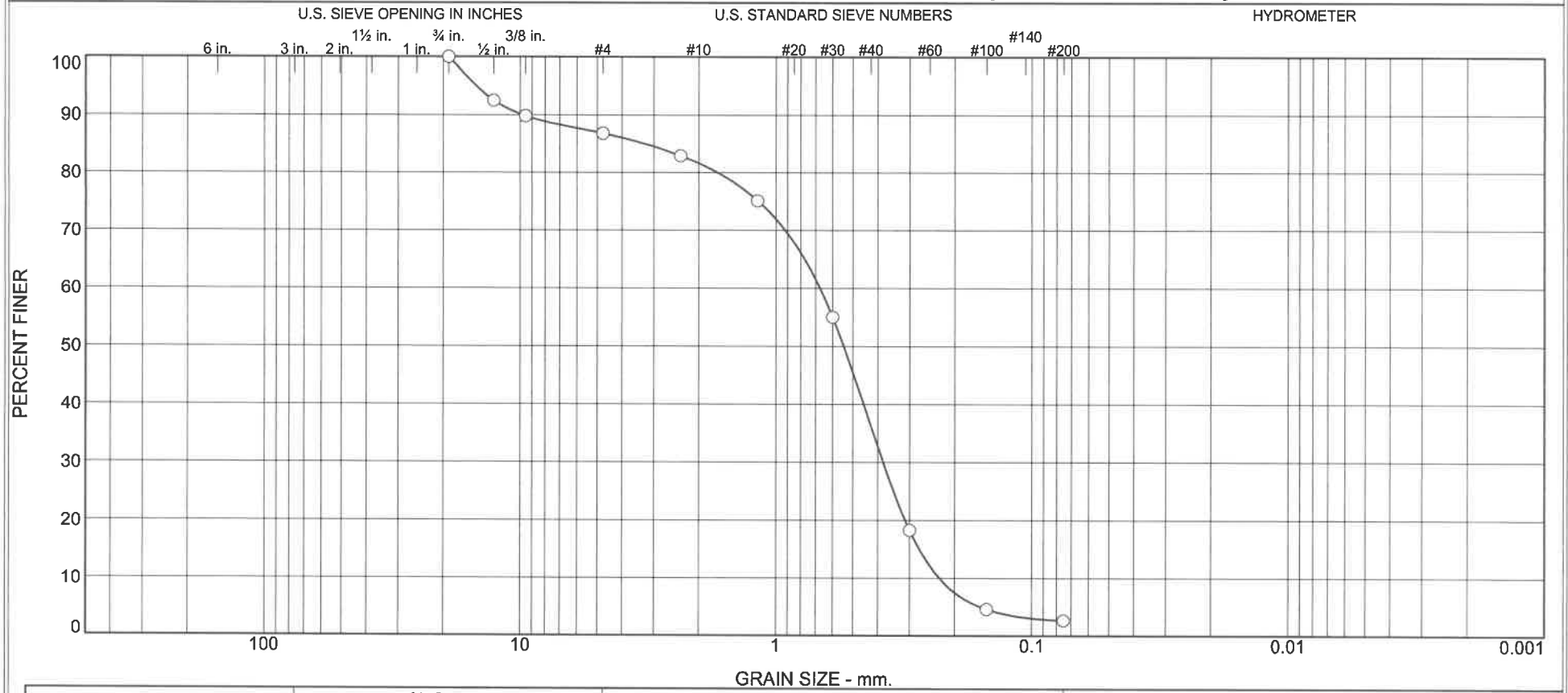
- Soil Classifications Summary (BH-5)
- Gradation and Classification
- Moisture-Density Relationship

SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

Test Boring BH-5 Sample No.	Classification (ASTM D-2487)	% Moisture (D-2216)	Combined Silt/Clay (%<#200) (D-1140)	Max Dry Density (D-698)	Opt. Moisture % (D-698)	Specific Gravity (D-854)
S-1	brown poorly graded SAND (SP)	2.6%	2.6%	107.9 pcf	5.7%	2.658

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	13.2	5.2	45.4	33.6	2.6	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Southampton to Deerfield	BH-5		5/3/24	SP	brown poorly graded SAND	2.6	NV	NP

Client POZ Engineering & Environmental, PC

Project Materials Testing 2024

Project No. 24090

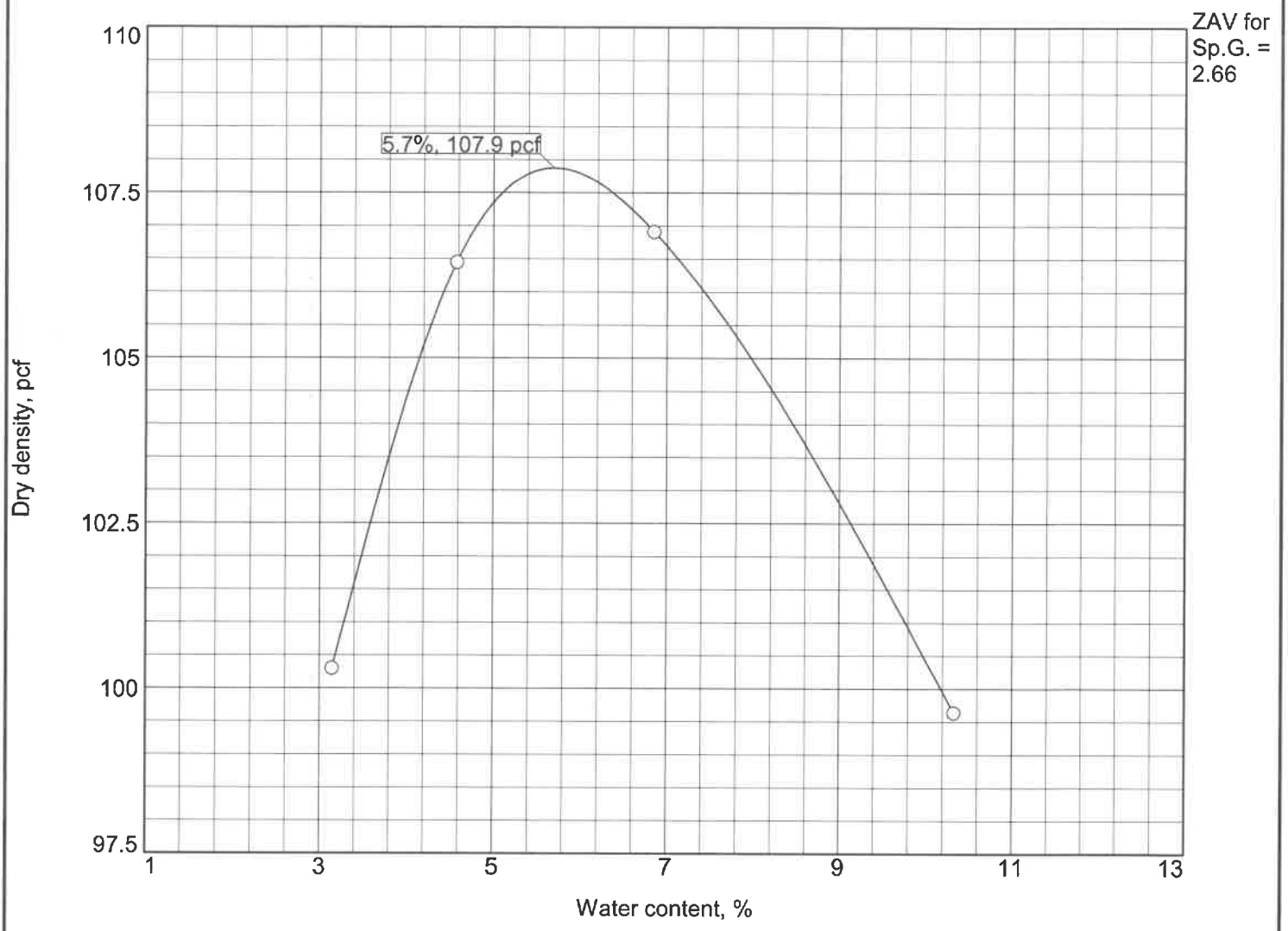
MIDLANTIC ENGINEERING

○ Specific Gravity= 2.658 (ASTM D854)

Enclosure (5)

Tested By: MJ **Checked By:** TB

MOISTURE-DENSITY RELATIONSHIP



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP	A-1-b	2.6	2.658	NV	NP	10.2	2.6

TEST RESULTS

Maximum dry density = 107.9 pcf

Optimum moisture = 5.7 %

MATERIAL DESCRIPTION

brown poorly graded SAND

Project No. 24090 **Client:** POZ Engineering & Environmental, PC

Project: Materials Testing 2024

○ **Source of Sample:** Southampton to Deerfield **Sample Number:** BH-5

MIDLANTIC ENGINEERING

Remarks:

Proctor No. 5
BH-5
5-3-24
Specific Gravity= 2.658 (ASTM D854)

Tested By: MJ **Checked By:** TB

Geotherm

21239 FM529 Rd., Bldg F
Cypress, TX 77433
Office: 281-985-9344
info@geothermusa.com
http://www.geothermusa.com

June 17, 2024

POZ Engineering & Environmental Consulting, P.C.
490 North Main Street
Pittston, PA 18640
Attn: Emanuel Posluszny, P.E.

Re: Thermal Analysis of Native Soil Samples
PSEG-LI Southampton to Deerfield – Long Island, NY (PO No. 144527)

The following is the report of thermal dryout characterization tests conducted on two (2) bulk samples and eight (8) undisturbed tube samples of native soil from the referenced project sent to our laboratory.

Thermal Resistivity Tests: The undisturbed tube samples were tested 'as is'. The bulk samples were tested at the 'as received' moisture content and at specified density. Per instructions, sample BH1 S-1 was tested at 68%, and sample BH1 S-2 was tested at 100% of the standard Proctor dry density ***provided by POZ*****.** The tests were conducted in accordance with the **IEEE standard 442-2017**. The results are tabulated below and the thermal dryout curves are presented in **Figures 1 to 5.**

Sample ID, Description, Thermal Resistivity, Moisture Content and Density

Sample ID	Depth (ft)	Effort (%)	Description (POZ)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
				Wet	Dry		
BH1 S-1	7	68	Orange Fine Grained Sand	165	384	2	73
BH1 S-2	11	100	Laminated Brown Fine Grained Sand	73	239	4	111
BH2 S-1	7	Tube	Orange Coarse Grained Sand	97	209	4	106
BH2 S-2	11	Tube	Light Brown Coarse Grained Sand	104	243	5	98
BH3 S-1	7	Tube	Light Brown Coarse Sand with Pebbles	76	208	4	106
BH3 S-2	11	Tube	Light Brown Coarse Grained Sand	100	239	3	100
BH4 S-1	7	Tube	Light to Dark Brown Coarse Grained Sand	79	213	4	105
BH4 S-2	11	Tube	Light Brown Coarse Grained Sand with Pebbles	96	269	4	94

Geotherm

Sample ID	Depth (ft)	Effort (%)	Description (POZ)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
				Wet	Dry		
BH5 S-1	7	Tube	Medium Brown Coarse Sand	95	192	3	108
BH5 S-2	11	Tube	Dark Brown Sand on top Light Brown Coarse Grained Sand on bottom	94	231	5	102

Comments: The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

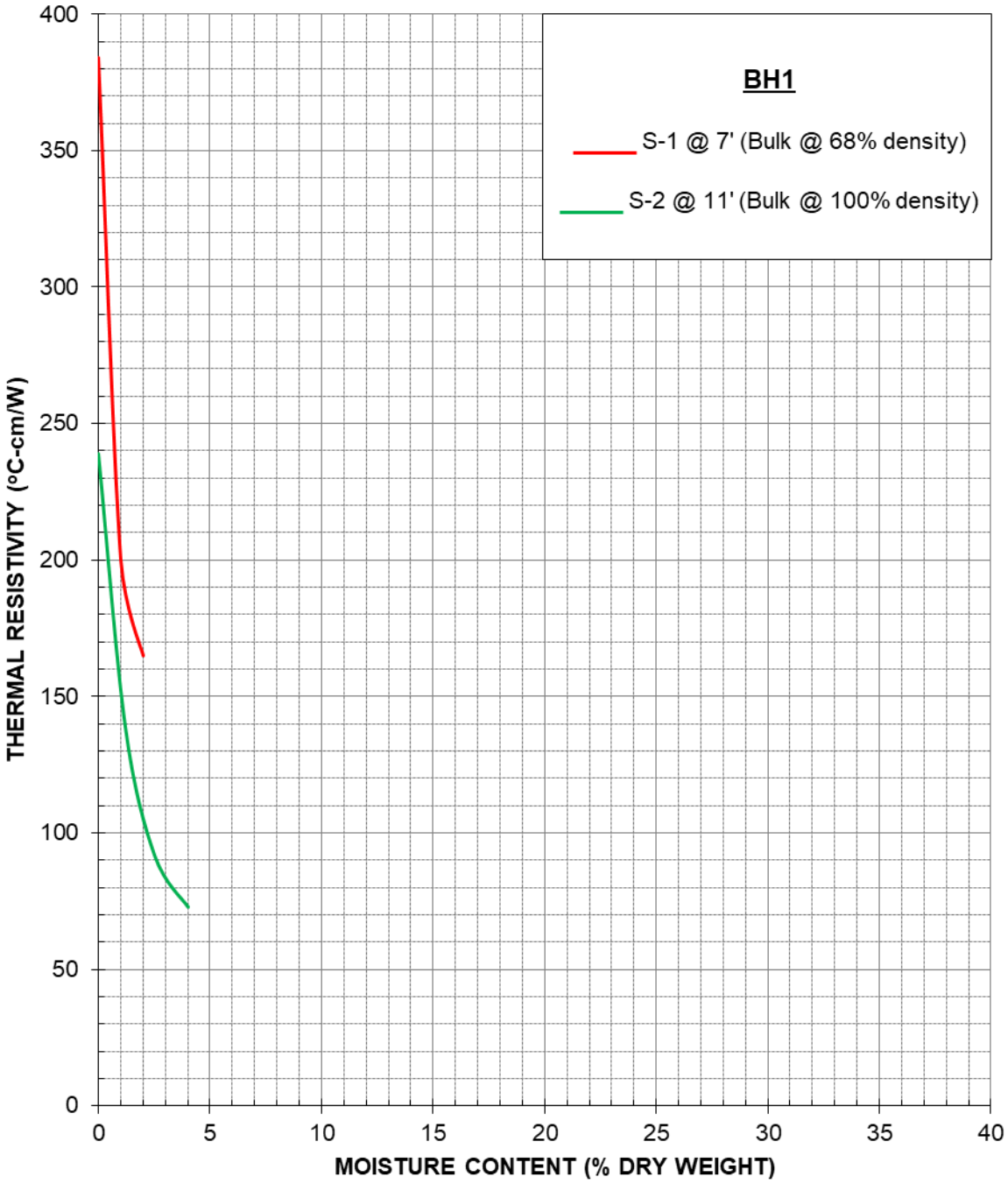
Please contact us if you have any questions or if we can be of further assistance.

Geotherm USA

Nimesh Patel

Geotherm

THERMAL DRYOUT CURVES



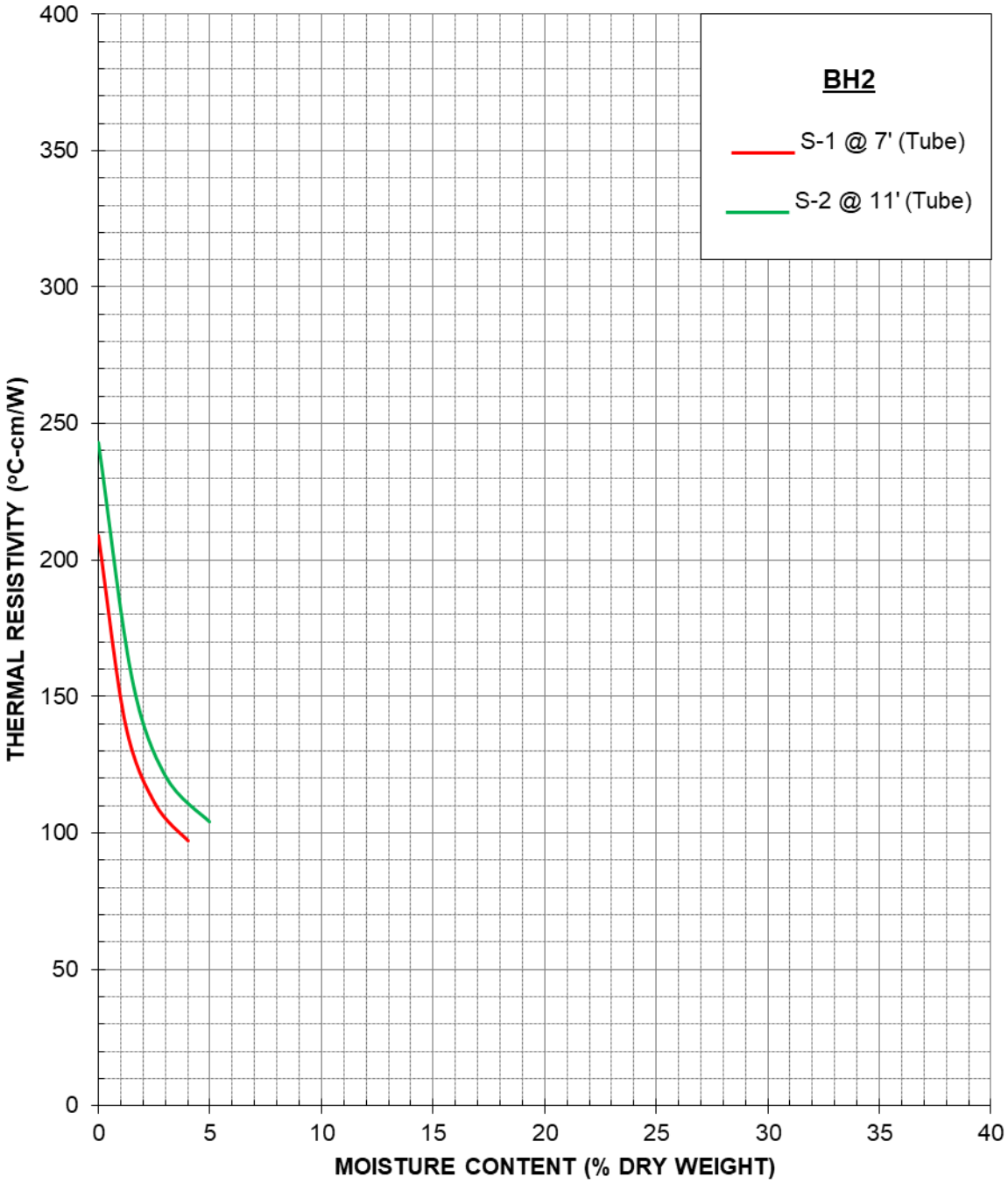
POZ Engineering & Environmental Consulting, P.C.

PSEG-LI Southampton to Deerfield – Long Island, NY

Thermal Analysis of Native Soil Samples

June 2024 **Figure 2**

THERMAL DRYOUT CURVES



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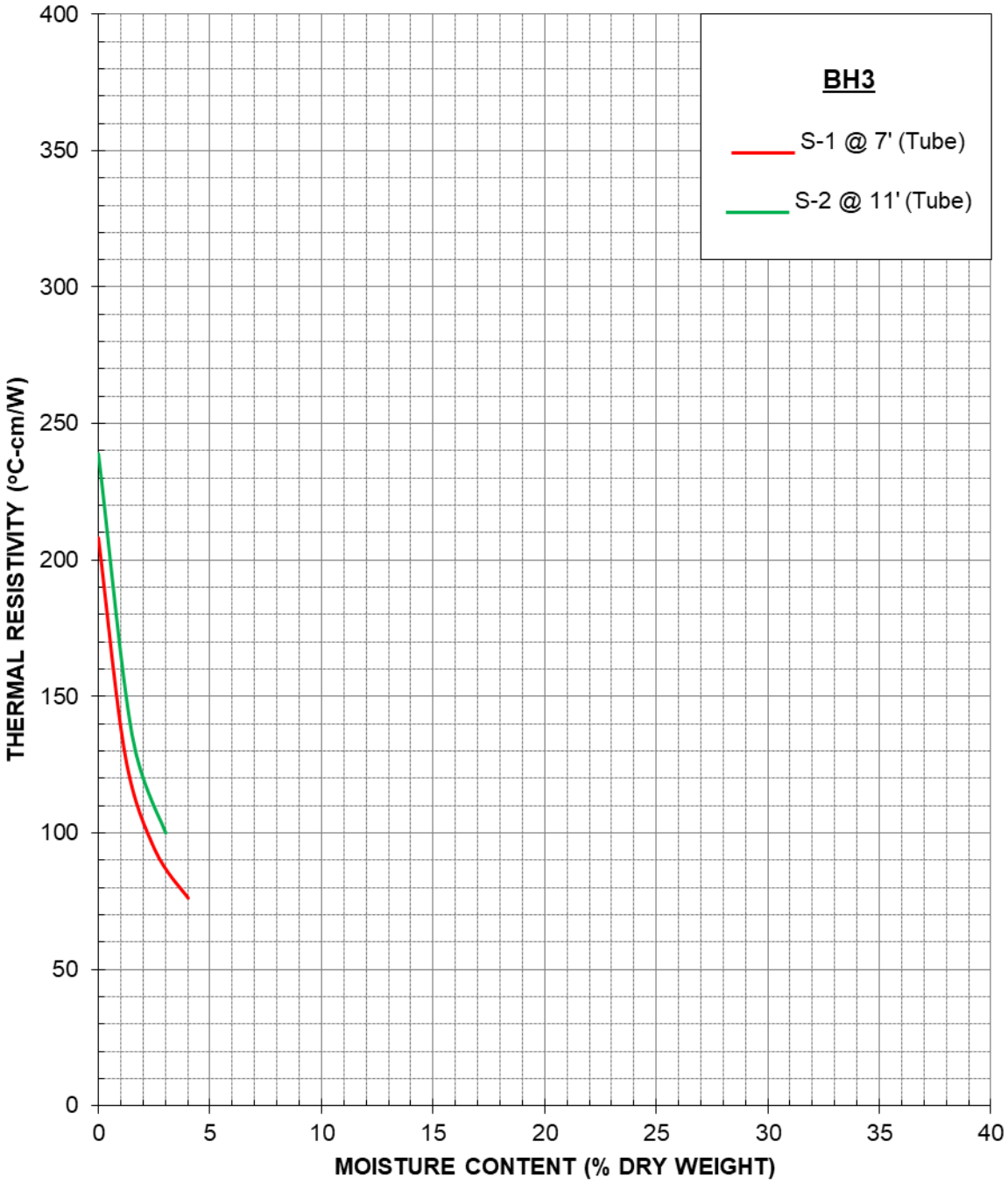
PSEG-LI Southampton to Deerfield – Long Island, NY

Thermal Analysis of Native Soil Samples

June 2024 **Figure 2**

THERMAL DRYOUT CURVES



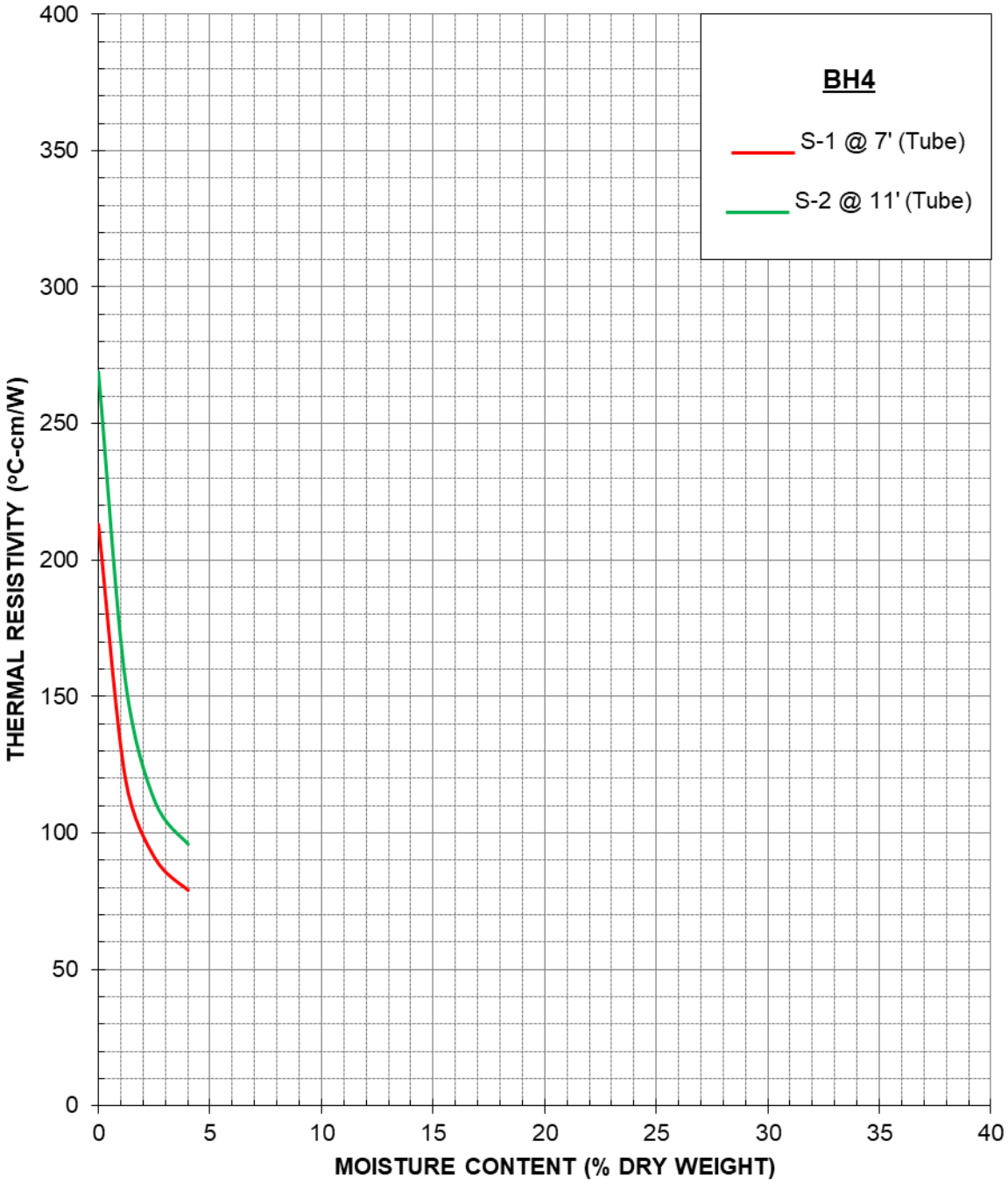
POZ Engineering & Environmental Consulting, P.C.

PSEG-LI Southampton to Deerfield – Long Island, NY

Thermal Analysis of Native Soil Samples

June 2024 **Figure 4**

THERMAL DRYOUT CURVES



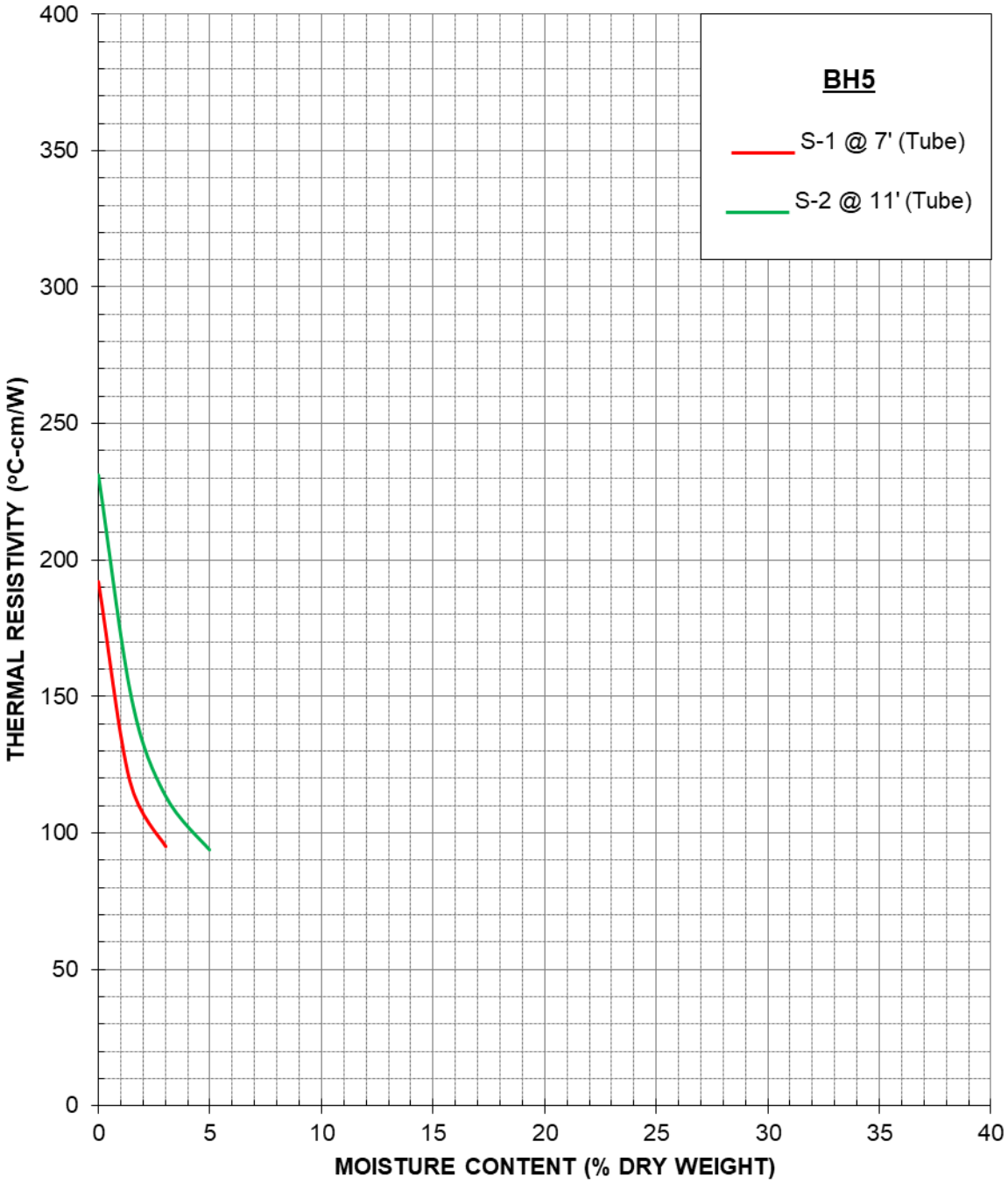
POZ Engineering & Environmental Consulting, P.C.

PSEG-LI Southampton to Deerfield – Long Island, NY

Thermal Analysis of Native Soil Samples

June 2024 **Figure 4**

THERMAL DRYOUT CURVES



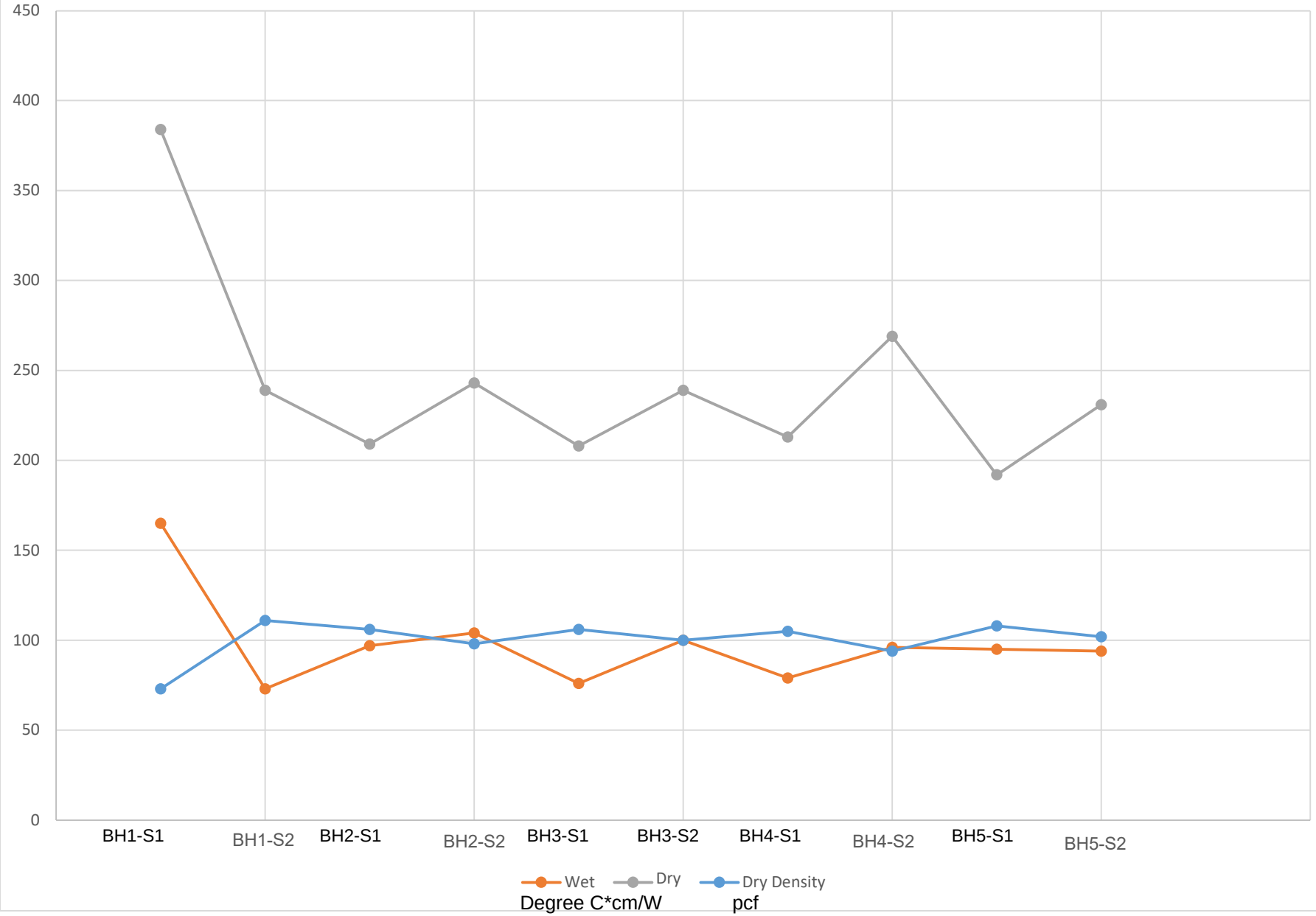
POZ Engineering & Environmental Consulting, P.C.

PSEG-LI Southampton to Deerfield – Long Island, NY

Thermal Analysis of Native Soil Samples

June 2024 **Figure 5**

Figure #1 Comparative Values of Thermal Resistivity (Wet and Dry), and Dry Density, between Boreholes



APPENDIX D

Soil Report NRCS

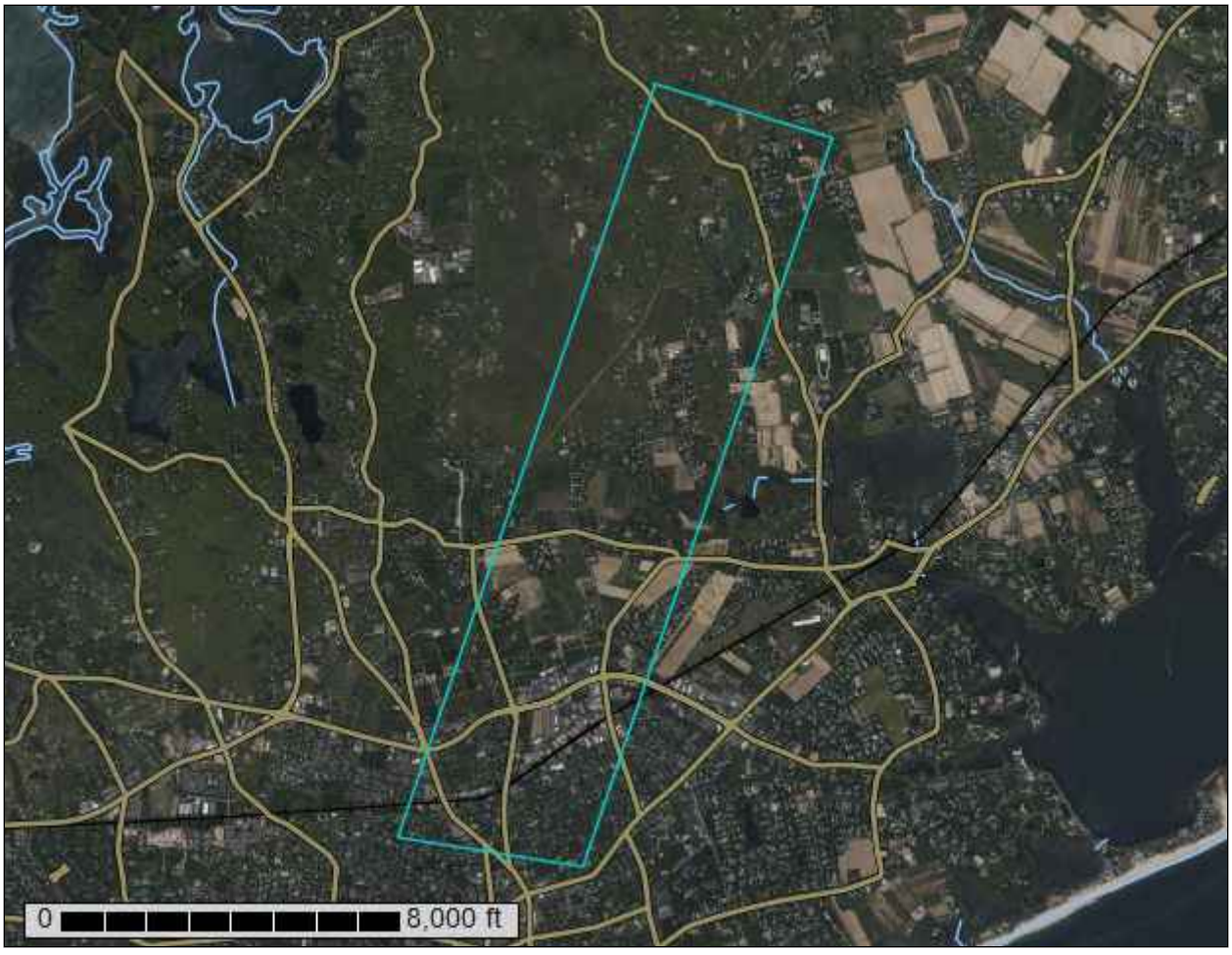
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Suffolk County, New York



June 21, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

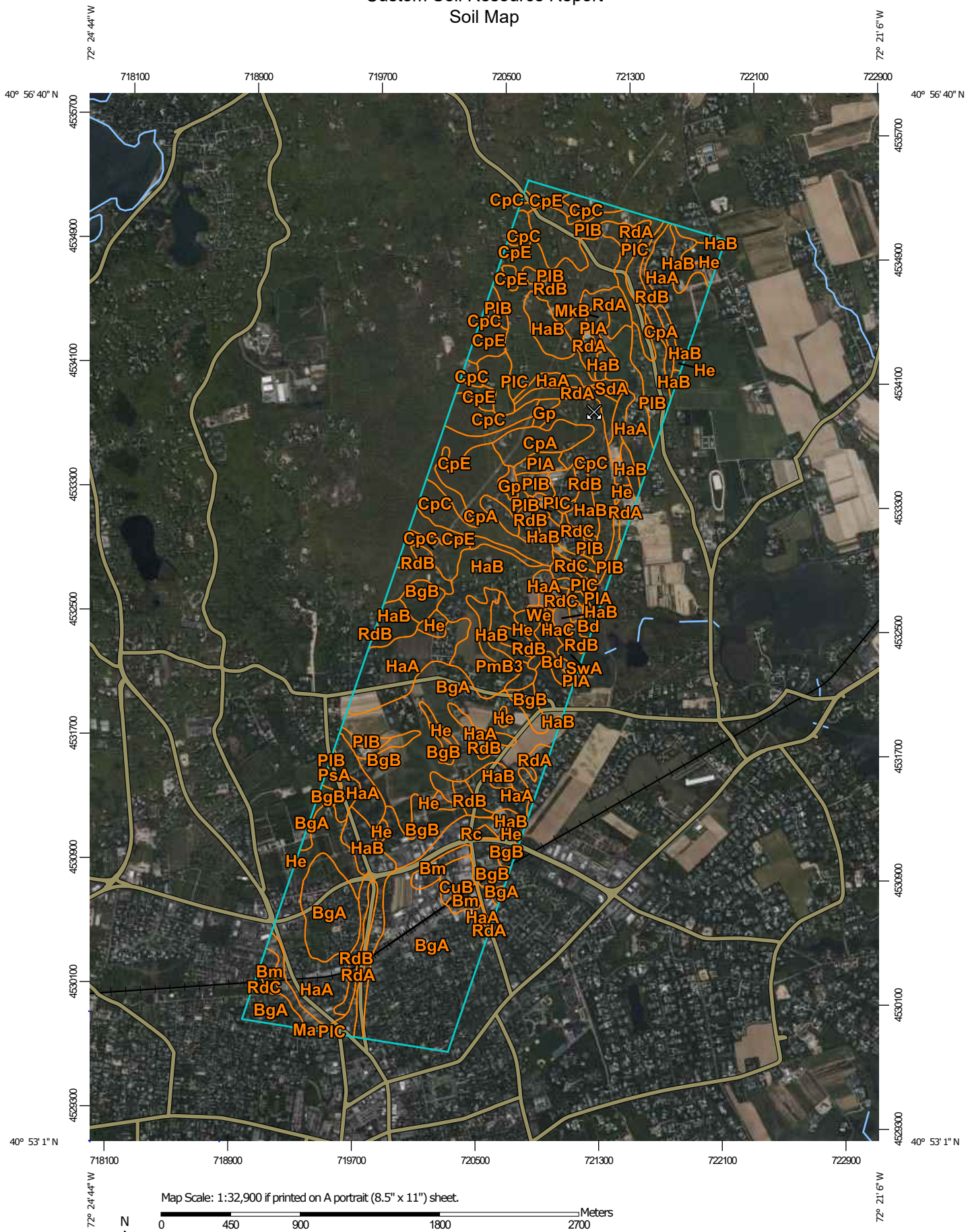
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:32,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 450 900 1800 2700

Feet: 0 1500 3000 6000 9000

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Suffolk County, New York
Survey Area Data: Version 21, Sep 6, 2023

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

Date(s) aerial images were photographed: May 10, 2023—May 11, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bd	Berryland mucky sand	8.7	0.5%
BgA	Bridgehampton silt loam, 0 to 2 percent slopes	433.0	23.4%
BgB	Bridgehampton silt loam, 2 to 6 percent slopes	72.7	3.9%
Bm	Bridgehampton silt loam, graded	22.0	1.2%
CpA	Carver and Plymouth soils, 0 to 3 percent slopes	39.6	2.1%
CpC	Carver and Plymouth soils, 3 to 15 percent slopes	172.5	9.3%
CpE	Carver and Plymouth soils, 15 to 35 percent slopes	71.2	3.8%
CuB	Cut and fill land, gently sloping	11.4	0.6%
Gp	Gravel pits	12.9	0.7%
HaA	Haven loam, 0 to 2 percent slopes	264.3	14.3%
HaB	Haven loam, 2 to 6 percent slopes	208.0	11.2%
HaC	Haven loam, 6 to 12 percent slopes	2.1	0.1%
He	Haven loam, thick surface layer	41.7	2.2%
Ma	Made land	0.8	0.0%
MkB	Montauk loam, 3 to 8 percent slopes	6.6	0.4%
PlA	Plymouth loamy coarse sand, 0 to 3 percent slopes	24.7	1.3%
PlB	Plymouth loamy coarse sand, 3 to 8 percent slopes	116.6	6.3%
PlC	Plymouth loamy coarse sand, 8 to 15 percent slopes	41.2	2.2%
PmB3	Plymouth gravelly loamy sand, 3 to 8 percent slopes, eroded	17.3	0.9%
PmC3	Plymouth gravelly loamy sand, 8 to 15 percent slopes, eroded	4.9	0.3%
PsA	Plymouth loamy sand, silty substratum, 0 to 3 percent slopes	4.9	0.3%
Rc	Recharge basin	2.3	0.1%
RdA	Riverhead sandy loam, 0 to 3 percent slopes	69.9	3.8%
RdB	Riverhead sandy loam, 3 to 8 percent slopes	168.7	9.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RdC	Riverhead sandy loam, 8 to 15 percent slopes	22.7	1.2%
SdA	Scio silt loam, sandy substratum, 0 to 2 percent slopes	4.9	0.3%
SwA	Swansea muck, 0 to 1 percent slopes, coastal lowland	3.9	0.2%
We	Wareham loamy sand	2.8	0.2%
Totals for Area of Interest		**1,852.6**	**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.

Suffolk County, New York

Bd—Berryland mucky sand

Map Unit Setting

National map unit symbol: 9x67
Elevation: 0 to 250 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Berryland and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berryland

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Acid sandy marine deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oa - 2 to 10 inches: highly decomposed plant material
A - 10 to 15 inches: mucky sand
Bh - 15 to 20 inches: sand
Bs - 20 to 30 inches: sand
BC - 30 to 40 inches: sand
C - 40 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Muck

Percent of map unit: 5 percent

Landform: Swamps, marshes
Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Atsion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wareham

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

BgA—Bridgehampton silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9x68
Elevation: 0 to 250 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bridgehampton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bridgehampton

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty glaciolacustrine or eolian deposits underlain by contrasting glacial drift, derived mainly from gneiss, granite, and schist with some sandstone, conglomerate, and shale

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 56 inches: silt loam
H3 - 56 to 80 inches: stratified gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 14.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F144AY024NY - Well Drained Eolian Outwash
Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Plymouth

Percent of map unit: 5 percent
Hydric soil rating: No

BgB—Bridgehampton silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9x69
Elevation: 0 to 180 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bridgehampton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bridgehampton

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Silty glaciolacustrine or eolian deposits underlain by contrasting glacial drift, derived mainly from gneiss, granite, and schist with some sandstone, conglomerate, and shale

Typical profile
H1 - 0 to 11 inches: silt loam
H2 - 11 to 56 inches: silt loam
H3 - 56 to 80 inches: stratified gravelly sand

Properties and qualities
Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 14.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY024NY - Well Drained Eolian Outwash
Hydric soil rating: No

Minor Components

Haven
Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: Unranked

Riverhead
Percent of map unit: 5 percent
Hydric soil rating: No

Bm—Bridgehampton silt loam, graded

Map Unit Setting
National map unit symbol: 9x6d
Elevation: 0 to 70 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Bridgehampton, graded, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bridgehampton, Graded

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty glaciolacustrine or eolian deposits underlain by contrasting glacial drift, derived mainly from gneiss, granite, and schist with some sandstone, conglomerate, and shale

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 56 inches: silt loam
H3 - 56 to 80 inches: stratified gravelly sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 15.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Hydrologic Soil Group: B
Ecological site: F144AY024NY - Well Drained Eolian Outwash
Hydric soil rating: No

Minor Components

Cut and fill

Percent of map unit: 15 percent
Hydric soil rating: Unranked

Bridgehampton, not graded

Percent of map unit: 10 percent
Hydric soil rating: No

CpA—Carver and Plymouth soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2zggv
Elevation: 0 to 180 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Carver and similar soils: 50 percent
Plymouth, loamy coarse sand, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carver

Setting

Landform: Moraines, outwash plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 3 inches: moderately decomposed plant material
A - 3 to 7 inches: coarse sand
E - 7 to 10 inches: coarse sand
Bw1 - 10 to 15 inches: coarse sand
Bw2 - 15 to 28 inches: coarse sand
BC - 28 to 32 inches: coarse sand
C - 32 to 67 inches: coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Description of Plymouth, Loamy Coarse Sand

Setting

Landform: Outwash plains, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Parent material: Siliceous sandy and gravelly glaciofluvial deposits and/or sandy and gravelly supraglacial meltout till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 3 inches: loamy coarse sand
E - 3 to 5 inches: coarse sand
Bhs - 5 to 7 inches: cobbly loamy coarse sand
Bw1 - 7 to 11 inches: cobbly loamy coarse sand
Bw2 - 11 to 22 inches: gravelly coarse sand
BC - 22 to 31 inches: gravelly coarse sand
C1 - 31 to 43 inches: gravelly coarse sand
C2 - 43 to 66 inches: coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Riverhead

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Haven

Percent of map unit: 5 percent
Landform: Moraines, outwash plains, outwash terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

CpC—Carver and Plymouth soils, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2zggw
Elevation: 0 to 340 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Carver and similar soils: 50 percent
Plymouth, loamy coarse sand, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carver

Setting

Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 3 inches: moderately decomposed plant material
A - 3 to 7 inches: coarse sand
E - 7 to 10 inches: coarse sand
Bw1 - 10 to 15 inches: coarse sand
Bw2 - 15 to 28 inches: coarse sand

BC - 28 to 32 inches: coarse sand
C - 32 to 67 inches: coarse sand

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Description of Plymouth, Loamy Coarse Sand

Setting

Landform: Outwash plains, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Parent material: Siliceous sandy and gravelly glaciofluvial deposits and/or sandy and gravelly supraglacial meltout till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 3 inches: loamy coarse sand
E - 3 to 5 inches: coarse sand
Bhs - 5 to 7 inches: cobbly loamy coarse sand
Bw1 - 7 to 11 inches: cobbly loamy coarse sand
Bw2 - 11 to 22 inches: gravelly coarse sand
BC - 22 to 31 inches: gravelly coarse sand
C1 - 31 to 43 inches: gravelly coarse sand
C2 - 43 to 66 inches: coarse sand

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Riverhead

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Haven

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

CpE—Carver and Plymouth soils, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2zggy
Elevation: 0 to 390 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Carver and similar soils: 45 percent
Plymouth, loamy coarse sand, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carver

Setting

Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 3 inches: moderately decomposed plant material
A - 3 to 7 inches: coarse sand
E - 7 to 10 inches: coarse sand
Bw1 - 10 to 15 inches: coarse sand
Bw2 - 15 to 28 inches: coarse sand
BC - 28 to 32 inches: coarse sand
C - 32 to 67 inches: coarse sand

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Description of Plymouth, Loamy Coarse Sand

Setting

Landform: Outwash plains, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Parent material: Siliceous sandy and gravelly glaciofluvial deposits and/or sandy and gravelly supraglacial meltout till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 3 inches: loamy coarse sand
E - 3 to 5 inches: coarse sand

Bhs - 5 to 7 inches: cobbly loamy coarse sand
Bw1 - 7 to 11 inches: cobbly loamy coarse sand
Bw2 - 11 to 22 inches: gravelly coarse sand
BC - 22 to 31 inches: gravelly coarse sand
C1 - 31 to 43 inches: gravelly coarse sand
C2 - 43 to 66 inches: coarse sand

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Montauk, sandy variant

Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Ecological site: F149BY009MA - Well Drained Dense Till Uplands
Hydric soil rating: No

Riverhead

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Haven

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash

Hydric soil rating: No

CuB—Cut and fill land, gently sloping

Map Unit Setting

National map unit symbol: 9x6k
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Cut and fill, gently sloping: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cut And Fill, Gently Sloping

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydric soil rating: No

Minor Components

Haven, graded

Percent of map unit: 5 percent
Hydric soil rating: No

Plymouth

Percent of map unit: 5 percent
Hydric soil rating: No

Riverhead, graded

Percent of map unit: 5 percent
Hydric soil rating: No

Carver

Percent of map unit: 5 percent
Hydric soil rating: No

Gp—Gravel pits

Map Unit Setting

National map unit symbol: 9x6t

Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition
Pits, gravel: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

HaA—Haven loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 9x6v
Elevation: 0 to 310 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Haven and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haven

Setting
Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile
Oa - 0 to 2 inches: highly decomposed plant material
H1 - 2 to 5 inches: loam
H2 - 5 to 19 inches: loam
BC - 19 to 28 inches: gravelly loam
C - 28 to 60 inches: stratified gravelly sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Scio

Percent of map unit: 5 percent
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils, gravelly

Percent of map unit: 5 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 5 percent
Hydric soil rating: No

Bridgehampton

Percent of map unit: 5 percent
Hydric soil rating: No

HaB—Haven loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9x6w
Elevation: 0 to 330 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Haven and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haven

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile
Oa - 0 to 2 inches: highly decomposed plant material
H1 - 2 to 5 inches: loam
H2 - 5 to 19 inches: loam
BC - 19 to 28 inches: gravelly loam
C - 28 to 60 inches: stratified gravelly sand

Properties and qualities
Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Riverhead
Percent of map unit: 8 percent
Hydric soil rating: No

Bridgehampton
Percent of map unit: 5 percent
Hydric soil rating: No

Montauk
Percent of map unit: 5 percent
Hydric soil rating: No

Haven, thick surface
Percent of map unit: 2 percent
Hydric soil rating: No

HaC—Haven loam, 6 to 12 percent slopes

Map Unit Setting
National map unit symbol: 9x6x
Elevation: 0 to 310 feet

Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Haven and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haven

Setting

Landform: Outwash plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material
H1 - 2 to 5 inches: loam
H2 - 5 to 19 inches: loam
BC - 19 to 28 inches: gravelly loam
C - 28 to 60 inches: stratified gravelly sand

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Riverhead

Percent of map unit: 8 percent
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Hydric soil rating: No

Bridgehampton

Percent of map unit: 5 percent

Hydric soil rating: No

Haven, thick surface

Percent of map unit: 2 percent
Hydric soil rating: No

He—Haven loam, thick surface layer

Map Unit Setting

National map unit symbol: 9x6y
Elevation: 0 to 250 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Haven, thick surface, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haven, Thick Surface

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 19 inches: loam
BC - 19 to 28 inches: gravelly loam
C - 28 to 60 inches: stratified gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Riverhead, thick surface
Percent of map unit: 5 percent
Hydric soil rating: No

Scio
Percent of map unit: 5 percent
Hydric soil rating: No

Ma—Made land

Map Unit Setting
National map unit symbol: 9x6z
Elevation: 100 to 1,600 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition
Made land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Made Land

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydric soil rating: No

MkB—Montauk loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2w80j
Elevation: 0 to 380 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 195 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Montauk and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk

Setting

Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: loam
Bw1 - 4 to 26 inches: loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
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 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F149BY009MA - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Greenbelt

Percent of map unit: 10 percent
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, base slope, crest, interfluve
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Charlton, sandy substratum

Percent of map unit: 2 percent
Landform: Terminal moraines
Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Scituate

Percent of map unit: 2 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Riverhead

Percent of map unit: 2 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

PlA—Plymouth loamy coarse sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2zgh0
Elevation: 0 to 260 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Plymouth, loamy coarse sand, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Loamy Coarse Sand

Setting

Landform: Outwash plains, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Parent material: Siliceous sandy and gravelly glaciofluvial deposits and/or sandy and gravelly supraglacial meltout till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 3 inches: loamy coarse sand
E - 3 to 5 inches: coarse sand
Bhs - 5 to 7 inches: cobbly loamy coarse sand
Bw1 - 7 to 11 inches: cobbly loamy coarse sand
Bw2 - 11 to 22 inches: gravelly coarse sand
BC - 22 to 31 inches: gravelly coarse sand
C1 - 31 to 43 inches: gravelly coarse sand
C2 - 43 to 66 inches: coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Carver

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Riverhead

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Montauk, sandy variant

Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope

Down-slope shape: Convex, linear
Across-slope shape: Convex
Ecological site: F149BY009MA - Well Drained Dense Till Uplands
Hydric soil rating: No

Barnstable

Percent of map unit: 5 percent
Landform: Moraines on outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Ecological site: F149BY011MA - Well Drained Till Uplands
Hydric soil rating: No

PlB—Plymouth loamy coarse sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2zggz
Elevation: 0 to 290 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Plymouth, loamy coarse sand, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Loamy Coarse Sand

Setting

Landform: Outwash plains, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Parent material: Siliceous sandy and gravelly glaciofluvial deposits and/or sandy and gravelly supraglacial meltout till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 3 inches: loamy coarse sand
E - 3 to 5 inches: coarse sand
Bhs - 5 to 7 inches: cobbly loamy coarse sand
Bw1 - 7 to 11 inches: cobbly loamy coarse sand
Bw2 - 11 to 22 inches: gravelly coarse sand
BC - 22 to 31 inches: gravelly coarse sand

C1 - 31 to 43 inches: gravelly coarse sand
C2 - 43 to 66 inches: coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Riverhead

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Carver

Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Montauk, sandy variant

Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Ecological site: F149BY009MA - Well Drained Dense Till Uplands
Hydric soil rating: No

Barnstable

Percent of map unit: 5 percent

Landform: Moraines on outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Ecological site: F149BY011MA - Well Drained Till Uplands
Hydric soil rating: No

PIC—Plymouth loamy coarse sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2yldy
Elevation: 0 to 310 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Plymouth, loamy coarse sand, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Loamy Coarse Sand

Setting

Landform: Outwash plains, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, head slope, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Parent material: Siliceous sandy and gravelly glaciofluvial deposits and/or sandy and gravelly supraglacial meltout till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 3 inches: loamy coarse sand
E - 3 to 5 inches: coarse sand
Bhs - 5 to 7 inches: cobbly loamy coarse sand
Bw1 - 7 to 11 inches: cobbly loamy coarse sand
Bw2 - 11 to 22 inches: gravelly coarse sand
BC - 22 to 31 inches: gravelly coarse sand
C1 - 31 to 43 inches: gravelly coarse sand
C2 - 43 to 66 inches: coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained

Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Riverhead
Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Montauk, sandy variant
Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Ecological site: F149BY009MA - Well Drained Dense Till Uplands
Hydric soil rating: No

Carver
Percent of map unit: 5 percent
Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Barnstable
Percent of map unit: 5 percent
Landform: Moraines on outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, side slope, crest, tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

PmB3—Plymouth gravelly loamy sand, 3 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 9x7j
Elevation: 0 to 250 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Plymouth, eroded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Eroded

Setting

Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid sandy glaciofluvial or deltaic deposits

Typical profile

H1 - 0 to 4 inches: gravelly loamy sand
H2 - 4 to 14 inches: gravelly loamy sand
H3 - 14 to 60 inches: gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
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: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Haven, eroded
Percent of map unit: 10 percent
Hydric soil rating: No

Riverhead, eroded
Percent of map unit: 10 percent
Hydric soil rating: No

PmC3—Plymouth gravelly loamy sand, 8 to 15 percent slopes, eroded

Map Unit Setting
National map unit symbol: 9x7k
Elevation: 0 to 200 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition
Plymouth, eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Eroded

Setting
Landform: Outwash plains, moraines
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid sandy glaciofluvial or deltaic deposits

Typical profile
H1 - 0 to 4 inches: gravelly loamy sand
H2 - 4 to 14 inches: gravelly loamy sand
H3 - 14 to 60 inches: gravelly coarse sand

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
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: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Riverhead, eroded

Percent of map unit: 10 percent
Hydric soil rating: No

PsA—Plymouth loamy sand, silty substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9x7l
Elevation: 0 to 160 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Plymouth, silty substratum, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Silty Substratum

Setting

Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid sandy glaciofluvial or deltaic deposits

Typical profile

H1 - 0 to 4 inches: loamy sand
H2 - 4 to 27 inches: loamy sand
H3 - 27 to 40 inches: gravelly coarse sand
H4 - 40 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Plymouth, sand

Percent of map unit: 10 percent
Hydric soil rating: No

Riverhead, silty substratum

Percent of map unit: 10 percent
Hydric soil rating: No

Rc—Recharge basin

Map Unit Setting

National map unit symbol: 9x7p
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Recharge basin: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

RdA—Riverhead sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9x7q
Elevation: 0 to 280 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Riverhead and similar soils: 80 percent
Minor components: 20 percent

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

Description of Riverhead

Setting

Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits overlying stratified sand and gravel

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 27 inches: sandy loam
H3 - 27 to 35 inches: gravelly loamy sand
H4 - 35 to 65 inches: stratified coarse sand to gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Plymouth

Percent of map unit: 5 percent
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Hydric soil rating: No

Haven

Percent of map unit: 5 percent
Hydric soil rating: No

Montauk, sandy variant

Percent of map unit: 3 percent
Hydric soil rating: No

Riverhead, silt loam layers

Percent of map unit: 2 percent
Hydric soil rating: No

RdB—Riverhead sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9x7r
Elevation: 0 to 330 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Riverhead and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverhead

Setting

Landform: Outwash plains, moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits overlying stratified sand and gravel

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 27 inches: sandy loam
H3 - 27 to 35 inches: gravelly loamy sand
H4 - 35 to 65 inches: stratified coarse sand to gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Haven
Percent of map unit: 5 percent
Hydric soil rating: No

Plymouth
Percent of map unit: 5 percent
Hydric soil rating: No

Bridgehampton
Percent of map unit: 5 percent
Hydric soil rating: No

Montauk, sandy variant
Percent of map unit: 3 percent
Hydric soil rating: No

Riverhead, silt loam layers
Percent of map unit: 2 percent
Hydric soil rating: No

RdC—Riverhead sandy loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 9x7s
Elevation: 0 to 380 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Riverhead and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverhead

Setting
Landform: Outwash plains, moraines
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits overlying stratified sand and gravel

Typical profile
H1 - 0 to 12 inches: sandy loam
H2 - 12 to 27 inches: sandy loam
H3 - 27 to 35 inches: gravelly loamy sand

H4 - 35 to 65 inches: stratified coarse sand to gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Hydric soil rating: No

Plymouth

Percent of map unit: 5 percent
Hydric soil rating: No

Riverhead, eroded

Percent of map unit: 3 percent
Hydric soil rating: No

Riverhead, till substratum

Percent of map unit: 2 percent
Hydric soil rating: No

SdA—Scio silt loam, sandy substratum, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9x80
Elevation: 100 to 1,000 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Scio, sandy substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scio, Sandy Substratum

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Glaciolacustrine deposits, eolian deposits, or old alluvium, comprised mainly of silt and very fine sand

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
H1 - 1 to 8 inches: silt loam
H2 - 8 to 29 inches: silt loam
C - 29 to 39 inches: silt loam
2C - 39 to 60 inches: stratified gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
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 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F149BY007NY - Moist Outwash
Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent
Hydric soil rating: No

Walpole

Percent of map unit: 5 percent
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Hydric soil rating: No

SwA—Swansea muck, 0 to 1 percent slopes, coastal lowland

Map Unit Setting

National map unit symbol: 2trl3
Elevation: 0 to 160 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Swansea and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swansea

Setting

Landform: Bogs, marshes, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loose sandy and gravelly glaciofluvial deposits

Typical profile

Oa - 0 to 36 inches: muck
Cg - 36 to 79 inches: coarse sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 17.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Freetown

Percent of map unit: 10 percent
Landform: Bogs, marshes, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rainberry

Percent of map unit: 5 percent
Landform: Kettles, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

We—Wareham loamy sand

Map Unit Setting

National map unit symbol: 9x88
Elevation: 100 to 1,000 feet
Mean annual precipitation: 45 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wareham, poorly drained, and similar soils: 50 percent
Wareham, somewhat poorly drained, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wareham, Poorly Drained

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial or deltaic deposits

Typical profile

Oa - 0 to 3 inches: highly decomposed plant material
H1 - 3 to 7 inches: loamy sand
H2 - 7 to 9 inches: loamy sand
H3 - 9 to 32 inches: loamy sand

H4 - 32 to 60 inches: stratified very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F149BY008MA - Very Wet Outwash
Hydric soil rating: Yes

Description of Wareham, Somewhat Poorly Drained

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial or deltaic deposits

Typical profile

Oa - 0 to 3 inches: highly decomposed plant material
H1 - 3 to 7 inches: loamy sand
H2 - 7 to 9 inches: loamy sand
H3 - 9 to 32 inches: loamy sand
H4 - 32 to 60 inches: stratified very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F149BY008MA - Very Wet Outwash
Hydric soil rating: No

Minor Components

Walpole

Percent of map unit: 5 percent
Hydric soil rating: No

Atsion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Berryland

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

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

Land Classifications

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

Hydric Rating by Map Unit

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

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

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

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

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

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

References:

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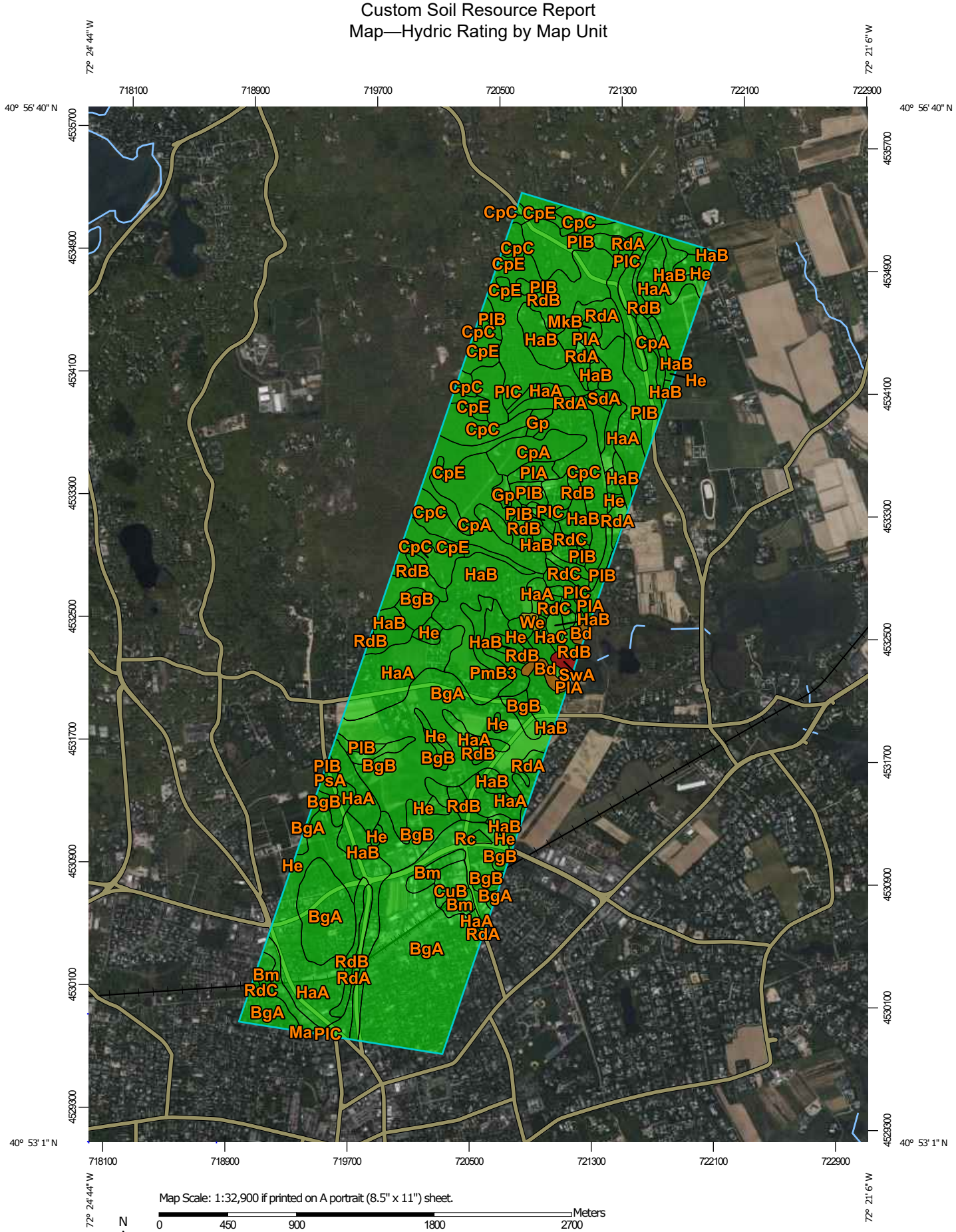
Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:32,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 450 900 1800 2700

Feet: 0 1500 3000 6000 9000

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Suffolk County, New York
Survey Area Data: Version 21, Sep 6, 2023

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

Date(s) aerial images were photographed: May 10, 2023—May 11, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Bd	Berryland mucky sand	95	8.7	0.5%
BgA	Bridgehampton silt loam, 0 to 2 percent slopes	0	433.0	23.4%
BgB	Bridgehampton silt loam, 2 to 6 percent slopes	0	72.7	3.9%
Bm	Bridgehampton silt loam, graded	0	22.0	1.2%
CpA	Carver and Plymouth soils, 0 to 3 percent slopes	0	39.6	2.1%
CpC	Carver and Plymouth soils, 3 to 15 percent slopes	0	172.5	9.3%
CpE	Carver and Plymouth soils, 15 to 35 percent slopes	0	71.2	3.8%
CuB	Cut and fill land, gently sloping	0	11.4	0.6%
Gp	Gravel pits	0	12.9	0.7%
HaA	Haven loam, 0 to 2 percent slopes	0	264.3	14.3%
HaB	Haven loam, 2 to 6 percent slopes	0	208.0	11.2%
HaC	Haven loam, 6 to 12 percent slopes	0	2.1	0.1%
He	Haven loam, thick surface layer	0	41.7	2.2%
Ma	Made land	0	0.8	0.0%
MkB	Montauk loam, 3 to 8 percent slopes	0	6.6	0.4%
PlA	Plymouth loamy coarse sand, 0 to 3 percent slopes	0	24.7	1.3%
PlB	Plymouth loamy coarse sand, 3 to 8 percent slopes	0	116.6	6.3%
PlC	Plymouth loamy coarse sand, 8 to 15 percent slopes	0	41.2	2.2%
PmB3	Plymouth gravelly loamy sand, 3 to 8 percent slopes, eroded	0	17.3	0.9%
PmC3	Plymouth gravelly loamy sand, 8 to 15 percent slopes, eroded	0	4.9	0.3%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PsA	Plymouth loamy sand, silty substratum, 0 to 3 percent slopes	0	4.9	0.3%
Rc	Recharge basin	0	2.3	0.1%
RdA	Riverhead sandy loam, 0 to 3 percent slopes	0	69.9	3.8%
RdB	Riverhead sandy loam, 3 to 8 percent slopes	0	168.7	9.1%
RdC	Riverhead sandy loam, 8 to 15 percent slopes	0	22.7	1.2%
SdA	Scio silt loam, sandy substratum, 0 to 2 percent slopes	0	4.9	0.3%
SwA	Swansea muck, 0 to 1 percent slopes, coastal lowland	100	3.9	0.2%
We	Wareham loamy sand	60	2.8	0.2%
Totals for Area of Interest			**1,852.6**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

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APPENDIX E

Groundwater Data

Figure # 1 – Borehole and Groundwater locations

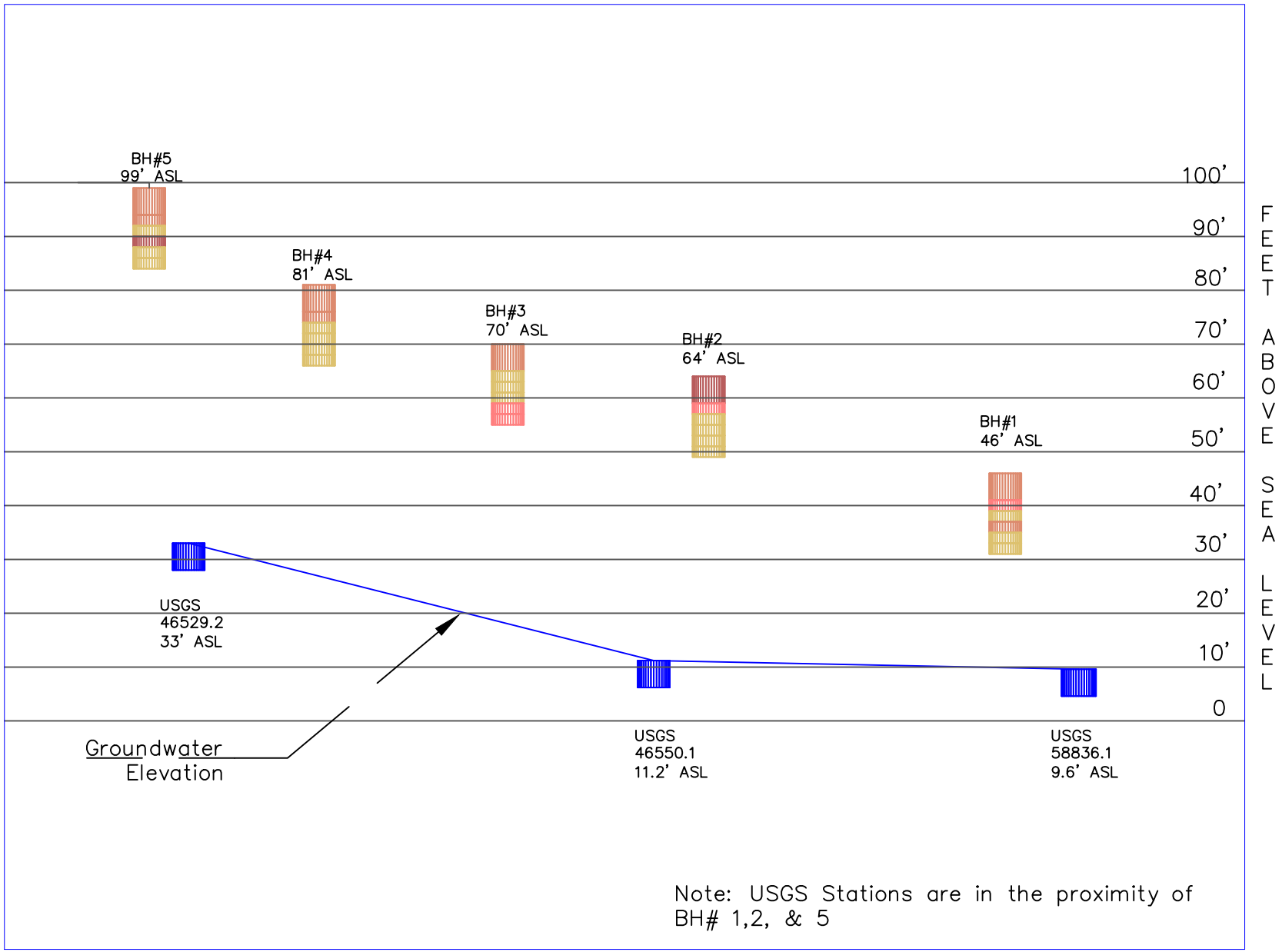

Figure #2 – Borehole and Groundwater Cross Sections