



**DOWN TO EARTH
CONSULTING, LLC**
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

**GEOTECHNICAL ENGINEERING REPORT
PROPOSED SOLAR ARRAY
OLD MAIDS LANE
PORTLAND, CONNECTICUT**

Prepared for:

Greenskies Clean Energy
127 Washington Avenue
North Haven, Connecticut 06473

Prepared by:

Down To Earth Consulting, LLC
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File No. 0255-013.00
December 2024

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**DOWN TO EARTH
CONSULTING, LLC**
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

December 6, 2024
File No. 0255-013.00

Michael Monaco
Greenskies Clean Energy
127 Washington Avenue
North Haven, Connecticut 06473

Via email: michael.monaco@greenskies.com

Re: Geotechnical Engineering Report
Proposed Solar Array
Old Maids Lane, Portland, Connecticut

Down To Earth Consulting, LLC (DTE) is pleased to submit this geotechnical engineering report for the proposed solar array project that will be located at Old Maids Lane, Portland, Connecticut (Site) for Greenskies Clean Energy (Client). We appreciate this opportunity to work with you and look forward to our continued involvement. Please call if you have any questions.

Sincerely,

Down To Earth Consulting, LLC


Braulio V. Vargas
Project Engineer


Raymond P. Janeiro, P.E.
Principal/Reviewer



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1.0 INTRODUCTION

Down To Earth Consulting, LLC, completed a subsurface exploration program and geotechnical engineering evaluation for the proposed solar array foundations. Our geotechnical engineering services included: reviewing provided project plans, completing borings and soils testing, characterizing subsurface conditions within the proposed solar array limits, performing geotechnical engineering analyses, and providing geotechnical design and construction recommendations for the project. Refer to Figures 1 and 2 (in Appendix 1) for an area plan and site plan, respectively. Our services were based, in part, on a provided *Site Layout Plan, Proposed Photovoltaic Array, Old Maids Lane, Portland, CT*, prepared by Greenskies, dated January 9, 2024.

2.0 BACKGROUND

The Site is located south of Olds Maids Lane in Portland, Connecticut generally south of the Hartford and Middlesex County lines. A proposed 4.99 MW ground-mount solar array will be constructed in a vegetated area generally located 1,600 feet south of the existing Nayaug Elementary School building. Nominal cuts on the order of 2-feet or less are anticipated to achieve design grades, as the solar array structures will generally conform to existing Site topography. Refer to Figure 2 (Appendix 1) for existing Site features and the proposed solar array location.

3.0 SUBSURFACE DATA

3.1 GENERAL SITE GEOLOGY

Published surficial and bedrock geological map data (1:24,000 scale, *Surficial Geology of the Glastonbury Quadrangle, Hartford and Middlesex Counties, Connecticut, Langer, W.H., 1977* and 1:31,680 scale, *The Bedrock Geology of the Glastonbury Quadrangle, Connecticut, Herz, Norman, 1955*) was reviewed. The eastern Site surficial material is mapped as a variable mixture of gravel, sand, silt and clay intermixed with cobbles and boulders (Glacial Till Deposits). Glaciofluvial deposits (sands with gravel and silt) are mapped within the western Site area. The underlying bedrock is classified as reddish-brown, reddish-gray coarse arkosic sandstone with pebbles of crystalline rocks (Portland Formation).

3.2 TEST BORINGS

We observed and logged nine test borings (B-1 through B-9) drilled by our subcontractor SITE, LLC on September 30 and October 1, 2024. Boring locations are depicted on Figure 2 (Appendix 1) and the logs are included in Appendix 2. Borings were located in the field by taping/pacing from existing site features, thus their locations should be considered approximate.

The borings were drilled to explore the soil, bedrock (if encountered), and groundwater conditions in the proposed solar array area. Hollow-stem auger drilling methods were used to advance the borings to depths ranging between approximately 12 and 22 feet below existing grades.

Representative soil samples were obtained in the borings for soil classification and laboratory testing by split barrel sampling procedures in general accordance with ASTM D-1586. The split-



spoon sampling procedure utilizes a standard 2-inch O.D. split-barrel sampler that is driven into the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the middle 12-inches of a normal 24-inch penetration is recorded as the Standard Penetration Resistance Value (N). The blows (i.e., “N-Value”) are indicated on the boring logs at their depth of occurrence and provide an indication of the relative consistency of the material.

Groundwater levels were measured using a weighted tape in open drill holes and/or inferred from wet soil samples during drilling.

4.0 SUBSURFACE CONDITIONS

4.1 SUBSURFACE PROFILE

The generalized subsurface profile, as inferred from the subsurface data, consists of Fill overlying Glaciofluvial Deposits and/or Glacial Till Deposits and Weathered Rock. An approximate 4- to 10-inch layer of Topsoil was also encountered at the surface of the explorations (except for Borings B-1 and B-2). The following is a more detailed description of the subsurface materials encountered:

4.1.1 Fill

The encountered Fill stratum ranged in thickness from about 1- to 5-feet and generally consisted of loose to very dense, dark red-brown to dark gray-brown, fine to coarse sand with varying (10 to 45%) amounts of fine to coarse gravel and little to some (10 to 35%) amounts of silt. Trace minus (0 to 5%) amounts of roots and decomposed organics were also observed in the Fill. In some instances, the presence of cobbles and boulders were also inferred based on observed drilling behavior and sampler refusals. The thickness, character, and consistency of the Fill will vary between exploration locations.

4.1.2 Glaciofluvial Deposits (Sand, Sand & Silt, Gravelly Sand in the Boring Logs)

Glaciofluvial Deposits were observed below the Fill in most of the borings (except for B-3 and B-7) at depths ranging from about 2 to 5 feet below grade, where encountered. This material generally consisted of loose to very dense, red-brown, fine to coarse sand with varying (10% to 45%) amounts of fine to coarse gravel and silt.

4.1.3 Glacial Till Deposits

Glacial Till Deposits were encountered in Borings B-3 and B-6 at about 2 to 10 feet below grade. This material generally consisted of medium dense, gray/red-brown, fine to coarse sand with some (20% to 35%) amounts of fine to coarse gravel and little to some (10 to 35%) amounts of silt.



4.1.4 Weathered Rock/Bedrock

Weathered Rock was observed in split spoon samples at many boring locations (i.e., B-3, B-5, B-6, B-7, and B-9) at about 5 to 15 feet below existing grades, where encountered. Weathered Rock was classified in the boring logs as arkose based on observed auger cuttings and retrieved samples. Bedrock was inferred from drilling refusal at Borings B-3, B-5, B-6, and B-7 at a depth of about 12 to 22 feet below existing grades. It should be noted that auger and split spoon refusal could be the result of the presence of cobbles and boulders. A large bedrock outcrop was documented within the southern Site area as indicated on Figure 2.

4.2 GROUNDWATER

Groundwater was generally not encountered within the limits of the explorations except for a perched water condition at about 15 feet below existing grade at Boring B-9. Groundwater levels measured in the boreholes may not have had sufficient time to stabilize and should be considered approximate. Groundwater levels will vary depending on factors such as temperature, season, precipitation, construction activity, and other conditions, which may be different from those at the time of these measurements.

5.0 SOILS TESTING

5.1 LABORATORY TESTING

Soil samples were collected from 0 to 4 feet below grade at Borings B-6 and B-8 to evaluate the corrosivity potential of sampled soils. Samples were analyzed for pH (ASTM G51), Sulfates (ASTM D4327), Chlorides (ASTM D4327), and Electrical Resistivity (ASTM G57). Thermal resistivity testing (ASTM D5334) was also completed on bulk samples collected from Borings B-1 and B-7. Based on the results of the laboratory tests, the soil samples are considered to be non-to slightly corrosive. We recommend that a corrosion specialist be consulted to determine the need for corrosion protective measures. The results of the laboratory testing are included in Appendix 3.

5.2 SOIL RESISTIVITY TESTING

On October 1, 2024, DTE field personnel conducted in-situ soil resistivity testing in accordance with accepted engineering practices using the Wenner electrode configuration. Electrodes were spaced at 5, 10, 20, 30, and 40 feet. One set of two approximately perpendicular resistivity lines were completed in the general vicinity of the proposed solar array area. The approximate locations and orientations of the resistivity lines are shown on the attached Figure 2. The results of the resistivity tests are as follows:

<u>Electrode Spacing (ft)</u>	<u>Resistivity (ohms-cm)</u>	
	<u>Line 1</u>	<u>Line 2</u>
5	61,184	69,132
10	53,218	76,217
20	89,852	89,584
30	79,224	57,105
40	59,365	58,369



Field resistivity results may be influenced by shallow bedrock, boulders, and shallow groundwater. Resistivity results will fluctuate depending on the degree of compaction, moisture content, constituent solubility, and temperature. Field resistivity values may also vary depending upon season, precipitation, and other conditions that may differ from those at the time of testing.

6.0 ENGINEERING IMPLICATIONS OF SUBSURFACE CONDITIONS

Subsurface conditions generally consist of dense soil deposits overlying relatively shallow bedrock. Due to the presence of dense soils and obstructions (e.g., cobbles, boulders, and shallow bedrock), pile driving refusal should be expected throughout the limits of the proposed solar array. The presence of obstructions may also cause the piles to be driven out of tolerance as piles deflect off obstructions during driving.

In areas of pile driving difficulties, predrilling of pilot holes (up to 2/3 of the pile diameter) may be required to accommodate pile installation. The pilot holes would then be backfilled with drill cuttings (absent any cobble-sized material) prior to driving piles. If piles still cannot penetrate soils sufficiently, drilling of oversized holes backfilled with grout may be required.

Ground screws (e.g., Krinner) may also be used to support the racking systems, but similarly we recommend predrilling a pilot hole to accommodate ground screw installation.

Foundations will need to be designed to resist compression, tension, and lateral loads. Preliminary geotechnical design parameters are provided below. The pile design capacities will need to be verified in the field based on the results of pile load testing completed at the Site.

7.0 GEOTECHNICAL ENGINEERING DESIGN RECOMMENDATIONS

We offer the following preliminary geotechnical design recommendations based on the subsurface conditions encountered at the Site, available project information, and the proposed construction.

7.1 SEISMIC DESIGN

The site class is “D” per the Building Code. Based on the standard penetration test results, visual soil classification, and design peak ground acceleration at this locale, the site soils are not susceptible to liquefaction.

7.2 DRIVEN PILE FOUNDATIONS

The proposed racking systems may be supported on driven steel piles end bearing in natural Soils or Weathered Rock/Bedrock. The steel piles should conform to ASTM A572, Grade 50 and have hardened pile tips (e.g., pile driving shoes) to minimize pile damage on potential obstructions (e.g., boulders and bedrock). A minimum steel section corrosion loss of 1/16-inch all around the piles should be used. DTE recommends the following preliminary static design parameters for a driven pile foundation alternative:



DESCRIPTION	VALUE
<u>Allowable End Bearing Capacity¹</u> Glaciofluvial Deposits Glacial Till/Weathered Rock Bedrock	4 kips per square foot (ksf) 6 ksf 10 ksf
<u>Ultimate Skin Friction Value²</u> Glaciofluvial Deposits (>3.5 fbg) Glacial Till/Weathered Rock	1,000 pounds per square foot (psf) 1,500 psf
<u>Modulus of Lateral Subgrade Reaction³</u> Glaciofluvial Deposits – dry (>2.5 fbg) Glacial Till Weathered Rock	90 pounds per cubic inch (pci) 150 pci 225 pci
<u>Angle of Internal Friction</u> Glaciofluvial Deposits Glacial Till Weathered Rock	33 degrees 36 degrees 38 degrees
<u>Total Soil Unit Weight</u> Glaciofluvial Deposits Glacial Till Weathered Rock	125 pounds per cubic foot (pcf) 135 pcf 140 pcf
<ol style="list-style-type: none"> 1. End-bearing should be neglected for uplift calculations. Provided value assumes a factor of safety of 3. 2. Provided value assumes a factor of safety of 2. Contribution to pile capacity within the frost depth (i.e., above depths of 3.5 feet) should be ignored. The uplift capacity should be based on the dead weight of the pile and side resistance provided by the subsurface soils (i.e., end bearing should be neglected). 3. To analyze foundation under lateral loading (e.g., Ensoft LPILE). 4. All values provided in this table are preliminary and must be verified in the field by load testing. 	

7.2.1 Pre-Drilling Alternative

If pre-drilling is required to accommodate pile installation in areas of driven pile refusal, we recommend all pre-drilled holes be drilled no deeper than 6 inches short of target installation depths. Additional pre-drilling recommendations presented in Section 6.0 should also be adopted for the project. The following preliminary static design parameters for a pre-drilled pile foundation alternative are recommended:



DESCRIPTION	VALUE
<u>Allowable End Bearing Capacity¹</u> Glaciofluvial Deposits Glacial Till/Weathered Rock Bedrock	4 kips per square foot (ksf) 6 ksf 10 ksf
<u>Ultimate Skin Friction Value²</u> Cuttings (>3.5 fbg) Natural Soil	500 pounds per square foot (psf) 1,000 psf
<u>Modulus of Lateral Subgrade Reaction³</u> Cuttings (>2.5 fbg) – dry Glaciofluvial Deposits – dry Glacial Till Weathered Rock	50 pounds per cubic inch (pci) 90 pci 150 pci 225 pci
<u>Angle of Internal Friction</u> Cuttings Glaciofluvial Deposits Glacial Till Weathered Rock	30 degrees 33 degrees 36 degrees 38 degrees
<u>Total Soil Unit Weight</u> Cuttings Glaciofluvial Deposits Glacial Till Weathered Rock	115 pounds per cubic foot (pcf) 125 pcf 135 pcf 140 pcf
1. End-bearing should be neglected for uplift calculations. Provided value assumes a factor of safety of 3. 2. Contribution to pile capacity within the frost depth (i.e., above depths of 3.5 feet) should be ignored. The uplift capacity should be based on the dead weight of the pile and side resistance provided by the subsurface soils (i.e., end bearing should be neglected). 3. To analyze foundation under lateral loading (e.g., Ensoft LPILE). 4. All values provided in this table are preliminary and must be verified in the field by load testing.	

7.2.2 Additional Pile Design Recommendations

Center-to-center pile spacing should not be less than 30 inches or 3 pile diameters. Final pile order lengths should be established based on the results of pile testing and the contractor should be prepared to increase anticipated pile lengths as conditions are exposed in the field.

Piles should be installed to a minimum ultimate geotechnical axial capacity of the structural load multiplied by 2 (assuming load testing is performed). Based on the recommended pile type, bearing material, and anticipated loads, we estimate negligible pile settlements. We recommend an adfreeze stress of 1,000 psf be considered when determining frost heave load on the piles. The box perimeter of the pile acting over the recommended frost depth of 3.5 feet should be considered when determining the frost heave load on a pile.

The lateral capacity of the upper 30 inches of soil should be neglected due to loss of strength from frost action and the presence of loose surficial soils. Appropriate lateral capacity reductions



associated with group effects should be used for piles having a center-to-center spacing of less than 5 times their largest cross-sectional dimension.

7.2.3 Load Testing and Drivability

Tension and lateral load tests should be performed on test piles to finalize foundation design for uplift and lateral load capacity. Compression load tests should also be completed if end bearing capacity of piles is used. Load tests should be completed near the boring explorations in order to corroborate the load test and subsurface exploration data and develop final design recommendations. The testing results should be provided to DTE to reevaluate the above design parameters.

We recommend that a drivability analysis (i.e., Wave Equation Analysis for Piles (WEAP)) be performed for the site-specific conditions and selected pile driving hammer to evaluate the proposed pile driving equipment and development of stresses in the piles. The maximum allowable driving stress in both tension and compression should not exceed 45 ksi, which is based on applying a reduction factor of 0.9 to the yield strength of Grade 50 Steel.

7.3 GROUND SCREW FOUNDATION ALTERNATIVE

The proposed racking systems may also be supported on a ground screw foundation system (Krinner or similar) that derive their capacity in natural soil deposits and Weathered Rock. Tension and lateral load tests should also be performed if a ground screw foundation system is selected to assess uplift and lateral capacities. Ground screw foundations are typically designed by a design-build contractor.

7.4 EQUIPMENT FOUNDATIONS

The proposed accessory structures may be designed as mat foundations bearing on a base course of at least 12-inches of Compacted Granular Fill (CGF) or Crushed Stone overlying proof-rolled natural soil deposits. Soils with appreciable organic content are not considered suitable bearing materials and must be excavated from foundation areas during site preparation.

When CGF is used beneath the foundations (e.g., in backfill areas, if needed), we recommend that it be placed one foot beyond the edge of the foundations and at a one horizontal to one vertical slope away and down from the bottom outside edge of the foundations (i.e., foundation zone of influence). Crushed Stone can be used in place of CGF as it is much easier to compact.

We recommend a maximum allowable design bearing pressure of four kips per square foot (4 ksf) for foundations bearing on the recommended bearing materials. Shallow foundations should be embedded 42-inches below finished grades to account for frost. Based on the recommended bearing strata and anticipated loads, we anticipate that foundations will undergo less than one inch of total settlement and less than a half inch of differential settlement. Settlements will occur as the loads are applied and are expected to be complete at the end of construction.

We recommend an ultimate coefficient of sliding friction of 0.45. A factor of safety of at least 1.5 should be applied to calculated sliding resistance.



8.0 MATERIALS RECOMMENDATIONS

8.1 COMPACTED GRANULAR FILL

Compacted Granular Fill (CGF) for use as structural fill shall consist of inorganic soil free of clay, loam, ice and snow, tree stumps, roots, and other organic matter; graded within the following limits:

Sieve Size	Percent finer by weight
4-inches	100%
No. 10	30 - 100
No. 40	10 - 90
No. 200	0 - 12*

* To be considered non-frost susceptible, granular fill should have a maximum of 3 percent of particles by weight smaller than 0.02mm in effective diameter.

8.2 CRUSHED STONE

Crushed Stone for use below foundations shall consist of sound, tough, durable, rock that is graded within the following:

Sieve Size	Percent finer by weight
5/8-inches	100%
1/2-inch	85 - 100
3/8 inch	15 - 45
No. 4	0 - 15
No. 8	0 - 5

8.3 COMPACTION REQUIREMENTS

CGF should be placed in loose lifts not exceeding 8-inches in depth and compacted to at least 95 percent of its maximum dry density, and within 2% of optimum moisture content, as determined by ASTM D1557, Method C (Modified Proctor) below foundations and other structures.

Crushed Stone is considered to be “self-compacting” and would negate the need to run laboratory proctor testing and have field density testing of in-place lifts. The crushed stone should be plate compacted to “chink up” the working surface in lifts. We recommend placing Crushed Stone in maximum 12-inch lifts and compacting the lifts with a minimum of four passes with a vibratory plate compactor weighing a minimum of 1,000 pounds and with a minimum centrifugal force of 10,000 pounds.

9.0 GEOTECHNICAL ENGINEERING CONSTRUCTION RECOMMENDATIONS

9.1 DRIVEN PILE FOUNDATION ALTERNATIVE

Technical specifications should be prepared by the design team that require detailed material and construction submittals and proof of experience in pile installation. The installation method or



combination of methods selected by the contractor should be submitted for review by the design team, prior to mobilization of equipment. Specifications should include provisions for removing encountered cobbles, boulders, and other obstructions as a contingency.

9.2 GROUND SCREW FOUNDATION ALTERNATIVE

Ground screws should be designed and installed by a specialty contractor with a minimum of 5 years of experience with designing and installing ground screw systems. The specialty contractor should also be licensed by the manufacturer of the selected ground screw system. The axial capacity of the ground screws must be confirmed during installation using the designer's recommended torque resistance. Predrilling may be required to install the ground screws in areas with boulders and shallow bedrock.

9.3 SHALLOW FOUNDATIONS – EQUIPMENT PADS

The proposed equipment areas should be cleared of existing vegetation and topsoil. Cobbles, boulders, and any identifiable compressible or deleterious materials should be removed. Existing fill (including re-worked parent materials, if present), and other unsuitable materials, must be removed from beneath bearing zones of influence to the top of firm, natural soil prior to construction. Over-excavation below bearing areas should include the zone of influence, defined as the area beneath 1 horizontal to 1 vertical (1H:1V) lines extending downward and outward from pad areas. Equipment pads shall bear on a prepared subgrade of firm natural soil, or CGF or Crushed Stone (over firm natural soil). Refer to Section 8.0 for material and placement recommendations.

Earthwork should be performed in dry conditions so that disturbance to foundation subgrades is limited. During earthwork, the Contractor should be responsible for protecting subgrades from the elements and maintaining the soils in a suitable state until completion of the project. Backfill should not be placed over a subgrade with standing water or that is frozen. Standing water, if present, should be removed and any soft and yielding soil should be removed prior to backfill placement. Excavations to subgrade levels should be performed using a smooth-edged bucket to minimize possible disturbance to the in-place subgrade soils.

Soil subgrades should be proof-rolled under the observation of a qualified Geotechnical Engineer with at least four (4) passes of a smooth-drum vibratory roller (minimum 8,000 pounds, minimum centrifugal force of 12,500 pounds) or, where approved by the geotechnical engineer, a vibratory plate compactor with a minimum of 2,500 pounds of centrifugal force. Any soft or loose zones identified during proof-rolling should be excavated and replaced with CGF, as necessary, and as required by the Geotechnical Engineer.

9.4 TEMPORARY EXCAVATIONS

The site soils are classified as OSHA Class "C" soil and can be cut at a maximum one vertical to one and a half horizontal (1V:1.5H) slope up to a maximum excavation depth of 20 feet. These maximum slope and excavation depths assume no surcharge load (i.e., stockpiles, construction equipment, etc.) at the top of the excavations or groundwater seepage.



9.5 TEMPORARY GROUNDWATER CONTROL

Based on information obtained from the subsurface exploration program, it is not anticipated that groundwater will be encountered during construction. We anticipate that water (stormwater, perched water, etc.) can be managed with conventional sump pumps and trenches in the excavations. Stormwater runoff should not be permitted to accumulate on/within exposed subgrades and the runoff should be directed away from the exposed subgrade areas.

10.0 REVIEW OF FINAL DESIGN, PLANS, AND SPECIFICATIONS

When project plans are finalized, and specifications are available, they should be provided to DTE for review of conformance with our geotechnical recommendations. If any changes are made to the proposed structure locations or bearing levels, the recommendations provided in this report will need to be verified by DTE for applicability.

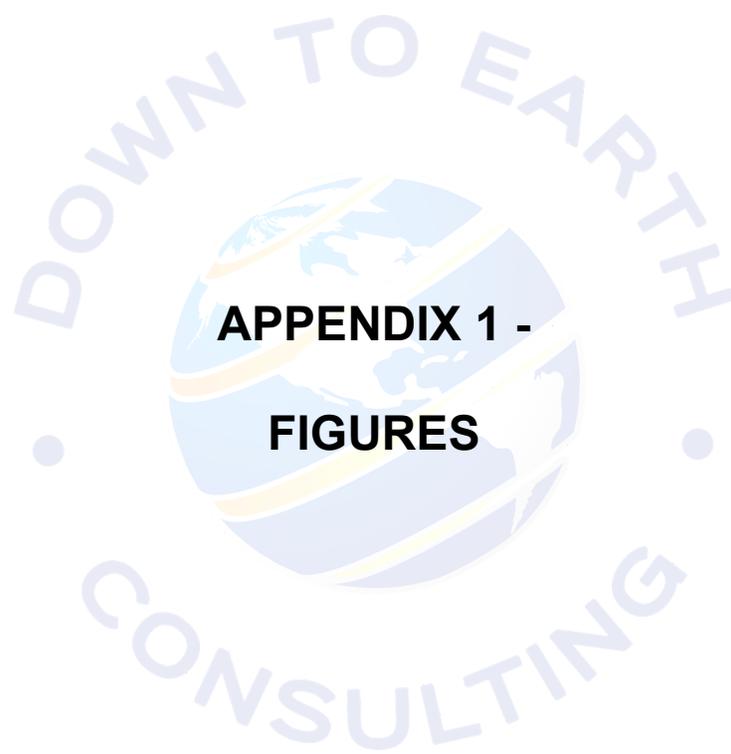
11.0 CONSTRUCTION QUALITY CONTROL

We further recommend that DTE be retained during earthwork construction to observe excavation to subgrade, fill placement and compaction, subgrade preparation, and deep foundation installation. The geotechnical engineer in the field should observe the work for compliance with the recommendations in this report, identify changes in subsurface conditions from those observed in the explorations should they become apparent, and assist in the development of design changes should subsurface conditions differ from those anticipated prior to the start of construction.

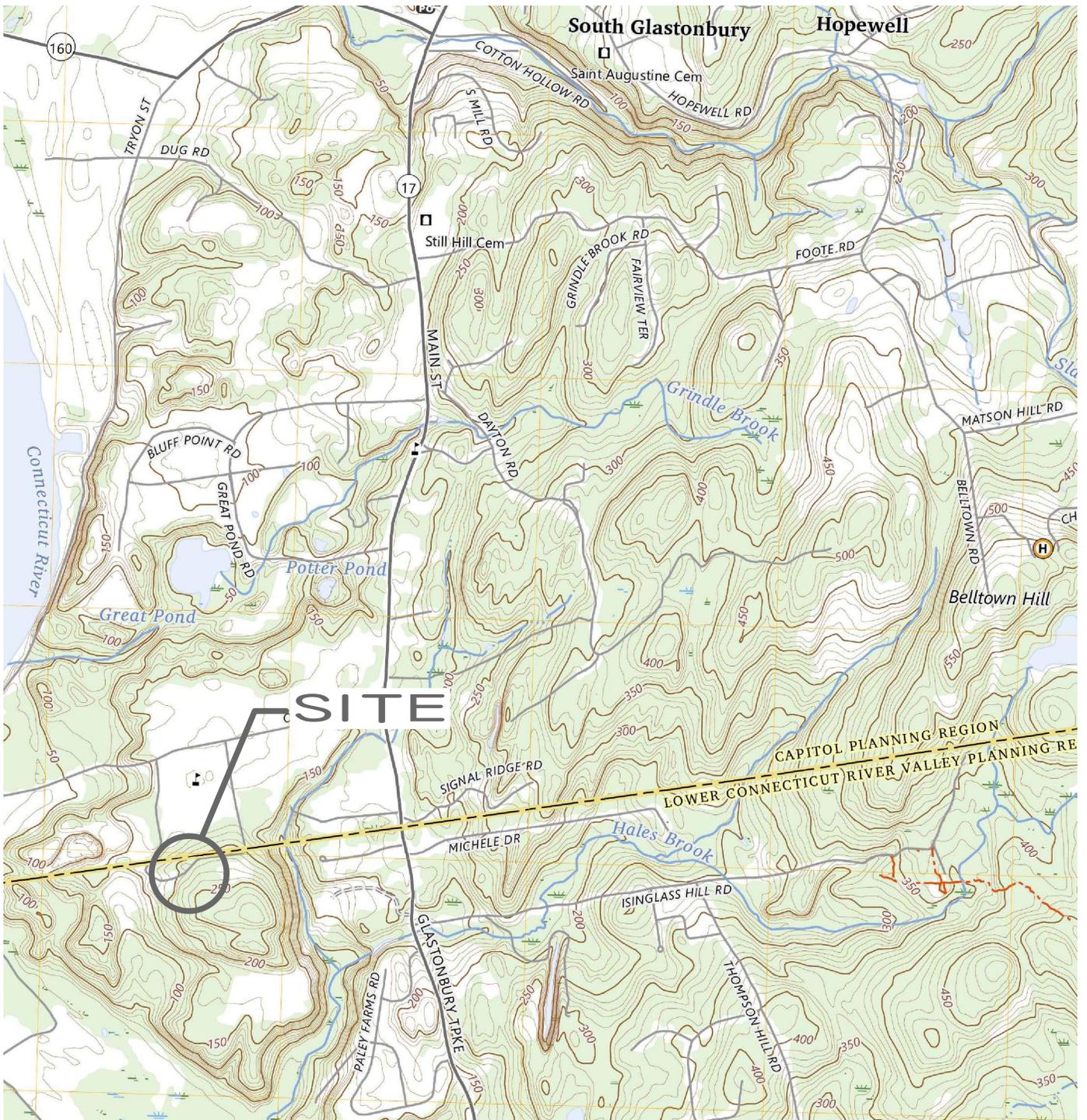
12.0 CLOSURE

We trust the information presented herein is sufficient for your use to progress design of the proposed solar array. We have enjoyed working with you on this project and look forward to our continued involvement. Please do not hesitate to call us if you have any questions.

This report is subject to the limitations included in Appendix 4.



**APPENDIX 1 -
FIGURES**



DOWN TO EARTH CONSULTING, LLC
 GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

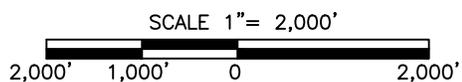
27 SIMON COMPANY DRIVE #363W
 WATERTOWN, CONNECTICUT 06795



QUADRANGLE LOCATION

**AREA PLAN
 PROPOSED SOLAR ARRAY
 OLD MAIDS LANE
 PORTLAND, CONNECTICUT**

REFERENCE:
 USGS TOPOGRAPHIC QUADRANGLE: GLASTONBURY, CT



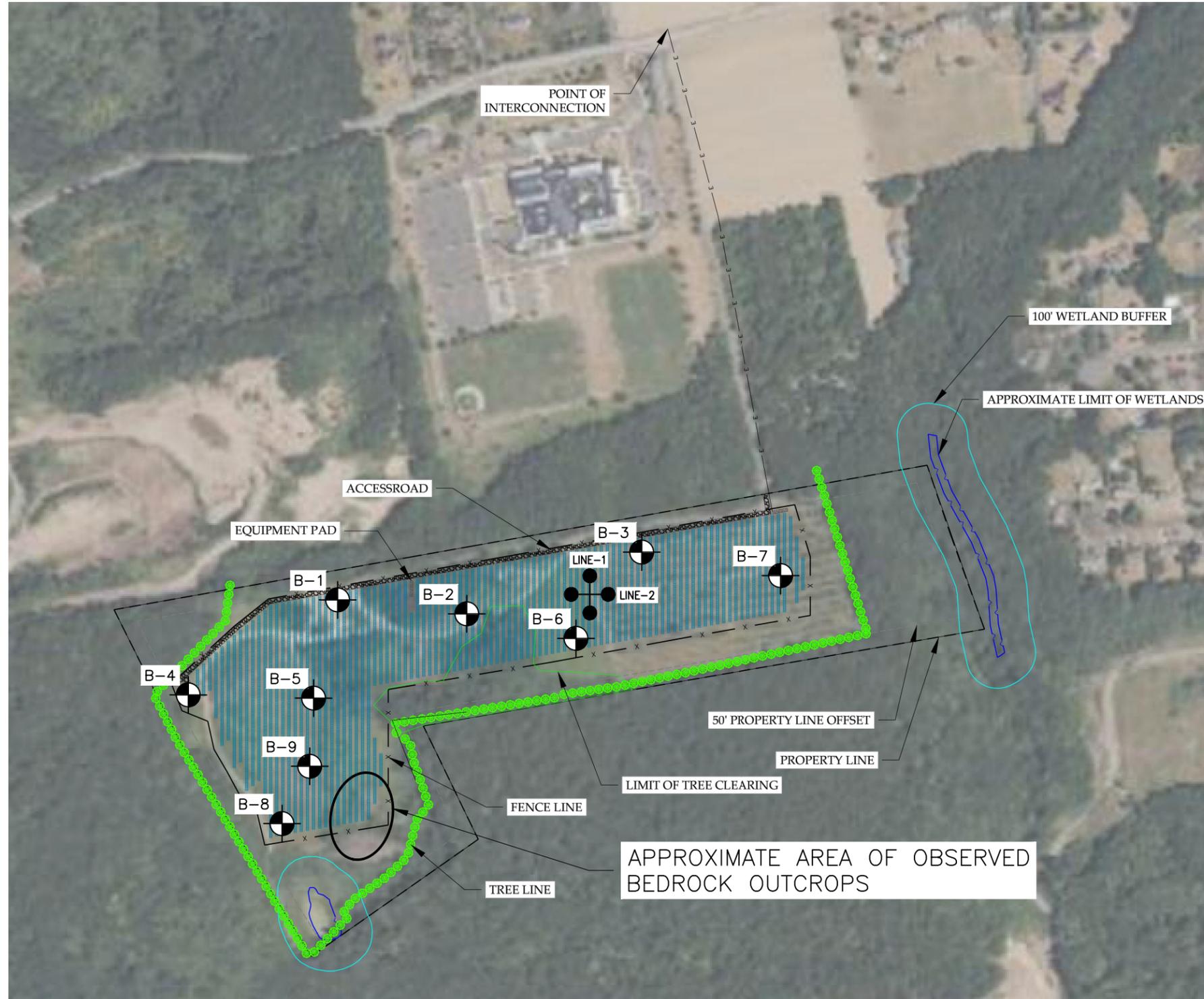
PROJECT NO. 0255-013.00

DATE: 9/23/2024

FIGURE NO. 1

DRAWN BY: BV

REVIEWED BY: RPJ

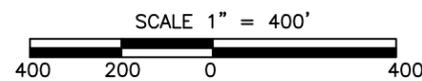


LEGEND

- B-1 TEST BORING NO. AND LOCATION BY DOWN TO EARTH CONSULTING, LLC
- LINE-1 RESISTIVITY TEST LOCATION (TYP.)

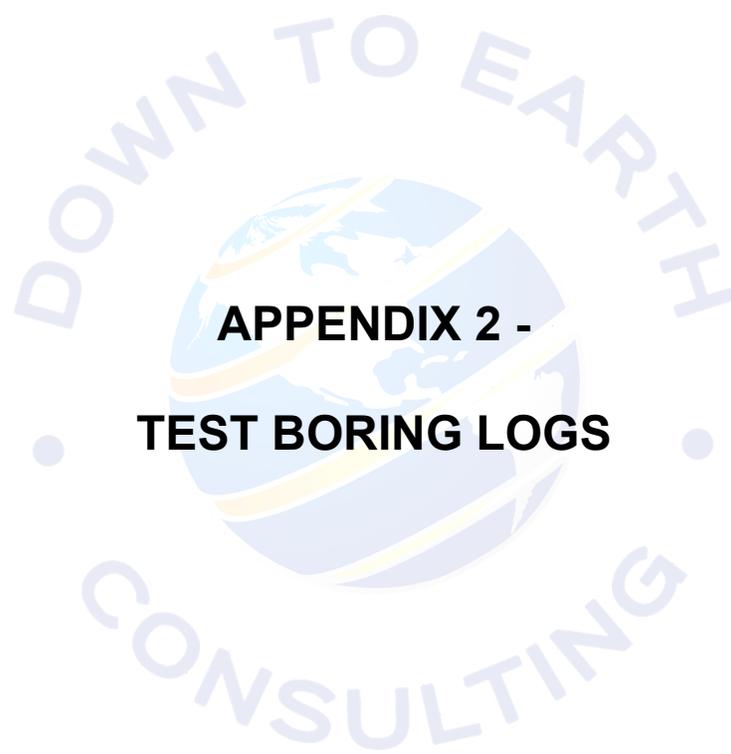
- NOTES:**
- 1) BASE MAP DEVELOPED FROM ELECTRONIC FILE PREPARED BY GREENSKIES, ENTITLED "PROPOSED PHOTOVOLTAIC ARRAY, OLD MAIDS LANE, PORTLAND, CT", DATED JANUARY 9, 2024.
 - 2) BORINGS WERE COMPLETED BY SITE, LLC. AND OBSERVED BY DOWN TO EARTH CONSULTING, LLC.
 - 3) RESISTIVITY TESTING WAS PERFORMED ON OCTOBER 1, 2024 BY DOWN TO EARTH CONSULTING, LLC.
 - 4) THE LOCATIONS OF THE EXPLORATIONS AND RESISTIVITY TESTING WERE DETERMINED BY TAPING AND VISUAL ESTIMATES FROM EXISTING SITE FEATURES. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

DESIGNED BY OTHERS					
DRAWN BY BV					
CHECKED BY RPJ					
APPROVED BY RPJ					
	NO.	DATE	DRWN.	CHKD	APPVD
REVISIONS					



PROJECT	PROPOSED SOLAR ARRAY OLD MAIDS LANE PORTLAND, CONNECTICUT
DWG. TITLE.	SITE AND EXPLORATION LOCATION PLAN

FILE NO.	0255-013.00
SCALE	DATE
AS NOTED	9/23/2024
FIGURE NO.	2



**APPENDIX 2 -
TEST BORING LOGS**



PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-1

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 9/30/2024 Date End 9/30/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)				
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.	Stabilization Time
Type Drill Rig:	Track Mounted CME 55 LCX	9/30/24	-	-	-	Not Encountered
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers					

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION					SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)		
1		S-1	12/24	0 to 2	1-2-4-5		Loose, red-brown, fine to coarse SAND, little fine Gravel, little Silt	FILL
2								
3		S-2	12/24	2 to 4	10-9-8-9		Medium dense, red-brown, fine to coarse SAND, trace fine Gravel, trace Silt	SAND
4								
5								
6		S-3	14/24	5 to 7	6-10-9-9		Medium dense, red-brown, fine to coarse SAND, trace Silt	
7								
8		S-4	15/24	7 to 9	5-6-6-9		Medium dense, red-brown, fine to coarse SAND, trace fine Gravel, trace Silt	
9								
10								
11		S-5	16/24	10 to 12	7-7-5-6		Medium dense, red-brown, fine to coarse SAND, trace Silt	
12								
13								
14								
15								
16		S-6	20/24	15 to 17	6-6-5-6		Medium dense, red-brown, fine to medium SAND, little Silt	
17								
18								
19								
20								
21		S-7	18/24	20 to 22	4-4-6-8		Loose to medium dense, red-brown, fine SAND, some Silt	
22								
23						END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE		
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
 2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.



PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-2

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 9/30/2024 Date End 9/30/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)				
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.	Stabilization Time
Type Drill Rig:	Track Mounted CME 55 LCX	9/30/24	-	-	-	Not Encountered
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers					

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES		
1		S-1	8/11	0 to 0.9	12-50/5"	Very dense, gray-brown, fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, with fractured boulder fragments at sample tip	FILL
2							BOULDER
3							
4		S-2	19/24	3 to 5	3-7-6-7	Medium dense, red-brown, fine SAND and SILT	SAND & SILT
5							
6		S-3	24/24	5 to 7	5-7-8-9		
7							
8		S-4	24/24	7 to 9	7-8-10-11	Medium dense, red-brown, SILT and fine SAND	SAND & SILT
9							
10						Medium dense, red-brown, SILT, some fine Sand	SAND & SILT
11		S-5	24/24	10 to 12	8-10-10-10		
12							
13						Medium dense, red-brown, SILT and fine SAND	SAND & SILT
14							
15							
16		S-6	24/24	15 to 17	6-10-10-11		
17						Medium dense, red-brown, SILT and fine SAND	SAND & SILT
18							
19							
20						Medium dense, red-brown, SILT and fine SAND	SAND & SILT
21		S-7	24/24	20 to 22	8-8-9-9		
22						END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE	SAND & SILT
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
 2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.



PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-3

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 9/30/2024 Date End 9/30/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)			
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.
Type Drill Rig:	Track Mounted CME 55 LCX	9/30/24	-	-	-
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers				Stabilization Time
					Not Encountered

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES		
1		S-1	12/24	0 to 2	2-2-3-2	Loose, dark red-brown, fine to coarse SAND, some Silt, trace fine Gravel, trace (-) Roots	6"+/- Topsoil
2							FILL
3		S-2	16/24	2 to 4	5-8-12-13	Medium dense, gray/red-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	TILL
4							
5							
6		S-3	11/24	5 to 6.3	6-23-50/4"	Very dense, gray-brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt (Decomposed Bedrock)	
7							
8							
9							
10							
11		S-4	24/24	10 to 12	12-21-20-27	Dense, gray-brown, decomposed ARKOSE fragments	WEATHERED ROCK
12							
13							
14							
15							
16		S-5	5/5	15 to 15.4	50/5"	Very dense, brown, decomposed ARKOSE fragments	
17							
18							
19						END OF EXPLORATION AT 17.8 FEET BELOW GROUND SURFACE	
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
 2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.



PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-4

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 10/1/2024 Date End 10/1/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)				
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.	Stabilization Time
Type Drill Rig:	Track Mounted CME 55 LCX	10/1/24	-	-	-	Not Encountered
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers					

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES		
1		S-1	17/24	0 to 2	3-6-6-6	Medium dense, dark brown, fine to coarse SAND, some Silt, little fine to coarse Gravel, trace (-) Roots	6"+/- Topsoil FILL
2							
3		S-2	11/24	2 to 4	14-15-25-31		
4						Dense, dark gray-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	GRAVELLY SAND
5							
6		S-3	17/24	5 to 7	6-7-10-15		
7						Medium dense, red-brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt	GRAVELLY SAND
8		S-4	12/24	7 to 9	16-15-14-14		
9							
10						Very dense, red-brown, fine to coarse GRAVEL and fine to coarse SAND, trace Silt	GRAVELLY SAND
11		S-5	17/24	10 to 12	13-27-31-22		
12							
13						Medium dense, red-brown, fine to medium SAND, little Silt	SAND
14							
15							
16		S-6	8/24	15 to 17	8-9-9-7	Medium dense, red-brown, fine to coarse SAND, little Silt	SAND
17							
18							
19						Medium dense, red-brown, fine to coarse SAND, little Silt	SAND
20							
21		S-7	19/24	20 to 22	8-7-7-8		
22						END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE	
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
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PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-5

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 10/1/2024 Date End 10/1/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)				
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.	Stabilization Time
Type Drill Rig:	Track Mounted CME 55 LCX	10/1/24	-	-	-	Not Encountered
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers					

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES		
1		S-1	19/24	0 to 2	2-6-17-25	Medium dense, gray-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	4"+/- Topsoil FILL
2							
3		S-2	15/24	2 to 3.3	39-34-50/3"		Very dense, dark brown, fine to coarse GRAVEL and fine to coarse SAND, little Silt
4							
5						Medium dense, red-brown, fine SAND, some Silt, stratified	SAND
6		S-3	18/24	5 to 7	5-5-6-7		
7							
8							
9							
10						Very dense, gray/red-brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt	WEATHERED ROCK
11		S-4	5/5	10 to 10.4	50/5"		
12						END OF EXPLORATION AT 12.2 FEET BELOW GROUND SURFACE	
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
 2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
 3) Steady auger chatter observed starting from about 10.5 feet below grade on inferred weathered rock.
 4) Auger refusal encountered at about 12.2 feet below grade on inferred bedrock.



PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-6

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 9/30/2024 Date End 9/30/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)				
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.	Stabilization Time
Type Drill Rig:	Track Mounted CME 55 LCX	9/30/24	-	-	-	Not Encountered
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers					

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION					SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)		
1		S-1	17/24	0 to 2	1-9-11-15		Medium dense, dark red-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt, trace (-) Roots	5"+/- Topsoil
2								
3		S-2	5/24	2 to 4	18-12-7-4			Medium dense, dark red-brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt, trace (-) Roots
4								
5								
6		S-3	20/24	5 to 7	5-6-6-6		Medium dense, red-brown, SILT, some fine Sand	SAND & SILT
7								
8		S-4	24/24	7 to 9	5-7-7-8		Medium dense, red-brown, fine SAND and SILT	
9								
10								
11		S-5	24/24	10 to 12	7-11-17-15		Medium dense, gray/red-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	TILL
12								
13								
14								
15								
16		S-6	24/24	15 to 17	14-10-12-24		Medium dense, gray-brown, fine to coarse SAND, some fine to coarse Gravel, some Silt, with decomposed arkose fragments	
17								
18								
19								WEATHERED ROCK
20								
21		S-7	3/3	20 to 20.3	50/3"		Very dense, gray-brown, decomposed ARKOSE fragments	
22								
23							END OF EXPLORATION AT 20.3 FEET BELOW GROUND SURFACE	
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

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PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-7

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 9/30/2024 Date End 9/30/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)			
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.
Type Drill Rig:	Track Mounted CME 55 LCX	9/30/24	-	-	-
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers				Stabilization Time
					Not Observed

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATA	
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES			Core Time (min./ft)
1		S-1	12/24	0 to 2	2-3-4-3	Loose, dark brown, fine to coarse SAND, some Silt, little fine Gravel, trace (-) Roots	6"+/- Topsoil FILL	
2								
3		S-2	18/24	2 to 4	2-4-7-8		Medium dense, dark brown, fine to coarse SAND and SILT, with decomposed rock fragments at sample tip	WEATHERED ROCK
4								
5								
6		S-3	19/24	5 to 7	5-13-19-16	Dense, gray-brown, decomposed ARKOSE fragments		
7								
8		S-4	18/24	7 to 9	9-13-18-15	Dense, gray-brown, decomposed ARKOSE fragments		
9								
10								
11		S-5	24/24	10 to 12	7-14-10-32	Medium dense, gray/brown, decomposed ARKOSE fragments		
12								
13								
14								
15								
16		S-6	9/9	15 to 15.8	38-50/3"	Very dense, gray-brown, decomposed ARKOSE fragments		
17								
18								
19								
20								
21		S-7	20/20	20 to 21.7	15-21-34-50/2"	Very dense, gray-brown, decomposed ARKOSE fragments		
22								
23						END OF EXPLORATION AT 21.7 FEET BELOW GROUND SURFACE		
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

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PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-8

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 10/1/2024 Date End 10/1/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)				
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.	Stabilization Time
Type Drill Rig:	Track Mounted CME 55 LCX	10/1/24	-	-	-	Not Encountered
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers					

DEPTH (ft)	Casing Blows (ft)	SAMPLE INFORMATION					SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)		
1		S-1	17/24	0 to 2	3-5-8-7		Medium dense, dark brown, fine to coarse SAND and SILT, little fine Gravel, trace (-) Organic Debris	6"+/- Topsoil FILL
2								
3		S-2	18/24	2 to 4	4-6-6-9		Medium dense, dark brown, fine to coarse SAND, little Silt, trace fine Gravel, trace (-) decomposed Organics	
4								
5								
6		S-3	20/24	5 to 7	7-10-5-4		Medium dense, brown to red-brown, fine to coarse SAND, little Silt	SAND
7								
8		S-4	24/24	7 to 9	4-4-5-5		Medium dense, red-brown, fine to medium SAND and SILT, moist	SAND & SILT
9								
10								
11		S-5	24/24	10 to 12	6-33-22-21		Very dense, red-brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt	
12								
13								
14								
15								
16		S-6	15/24	15 to 17	11-12-13-11		Medium dense, red-brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt	GRAVELLY SAND
17								
18								
19								
20								
21		S-7	7/24	20 to 22	11-16-14-16		Medium dense, red-brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt	
22								
23							END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE	
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
 2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.



PROJECT

PROPOSED SOLAR ARRAY

OLD MAIDS LANE

PORTLAND, CONNECTICUT

BORING NO. B-9

SHEET 1 of 1

FILE NO. 0255-013.00

CHKD. BY RPJ

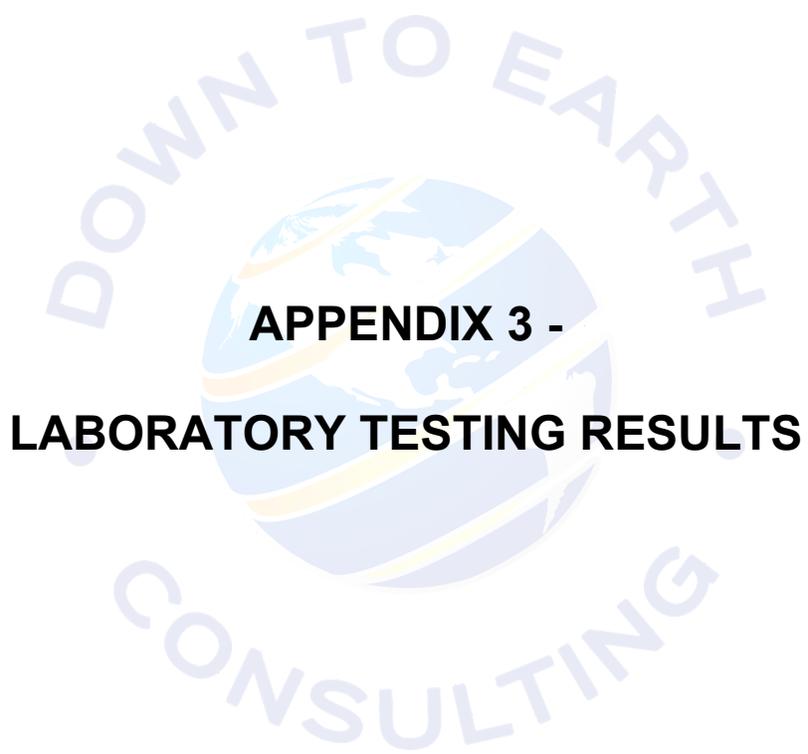
Boring Co. Site, LLC Boring Location See Boring Location Plan
 Driller John DeAngelis Ground Surface El. Not Available Datum Not Available
 Logged By Mateusz Fekieta Date Start 10/1/2024 Date End 10/1/2024

Hammer Type:	Automatic Hammer	Groundwater Readings (from ground surface)			
Sampler Size:	1-3/8" I.D. Split Spoon	Date	Time	Depth (ft)	Elev.
Type Drill Rig:	Track Mounted CME 55 LCX	10/1/24	-	15	-
Drilling Method:	2.25-inch I.D. Hollow-Stem Augers				Stabilization Time
					Wet Sample (Perched Water)

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (Inches)	DEPTH (feet)	BLOWS PER 6 INCHES		
1		S-1	20/24	0 to 2	2-8-14-12	Medium dense, dark red-brown, fine to coarse SAND, some fine to coarse Sand, some Silt, trace (-) Roots	10"+/- Topsoil FILL
2							
3		S-2	16/24	2 to 4	10-11-11-10		
4						Medium dense, red-brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	GRAVELLY SAND
5							
6		S-3	14/24	5 to 7	5-6-5-5		
7							
8		S-4	18/24	7 to 9	8-9-13-11		
9							
10							
11		S-5	18/24	10 to 12	10-14-18-16	Dense, red-brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt	GRAVELLY SAND
12							
13							
14						Medium dense, red-brown, fine SAND and SILT, wet	SAND & SILT
15							
16		S-6	20/24	15 to 17	6-8-6-6		
17						Dense, gray/red-brown, decomposed ARKOSE fragments	WEATHERED ROCK
18							
19							
20							
21		S-7	19/24	20 to 22	14-14-21-21	END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE	
22							
23						END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE	
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	Trace = 0 to 10% Little = 10 to 20% Some = 20 to 35% And = 35 to 50%	1. S denotes split-barrel sampler. 2. ST denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. WH denotes weight of hammer 8. WR denotes weight of rods 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
 2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.



**APPENDIX 3 -
LABORATORY TESTING RESULTS**



195 Frances Avenue
 Cranston RI, 02910
 Phone: (401)-467-6454
 Fax: (401)-467-2398
<http://www.thielsch.com>

Client Information
 Down to Earth Consulting, LLC
 Naugatuck, CT
 Ray Janeiro
ray@downtoearthconsulting.com

Thermal Resistivity Measurements of Soils and Backfill Materials IEEE Std 442TM - 2017

Project Name:	PSA Old Maids Lane	Thermal Meter:	TEMPOS
Project Number:	74-24-0002.242	Thermal Probe:	TR-3 000143
Lab Number:	24-TR-4719	Specimen Prep:	Reconstituted Specimen
Sample Number:	B-1	Mold Type:	3x6 Cylinder
Material Source:	Grab	Tested by:	SBR
Depth:	0-4'	Reviewed By:	RR
Date:	11.25.24		

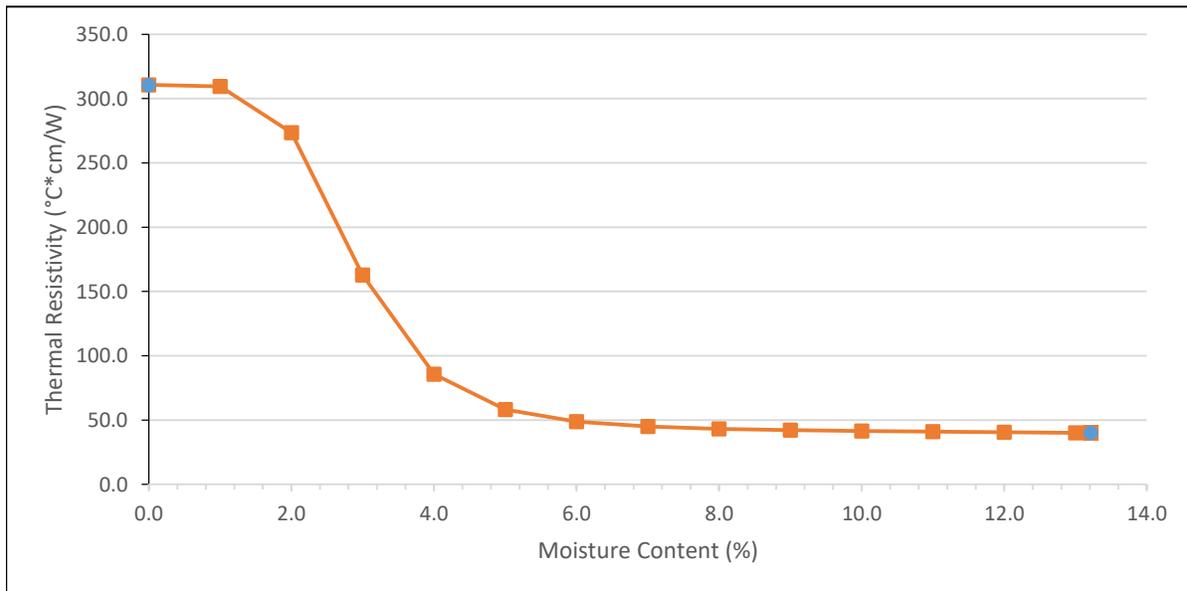
Compaction & Moisture Content Information

Soil Description:	No index testing was conducted		
Oversized Material (%):		Passing #200 Sieve (%):	
Proctor Method:		Requested % Compaction:	
Maximum Dry Density (pcf):	115.0	As Received Moisture Content (%):	14.0%
Remolded Dry Density (pcf):	111.7	In-situ Moisture Cont. (%):	N/A

Thermal Resistivity Test Results

Moisture Content (%)	Thermal Conductivity (W/m*K)	Thermal Resistivity (°C*cm/W)
13.2	2.502	40.1
0.0	0.322	310.5

Thermal Resistivity Dryout Curve



Test Notes:

Optimum, Mid-Point, and Oven-Dried Test Conditions provided for Dryout Curve.
 Maximum particle size used for reconstituted sample was 3/8".
 Thermal dryout curve was interpolated between the oven dry and optimum water content points using Meter Group combination method.

	195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 http://www.thielsch.com	Client Information Down to Earth Consulting, LLC Naugatuck, CT Ray Janeiro ray@downtoearthconsulting.com

Thermal Resistivity Measurements of Soils and Backfill Materials IEEE Std 442TM - 2017

Project Name:	PSA Old Maids Lane	Thermal Meter:	TEMPOS
Project Number:	74-24-0002.242	Thermal Probe:	TR-3 000143
Lab Number:	24-TR-4721	Specimen Prep:	Reconstituted Specimen
Sample Number:	B-7	Mold Type:	3x6 Cylinder
Material Source:	Grab	Tested by:	SBR
Depth:	0-1'	Reviewed By:	RR
Date:	11.25.24		

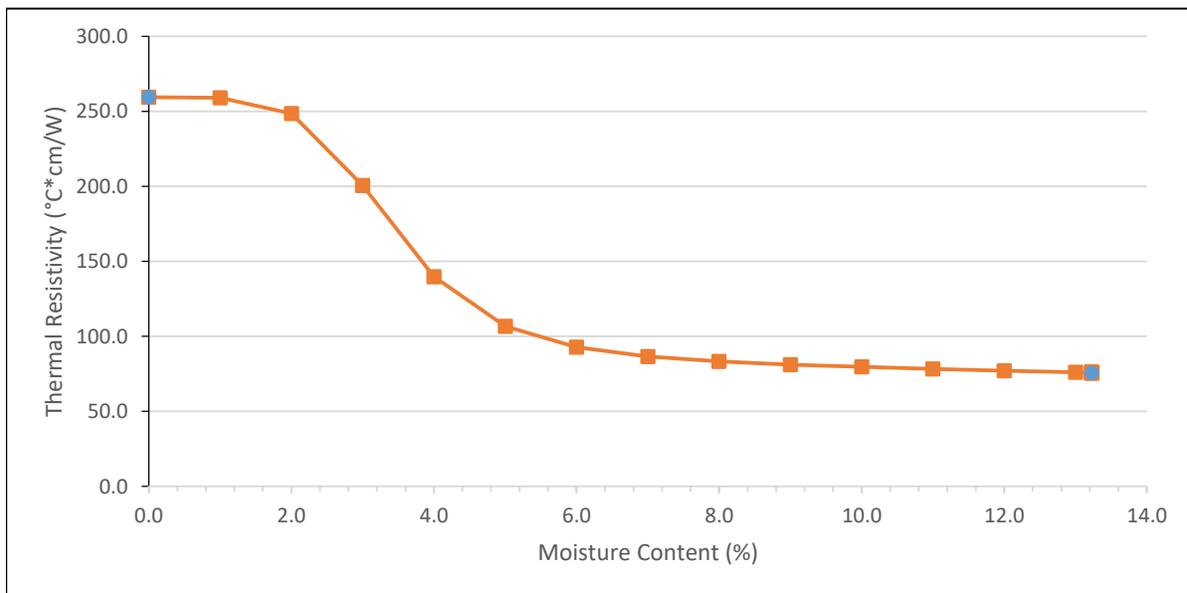
Compaction & Moisture Content Information

Soil Description:	No index testing was conducted		
Oversized Material (%):		Passing #200 Sieve (%):	
Proctor Method:		Requested % Compaction:	
Maximum Dry Density (pcf):	115.0	As Received Moisture Content (%):	14.0%
Remolded Dry Density (pcf):	96.9	In-situ Moisture Cont. (%):	N/A

Thermal Resistivity Test Results

Moisture Content (%)	Thermal Conductivity (W/m*K)	Thermal Resistivity (°C*cm/W)
13.2	1.322	75.7
0.0	0.385	259.5

Thermal Resistivity Dryout Curve



Test Notes:

Optimum, Mid-Point, and Oven-Dried Test Conditions provided for Dryout Curve.

Maximum particle size used for reconstituted sample was 3/8".

Thermal dryout curve was interpolated between the oven dry and optimum water content points using Meter Group combination method.

CERTIFICATE OF ANALYSIS

Kris Roland
Thielsch Engineering, Inc.
CTS Cranston
Cranston, RI 02910

RE: PSA - Old Maids Lane Portland CT (0255-013.00)
ESS Laboratory Work Order Number: 24K0767

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 8:01 pm, Nov 25, 2024

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: PSA - Old Maids Lane Portland CT

ESS Laboratory Work Order: 24K0767

SAMPLE RECEIPT

The following samples were received on November 19, 2024 for the analyses specified on the enclosed Chain of Custody Record.

The cooler temperature was not within the acceptance limit of <6°C, however, samples were delivered on ice and therefore meet regulatory criteria.

Lab Number	Sample Name	Matrix	Analysis
24K0767-01	B-6	Soil	D4327
24K0767-02	B-8	Soil	D4327

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: PSA - Old Maids Lane Portland CT

ESS Laboratory Work Order: 24K0767

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: PSA - Old Maids Lane Portland CT

ESS Laboratory Work Order: 24K0767

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
 Client Project ID: PSA - Old Maids Lane Portland CT
 Client Sample ID: B-6
 Date Sampled: 11/19/24 08:40
 Percent Solids: 92

ESS Laboratory Work Order: 24K0767
 ESS Laboratory Sample ID: 24K0767-01
 Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Chloride	WL ND (5)	---	D4327	---	1	JLK	11/21/24 4:47	mg/kg dry	DK42042
Sulfate	WL 29 (5)	---	D4327	---	1	JLK	11/21/24 4:47	mg/kg dry	DK42042

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
 Client Project ID: PSA - Old Maids Lane Portland CT
 Client Sample ID: B-8
 Date Sampled: 11/19/24 08:40
 Percent Solids: 87

ESS Laboratory Work Order: 24K0767
 ESS Laboratory Sample ID: 24K0767-02
 Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Chloride	WL ND (6)	---	D4327	---	1	JLK	11/21/24 5:04	mg/kg dry	DK42042
Sulfate	WL 25 (6)	---	D4327	---	1	JLK	11/21/24 5:04	mg/kg dry	DK42042

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
 Client Project ID: PSA - Old Maids Lane Portland CT

ESS Laboratory Work Order: 24K0767

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Classical Chemistry

Batch DK42042 - General Preparation

Blank

Chloride	ND	5	mg/kg wet							
Sulfate	ND	5	mg/kg wet							

LCS

Chloride	10		mg/L	10.00		96	85-115			
Sulfate	11		mg/L	10.00		106	80-120			

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.

Client Project ID: PSA - Old Maids Lane Portland CT

ESS Laboratory Work Order: 24K0767

Notes and Definitions

WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: PSA - Old Maids Lane Portland CT

ESS Laboratory Work Order: 24K0767

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002
<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Thielsch Engineering, Inc - ESS

ESS Project ID: 24K0767

Shipped/Delivered Via: Client

Date Received: 11/19/2024

Project Due Date: 11/26/2024

Days for Project: 5 Day

- 1. Air bill manifest present? No
Air No.: NA
- 2. Were custody seals present? No
- 3. Is radiation count <100 CPM? Yes
- 4. Is a Cooler Present? No
Temp: 19 Iced with: None
- 5. Was COC signed and dated by client? Yes

- 6. Does COC match bottles? Yes
- 7. Is COC complete and correct? Yes
- 8. Were samples received intact? Yes
- 9. Were labs informed about **short holds & rushes**? Yes / No / NA
- 10. Were any analyses received outside of hold time? Yes / No

- 11. Any Subcontracting needed? Yes / No
ESS Sample IDs: _____
Analysis: _____
TAT: _____

- 12. Were VOAs received? Yes / No
 - a. Air bubbles in aqueous VOAs? Yes / No
 - b. Does methanol cover soil completely? Yes / No / NA

- 13. Are the samples properly preserved? Yes / No
 - a. If metals preserved upon receipt: Date: _____
 - b. If dissolved metals are requested, are they: Yes / No Field Filtered
 - c. Low Level VOA vials frozen: Date: _____

Time: _____ By/Acid Lot#: _____
Yes / No To Be Lab Filtered _____
Time: _____ By: _____

Sample Receiving Notes:

no cooling media observed

- 14. Was there a need to contact Project Manager? Yes / No
a. Was there a need to contact the client? Yes / No

Who was contacted? _____ Date: _____ Time: _____ By: _____

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	616104	Yes	N/A	Yes	8 oz jar	NP	
2	616105	Yes	N/A	Yes	8 oz jar	NP	

2nd Review

Were all containers scanned into storage/lab?

Initials: [Signature]
 Yes / No
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA

- Are barcode labels on correct containers?
- Are all Flashpoint stickers attached/container ID # circled?
- Are all Hex Chrome stickers attached?
- Are all QC stickers attached?
- Are VOA stickers attached if bubbles noted?

Completed By: [Signature] Date & Time: 11/19/24 10:57
 Reviewed By: [Signature] Date & Time: 11/19/24 11:22



**APPENDIX 4 -
LIMITATIONS**

LIMITATIONS

Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations by Down To Earth Consulting, LLC (DTE) and others. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.
2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.
3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tidal, temperature, and other factors occurring since the time measurements were made.

Review

4. In the event that any changes in the nature, design or location of the proposed structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DTE. It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

Construction

5. It is recommended that this firm be retained to provide soil engineering services during construction of the earthworks and foundation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

6. This report has been prepared for the exclusive use of Greenskies Clean Energy for specific application to the project noted in this geotechnical report in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.
7. This soil and foundation engineering report has been prepared for this project by DTE. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.
8. This report may contain comparative cost estimates for the purpose of evaluating alternative foundation schemes. These estimates may also involve approximate quantity evaluations. It should be noted that quantity estimates may not be accurate enough for construction bids. Since DTE has no control over labor and materials cost and design, the estimates of construction costs have been made on the basis of experience. DTE does not guarantee the accuracy of cost estimates as compared to contractor's bids for construction costs.