GEOTECHNICAL ENGINEERING REPORT

Hurstmont Estate

Harding Township, Morris County, New Jersey

October 2022

Prepared For:

HURSTMONT ESTATE ACQUISITIONS, LLC
14 Doty Road, Unit B
Haskell, New Jersey 07420

Attn: Mr. Mike Nestico

Prepared By:

GEO-TECHNOLOGY ASSOCIATES, INC.
Geotechnical and Environmental Consultants
14 Worlds Fair Drive, Suite A
Somerset, New Jersey 08873

GTA Job No: 31221732

GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing Geoprofessional Business Association Member Firm

October 7, 2022

Hurstmont Estate Acquisitions, LLC
14 Doty Road, Unit B
Haskell, New Jersey 07420

Attn: Mr. Mike Nestico

Re: Geotechnical Engineering Report
Hurstmont Estate
Harding Township, Morris County, New Jersey

Dear Mike:

In accordance with our agreement dated August 3, 2022 and executed on August 7, 2022 Geo-Technology Associates, Inc. (GTA) has performed a preliminary geotechnical exploration for the planning and design of a proposed assisted living development in Harding Township, Morris County, New Jersey. The exploration consisted of 4 Standard Penetration Test borings and 32 test pits throughout the portions of the site proposed for development, visually classifying the encountered soils, and performing limited laboratory testing. The results of the field and laboratory testing and GTA's recommendations regarding design and construction of the proposed development are included in this report.

GTA appreciates the opportunity to have been of assistance to you on this project. Please contact our office at (732) 271-9301 if you have questions or require additional information.

Very truly yours,
GEO-TECHNOLOGY ASSOCIATES, INC.

Allison Tether

Allison Tether, P.G.
Senior Project Manager

Dennis C. Loh, P.E.
Vice President

AFS/AMT/DCL
Job No. 31221732
Attachments

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INTRODUCTION

This report presents the results of a preliminary geotechnical exploration performed by Geo-Technology Associates, Inc. (GTA) for the planning and design of a proposed assisted living development in Harding Township, Morris County, New Jersey. The site is located on the eastern side of Mount Kemble Road, north of its intersection with Tempe Wick Road, and is identified as Lot 2 in Block 27 and Lot 1.01 in Block 34 on the Harding Township tax map. Please refer to the Site Location Map, which is Figure 1 in Appendix A of this report.

GTA was provided with several concept plans prepared by Gladstone Design, Inc. (GDI), which included a plan titled "Concept Plan F" dated May 5, 2022 with revision dates of May 31, 2022, June 16, 2022, and July 13, 2022, a plan titled "Concept Plan" dated July 8, 2022, and a plan titled "Concept Plan" dated August 2, 2022. The plans indicate the site boundaries, existing topography, and the layout and dimensions of the proposed structures, retaining walls, and stormwater management (SWM) basin areas. The June 16th "Concept Plan F" indicates the proposed site grading and finished floor elevations for the proposed structures. The July 13th "Concept Plan F" indicates the locations of proposed SWM basins throughout the site and was marked up to show the proposed basin bottom elevations, requested depths for testing, and 19 requested test locations. The July 8th "Concept Plan" shows a cross-section cut profile for the proposed assisted living facility building and the August 2nd "Concept Plan" includes the composite site layout with the neighboring "Bin Jean" property. GTA was also provided with a marked-up version of the composite site layout, which was marked up to show the locations of 3 requested test pit excavations on the neighboring Bin Jean property. The results of these test pits are included in this report and the test pit logs are numbered TP-101, TP-102, and TP-103.

GTA was also provided with an architectural planset prepared by Meyer Architecture and Interiors titled "Hurstmont Estate" dated July 21, 2022. The plans indicate the proposed assisted

living facility will be 4-stories in height and will contain below-grade garage level parking. The plans indicate 2 options for the garage level and first floor layouts.

The scope of this study included a field exploration, laboratory testing, and geotechnical engineering analyses. The field exploration included the observation of 4 Standard Penetration Test (SPT) borings along the proposed retaining walls and assisted living facility in the northern portion of the site and 32 test pit excavations adjacent to the proposed building areas and within potential stormwater management (SWM) basin locations. Limited laboratory testing was performed on soil samples obtained from the test pits to assist in characterizing the general subsurface conditions. The conclusions and recommendations presented in this report were derived from engineering analyses of field and laboratory data, and preliminary information for the proposed development as detailed herein.

SITE CONDITIONS

The site is roughly bounded by Mount Kemble Road to the southeast, Tempe Wick Road to the southwest, residential properties along Mount Kemble Road to the northeast, and wooded areas to the northwest. At the time of our study, the subject site was vacant land. The southern half of the site was an overgrown lawn area with a few trees throughout and the northern portion of the site was wooded. Based on our review of historic aerial photographs, a residence previously occupied the central portion of the site and has recently been demolished. Demolition debris was present at the ground surface in the area of the former residence, and an asphalt-paved driveway leading to the house remained.

Based on the topographic contours shown on the plan provided to us and our visual observations at the site, the ground surface in the development area generally slopes steeply downward from about Elevation (EL) 540 feet in the northern portion of the site to about EL 375 feet in the southern portion of the site.

PROPOSED CONSTRUCTION

Based on the conceptual plan provided to us, we understand that the proposed development will include a 4-story assisted living facility building located in the northeastern portion of the site

and 40 age-restricted townhouse units contained within 19 buildings through the remainder of the site. We understand the assisted living facility will have below-grade garage level parking and 2 layout options are being considered. The plans provided indicate that the finished floor for the northern portion of the building will be established at EL 481 feet and the lowest floor level in the southern portion of the building will be established at EL 468.5 feet. Access to the development will be provided from two locations along Mount Kemble Road to the south. A network of paved internal roadways will provide access to each unit throughout the development, and at-grade parking will be provided throughout the development.

The plans indicate 9 proposed and potential SWM basins throughout the southern half of the site, which includes 2 underground basins and 7 surface basins. Based on scaled measurements, the basins will have bottom areas ranging from about 1,500 to 3,000 square feet, with the exception of the large southernmost basin, which will have a bottom area of about 19,200 square feet.

Due to the steep slope of the site, significant site grading will be required throughout the proposed development, and several retaining walls are indicated throughout the site, including a large, tiered retaining wall along the northern property boundary. Based on the grading plan provided, we understand significant cuts ranging up to about 50 feet and fills ranging up to about 10 feet will generally be required to achieve the final grades.

The assisted living facility and townhouse structures are assumed to be of cast-in-place concrete and steel- or timber-frame construction. Based on our experience on projects of similar scope, we estimate that the proposed assisted living facility will have maximum column loads of approximately 200 to 250 kips, and bearing wall loads of approximately 15 to 20 kips per linear foot. We estimate that the townhouse structures will have maximum column loads of approximately 75 to 100 kips, and bearing wall loads of approximately 4 to 6 kips per linear foot. Maximum ground floor slab live loads of approximately 100 pounds per square foot are anticipated for the structures.

SITE GEOLOGY

The subject site is situated within the Highlands physiographic province characterized by rugged topography with discontinuous rounded ridges separated by deep narrow valleys. The site is

underlain by the Mesoproterozoic age Amphibolite and Hornblende-quartz-oligoclase gneiss, as shown on the *Bedrock Geologic Map of the Mendham Quadrangle, Morris and Somerset Counties, New Jersey (OFM 126, 2019)* published by the New Jersey Geological Survey. The Amphibolite is described as grayish-black, medium-grained, foliated gneiss composed of hornblende and andesine. The Hornblende-quartz-oligoclase gneiss is described as white or light-gray weathering, medium-gray or greenish-gray, medium- to coarse-grained moderately foliated gneiss composed of oligoclase, quartz, clinopyroxene, hornblende and hypersthene.

The surficial geology of the site, as shown on the *Surficial Geology of the Mendham Quadrangle, Morris and Somerset Counties, New Jersey (OFM 94, 2012)* published by the New Jersey Geological Survey, consists of predominantly gneiss colluvium and the southern portion of the site is mapped as weathered gneiss. The gneiss colluvium is described as yellowish-brown, reddish-yellow, and brown sandy silt, silty sand, and sandy clayey silt with some to many gneiss pebbles and cobbles. The colluvium can be as much as 50 feet thick. The weathered gneiss is described as yellowish-brown, yellow, very pale brown, and reddish-yellow silty sand, silty clayey sand, and sandy clayey silt, with few to many pebble and cobbles of gneiss. The unit includes granular decomposed rock, fractured rock rubble, and saprolite that preserves original rock structure. The total thickness of the weathered material can be as much as 150 feet but is typically less than about 50 feet.

Please refer to the referenced publications for more detailed descriptions of the geologic members.

SUBSURFACE EXPLORATION

The subsurface exploration program for this preliminary study consisted of drilling 4 SPT borings along the proposed retaining wall and excavating 32 test pits adjacent to the proposed buildings and within potential SWM basin areas. The borings were performed by Environmental Technical Drilling, Inc. on August 25 and 26, 2022 using a CME 55 track-mounted drill rig and extended to depths ranging from about 18½ to 40 feet below the existing ground surface. The test pits were excavated by Heritage Contracting Company, Inc. on August 17 through 23, 2022 using a

Kobelco 135SR track-mounted excavator and extended to depths ranging from about 5 to 15 feet below the ground surface.

The test pit locations in potential SWM basin areas were selected by GDI and the remaining locations were selected by GTA. The explorations were located in the field using a hand-held GPS unit and the existing site features. The approximate locations of the explorations performed for this study are shown on the Test Pit Location Plan, which is included in Figure 2 in Appendix A of this report. Detailed descriptions of the encountered subsurface conditions are indicated on the Logs of Test Pits, which are included in Appendix B. The ground surface elevations shown on the test pit logs were obtained by interpolating between topographic contours shown on the plans provided to us. Due to the steeply sloping topography of the area, these elevations should be considered very approximate. To obtain more accurate location and elevation data, the disturbed areas where the borings and test pits were performed should be located in the field and surveyed by a professional surveyor.

The samples retrieved from the test pits were delivered to GTA's laboratory for visual classification by a geotechnical engineer and limited laboratory testing. The soil descriptions indicated on the logs are based on visual observations of the individual soil samples as summarized in the Notes for Exploration Logs included in Appendix B, supplemented by the laboratory test results.

LABORATORY TESTING

Laboratory testing performed for this study included grain size distribution and Atterberg limits testing for classification of the soils in accordance with the Unified Soil Classification System (USCS), and natural moisture content determinations. Classification of soils in accordance with the USCS provides information regarding the engineering properties of the on-site soils that will likely support the proposed foundations, slabs, and pavements, and be used as controlled compacted fill and backfill. Detailed results of the laboratory testing performed for this study are included in Appendix C. The results of the laboratory tests are summarized in the following table:

SUMMARY OF LABORATORY TEST RESULTS

Exploration Location	Depth (ft.)	LL (%)	PI (%)	USCS Classification	NMC (%)	Fines (%)
B-2	2-4	NV	NV	Sandy SILT (ML)	14.4	68.4
TP-4	6	NP	NP	Silty GRAVEL with sand (GM)	12.3	44.5
TP-8	9	27.0	5.6	Gravelly Silty CLAY (CL-ML)	20.1	59.9
TP-15	7	NP	NP	Silty GRAVEL with sand (GM)	16.2	44.3
TP-28	5	NP	NP	Sandy SILT (ML)	12.4	68.5

*Note: LL=Liquid Limit, PI=Plasticity Index, NP=Non-Plastic, NV=Not Verified, NMC=Natural Moisture Content, Fines=Material passing the #200 sieve

SUBSURFACE CONDITIONS

In general, an approximately 1- to 12-inch-thick layer of topsoil was encountered at the ground surface in 34 of the 36 explorations performed for this study, averaging about 7 inches. Test Pit TP-9 encountered an approximately 4-inch-thick layer of asphalt pavement at the ground surface and Test Pit TP-14 encountered existing fill materials at the ground surface. Existing fill materials were encountered below the topsoil in 8 additional test pits, generally located in the central portion of the site. The fill extended to depths ranging from about 1 to 8 feet below the existing surface grades and generally consisted of silty sand and silty gravel soils with debris including concrete and asphalt fragments, and abandoned utility pipes. Test Pit TP-16 encountered a layer of buried topsoil below the fill at a depth of about 7½ feet below the ground surface.

The natural soils underlying the topsoil and fill appear to be consistent with the geologic mapping and predominantly consisted of medium dense to very dense silty sands with gravel and silty gravels with sand, and cobbles and boulders were frequently encountered within the excavated soils. The explorations encountered sandy silt and silty clay layers within the granular soils in a few of the explorations, and these fine-grained soil layers were generally only a few feet in thickness. Below the surficial soils, decomposed gneiss bedrock was encountered in 34 of the 36 explorations at depths ranging from about 1 to 12½ feet below the ground surface. The decomposed rock, also called saprolite, generally preserves the appearance of the original rock structure but due to chemical weathering processes over time presents as a silty sand when excavated. The Kobelco 135SR excavator was generally able to dig several feet below the surface of decomposed rock, and

competent rock was encountered in the borings performed for this study at depths ranging from about 18½ to 35 feet below the ground surface.

Groundwater was not observed in the explorations performed for this study. Long-term groundwater readings were not obtained because the explorations were backfilled upon completion for safety considerations. Fluctuations in the groundwater level typically occur due to several factors, including variations in precipitation, seasonal changes, and site development activities. It should be anticipated that seepage of perched or trapped water may occur in construction excavations at potentially shallow depths throughout the site.

INFILTRATION TEST RESULTS

In-situ infiltration tests were performed adjacent to 19 test pits located within proposed and potential SWM basin areas using a double-ring infiltrometer in accordance with the ASTM D 3385 test procedure. The tests were performed at depths ranging from approximately 1 to 6½ feet below the ground surface within the natural soils. An infiltration test was attempted at Test Pit TP-17 but the testing equipment could not be properly seated due to the presence of gravel and cobbles and resulted in water visibly leaking from the base of the test apparatus. The results of the infiltration tests performed for this study are summarized in the following table.

SUMMARY OF INFILTRATION TEST RESULTS

Test Pit Location	Approximate Test Depth* (ft)	Final Water Level Drop (in)	Time Interval (min)	USCS Classification	Measured Infiltration Rate (in/hr)
TP-1	6	0	30	Silty SAND with gravel, cobbles, and boulders (SM)	0
TP-2	4	¾	60	Silty SAND with gravel and cobbles (SM)	0.75
TP-3	6	¼	12	Decomposed Gneiss (presented as SM)	1.25
TP-4	6	0	30	Silty GRAVEL with sand, cobbles, and boulders (GM)	0
TP-5	6	1	60	Silty GRAVEL with sand, cobbles, and boulders (GM)	1
TP-9	6	½	20	Silty GRAVEL with sand, cobbles, and boulders (GM)	1.5

Test Pit Location	Approximate Test Depth* (ft)	Final Water Level Drop (in)	Time Interval (min)	USCS Classification	Measured Infiltration Rate (in/hr)
TP-10	6	¼	5	Decomposed Gneiss (presented as SM)	3
TP-12	6	½	15	Silty GRAVEL with sand and cobbles (GM)	2
TP-13	6	¼	3	Silty SAND with gravel, cobbles, and boulders (SM) [FILL]	5
TP-14	6½	¼	4	Silty SAND with gravel (SM)	3.75
TP-15	6	3	60	Silty SAND (SM) [FILL]	3
TP-17	1	N/A**	N/A	Decomposed Gneiss (presented as SM)	N/A**
TP-18	5½	½	4	Silty SAND (SM)	7.5
TP-21	4	15	¼	Silty SAND with gravel, cobbles, and boulders (SM)	1
TP-22	5	½	10	Silty GRAVEL with sand, cobbles, and boulders (GM)	3
TP-23	1	2	20	Silty SAND with gravel and cobbles (SM)	6
TP-24	1½	1	20	Silty SAND with gravel (SM)	3
TP-28	5	¾	30	Sandy SILT with gravel (ML)	1.5
TP-29	6	¼	30	Silty GRAVEL with sand, cobbles, and boulders (GM)	0.5

*Beneath the existing ground surface.
**Infiltration test terminated due to leakage from testing apparatus.

The primary conditions that affect the capacity to infiltrate water are the soil gradation and density properties and the presence of hydraulically restrictive layers such as silt or clay (fines), rock, or groundwater, each of which would restrict the flow of water into the underlying aquifer. Groundwater seepage was not observed in the test pits; however, decomposed rock was encountered at relatively shallow depths throughout the site. The decomposed rock generally presented as silty sand when excavated, and where tested appeared somewhat receptive to infiltration.

In general, the natural soils tested consisted of predominantly silty sands and silty gravels with varying amounts of cobbles and boulders and appeared somewhat to moderately receptive to infiltration. It is our opinion that the soils tested in the proposed basin areas are somewhat suitable for infiltration depending on the design infiltration rates of the basin and proposed basin bottom elevations.

We recommend additional testing be performed at the time of construction to verify the design assumptions. This testing should be performed after the basin subgrades are properly prepared. If localized areas of low or no infiltration are encountered during construction, we recommend the soils be undercut and backfilled to the proposed bottom of basin elevation using granular soils, washed gravel, or sand meeting the design infiltration rate.

It will be important to limit disturbance and compaction of the infiltration surface during construction. Infiltration areas should not be exposed to unstabilized runoff that may contribute to sedimentation and clogging of the subgrade, and possible system failure, prior to the completion of construction. Where possible, the operation of heavy construction equipment directly on the infiltration area subgrades should be avoided or kept to a minimum. After grubbing and rough grading, infiltration areas should be tilled with a disc or rotary tiller followed by a leveling drag, to restore the soils to a loose condition.

Construction oversight by competent engineering personnel during installation of stormwater management facilities is critical to successful functioning of the system. Ideally, construction oversight should be provided by the geotechnical engineer, or qualified representative, retained by the project owner to document construction operations and assure that project specifications and special construction requirements are met. Periodic inspection and maintenance of the infiltration system will be required to maximize the efficiency and design life of the system.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this study, it is GTA's opinion that construction of the proposed residential development is feasible, provided the geotechnical recommendations are followed, and that the standard level of care is maintained during construction. However, the site grading will

likely pose a significant challenge in the planning and construction of the development. Following the recommended earthwork procedures as outlined in this report, it is our opinion that the proposed structures may be supported by conventional spread footings, and the ground level floor slabs may be established on-grade. Geotechnical issues that will impact site development include presence of cobbles and boulders at relatively shallow depths, relatively shallow bedrock, and significant site grading which may require rock blasting. Further discussions of our geotechnical recommendations for site development are presented in the following sections of this report. Significant additional explorations will be needed to further evaluate the subsurface conditions throughout the site.

Site Preparation

Site preparation should begin by demolishing the existing structures, and the demolition products should be removed from the site. Below-grade components such as abandoned underground storage tanks, foundations, concrete floor slabs, and utilities should be completely removed from within at least 5 feet beyond the proposed building areas. Structural components may remain in-place below proposed pavement or landscaped areas provided they are cut off at least two feet below the proposed subgrade levels and will not interfere with proposed utilities or other improvements. Excavations to remove existing structures or surface improvements that extend below the proposed building or pavement areas should be backfilled with controlled compacted fill meeting the gradation and compaction requirements outlined in the *Earthwork* section of this report. GTA suggests that backfilling of demolition excavations be performed by the earthwork contractor, as they are typically more familiar with the means and methods of installing structural backfill than demolition contractors. Each layer of backfill should be observed and tested by GTA.

Site preparation should continue by clearing and grubbing the trees and surface vegetation, and stripping the topsoil from within and at least five feet beyond proposed building and pavement areas. An average topsoil thickness of approximately 7 inches was encountered in the explorations performed for this study; however, the actual topsoil stripping thickness will depend on local topsoil and vegetation development, soil moisture, construction traffic disturbance, and contractor care during clearing and stripping. The excavated topsoil will not be suitable for reuse as controlled compacted fill or backfill within building or pavement areas, or as backfill against the building walls or atop utilities.

Existing fill materials were encountered in 9 of the test pits performed for this study, generally located in the central portion of the site. The fill extended to depths ranging from about 1 to 3 feet below the existing surface grades at most locations where fill was encountered. However, deeper areas of fill were encountered at Test Pits TP-13 and TP-16, where the fill extended to depths of 7½ to 8 feet. The fill generally consisted of silty sand and silty gravel soils with debris including concrete and asphalt fragments, and abandoned utility pipes. For planning and budgeting purposes, we recommend that the existing fill materials be considered unreliable to support the proposed building loads, and it should be assumed that the fill will need to be completely removed from within and at least 5 feet beyond the proposed building areas.

The subgrade soils exposed below the proposed building and pavement areas to remain at grade or receive fill should be evaluated by a representative from GTA. Ideally, the evaluation should consist of proofrolling and compacting the soils to a dense and unyielding consistency by several passes of a large smooth drum vibratory compactor with a static drum weight of at least ten tons, although some other method may be deemed more appropriate by the geotechnical engineer depending on the prevailing weather conditions. Soils that are observed to be soft or unstable during the evaluation should be selectively excavated, and the resultant excavations should be backfilled with controlled compacted fill.

Though the soils encountered are predominantly granular, some soils may still be susceptible to disturbance and softening from excess moisture and construction equipment traffic. Depending on the results of the subgrade evaluation at the time of construction, undercutting of the subgrade soils may be required prior to fill placement. If soils are unstable because of excess moisture content, it may be feasible to scarify, aerate, and dry the surficial soils followed by re-compaction to the recommended degree of compaction. Reducing the moisture content in this manner will only be feasible during the warm, dry seasons and may require extended drying times and discing effort to adequately dry the soils to a moisture content that is acceptable for compaction.

Earthwork

We recommend that the earthwork phase of the project be performed during the warmer, drier months of the year. Bid documents should clearly state that the geotechnical engineer will

evaluate the suitability of the soils for various purposes at the time of construction, and that high moisture content will not be considered as a basis for rejection of soils as unsuitable. The need for moisture conditioning (drying) of the soils should be anticipated and included in the earthwork contract.

It should be noted that repeated construction traffic can destabilize the exposed subgrade soils. In order to protect the exposed subgrade, we recommend that construction traffic travel on designated haul roads to the extent possible to reduce the potential for widespread destabilization of the site subgrade soils.

All construction excavations should be sloped and shored in accordance with OSHA excavation regulations or stricter local governing safety codes. It is our opinion that the undisturbed natural soils or controlled compacted fill composed of similarly graded materials would generally be classified as "Type C" soils under the OSHA excavation regulations, while the weathered and decomposed rock (saprolite) may be classified as "Type B" soils. Significantly flatter excavation side-slopes will be required where groundwater seepage occurs. Gneiss bedrock can be classified as "stable rock" per OSHA. Permanent soil slopes should be designed no steeper than three horizontal to one vertical (3H:1V).

Difficult excavation due to cobbles and boulders within the overburden soils and saprolite should be expected throughout the site, and it should be anticipated that the removal and management of numerous cobbles and boulders will be required. The roller bit refusal depths shown on the boring logs generally indicate the surface of competent bedrock in these areas; however, additional explorations will be required to further identify and characterize the rock. We generally recommend that the construction documents identify all excavation as "unclassified." If excavation must be bid as "classified" then your agreement must include a definition of rock. An example definition of rock for contractual purposes is presented below.

> Rock is defined as a boulder or bedrock that cannot be dislodged by a Caterpillar D-9 bulldozer, or equivalent, equipped with a hydraulically operated power ripper, or by a Caterpillar 345 excavator, or equivalent, equipped with rock teeth but without the use of hoe rams or other breaking techniques. Boulders

> exceeding two cubic yards in volume shall also be considered rock excavation. This classification does not include materials such as loose rock, concrete or other materials that can be removed by means other than breaking by hoe rams, etc., but which for reasons of economy in excavating the contractor chooses to remove by other methods.

If excavation is bid as "classified" then a rock excavation allowance should be established and be included in the base bid with add/deduct unit prices per cubic yard (measured in-place) to adjust the base allowance. It should be noted that variations in the depth to bedrock between the exploration locations can be encountered across the site during mass excavation. Therefore, the estimated initial rock surface grades indicated on the exploration logs can only be used for preliminary rock excavation quantities for planning purposes as variations in the depth to bedrock are likely. Additional soil borings should be performed throughout the site after the grading plans are more fully developed to better delineate the rock surface.

An on-site crushing and screening operation should be considered to process excavated cobbles, boulders, and shot rock into particle sizes suitable for reuse as structural fill, backfill for retaining walls, or stone aggregate below slabs or pavements.

The excavated predominately coarse-grained natural site soils (GM, SM) are considered suitable for reuse as controlled fill, with some limitations. Moisture conditioning of the on-site soils may be required to attain the recommended degree of compaction, depending on the prevailing weather conditions at the time the earthwork is performed.

Off-site borrow should meet USCS designation SM, SP, SW, SC, GP, GM, GC, or GW and be approved by the geotechnical engineer prior to use.

All fill placed below proposed buildings and pavements should consist of controlled compacted fill and be installed under the observation of a representative of GTA. Mass fill should be spread in layers on the order of eight to ten inches in loose thickness and compacted to the following specifications. Backfill placed in confined areas, such as foundation and utility excavations, should be spread in thinner layers and compacted to the same degree using manually operated compaction equipment.

RECOMMENDED COMPACTION SPECIFICATIONS

Structure / Fill Location	Compaction / Moisture Specification
Below foundations, retaining walls, floor slabs, and within wall backfill or slopes steeper than 5H:1V	95% of ASTM D-1557 Moisture: ± 3% of optimum
Top 1 foot of pavement subgrade	95% of ASTM D-1557 Moisture: ± 2% of optimum
Fills below 1 foot of pavement subgrade	90% of ASTM D-1557 Moisture: ± 3% of optimum

All compactive effort should be verified by in-place density testing by a representative of GTA. The 2018 International Building Code (IBC) requires that fill subgrades and every lift of fill be observed and tested. New fills constructed on slopes steeper than 5H:1V should be keyed into existing slopes for stability considerations. All fill slopes steeper than 5H:1V should generally be placed as controlled fill and be compacted to minimum densities as specified above. Fill for slopes in non-structural areas, such as landscape berms, can be constructed as steep as 3H:1V up to a height of ten feet.

Groundwater was not encountered in the explorations performed for this study. It should be expected that water seepage will occur from the significant excavations to be performed to achieve the site grades. Stone-filled cutoff trenches should be anticipated to be required in proposed cut areas. Positive drainage should be maintained during construction to prevent inundation of subgrade soils by surface water runoff. Excavations to remove wet, soft soils should be backfilled with controlled compacted fill or AASHTO No. 57 stone aggregate.

Subsurface Utilities

It is our opinion that the natural soils, existing fill, and controlled compacted fill are considered suitable for support of subsurface utilities, which will likely include water and sewer lines. GTA recommends a 6-inch-thick granular bedding layer consisting of AASHTO No. 57 stone aggregate be placed if water seepage occurs at or above the planned invert elevations.

Contractors should provide adequate earth support and dewatering systems in utility trench excavations. Dewatering through the use of "sump and pump" techniques may be required in some areas to remove water seepage, especially if utility installation is performed during the wet season or after prolonged periods of inclement weather.

Utilities installed below pavements and other structural areas should be backfilled using controlled fill, compacted in accordance with the recommendations presented in the *Earthwork* section of this report.

Foundations

Assuming maximum column loads of approximately 200 to 250 kips and bearing wall loads of approximately 15 to 20 kips per linear foot for the proposed assisted living facility and maximum column loads of approximately 75 to 100 kips and bearing wall loads of approximately 4 to 6 kips per linear foot for the proposed townhouse structures, the proposed residential structures may be supported on conventional shallow spread foundations. Foundations supported on the undisturbed natural soils or controlled compacted fill, may be designed to impose bearing pressures of up to 4,000 pounds per square foot. Foundations supported by the weathered/decomposed rock (saprolite) can likely be designed for bearing pressures of about 6,000 to 8,000 psf and footings supported on competent bedrock can be designed assuming a bearing pressure of about 16,000 to 20,000 psf. Minimum widths for wall footings of 24 inches and column footings of 30 inches are recommended to prevent a punching-type shear failure if the design, based on the above bearing pressures, results in a narrower footing.

Where soft/loose natural soils are encountered at the footing subgrade or within the zone of foundation stress influence, the foundation excavations should extend to stable materials. Footing subgrades requiring overexcavation may be backfilled to the design bearing grade with controlled compacted fill, open-graded crushed stone meeting the gradational requirements of AASHTO Size No. 57 aggregate, or concrete. Open-graded stone may be placed in approximately 12-inch-thick loose lifts and be compacted by tamping with the equipment bucket or a vibrating-plate compactor. Controlled compacted fill should be placed and compacted in accordance with the recommendations presented in the *Earthwork* section of this report. The decision to undercut footings or perform other

foundation remedial measures should be made in the field by the geotechnical engineer during footing construction.

Settlements on the order of 1-inch total and ½-inch differential can be anticipated for footings bearing on soil, based on the assumed loads. Exterior footings should be founded a minimum of 36 inches below the final exterior grades to provide protection from frost action, or deeper if required by local building code. Interior foundations in permanently heated portions of the structures may be established at convenient depths below the floor slabs. Footings founded on sound bedrock need not extend to the required frost depth because competent bedrock is not prone to heaving when frozen.

In the case that seepage of perched or trapped water occurs throughout the site and water seepage is encountered during foundation construction, the excavation should be dewatered using sumps and removing the water by pumping away from the building site. Excavations to remove wet, soft soils should be backfilled with AASHTO No. 57 stone aggregate.

Detailed foundation subgrade evaluations should be performed by a representative of GTA in each footing excavation, prior to the placement of reinforcing steel or concrete, to confirm that the recommended allowable soil bearing capacity is available. The foundation bearing surface evaluations should be performed using a combination of visual observation, hand-rod probing, Dynamic Cone Penetrometer (DCP) testing, and comparisons with the explorations. Concrete placement should generally be performed the same day the excavations for the footings are performed to prevent exposure and potential weakening of the foundation subgrade.

Floor Design

Following the earthwork procedures recommended in this report, it is our opinion that the floor slabs can be designed as concrete slabs–on–grade. GTA recommends that the concrete floor slabs be founded on a minimum 4-inch-thick coarse granular layer. Washed gravel or crushed stone meeting the gradation of AASHTO Size No. 57 aggregate can be used for the granular layer unless otherwise required by local code. Where moisture sensitive floor finishes are planned, it is generally recommended that a polyethylene vapor retarder be installed in accordance with ACI guidelines to interrupt the rise of capillary moisture through the slabs. Undisturbed natural soil and controlled fill

subgrade materials should be observed to evaluate compaction and stability prior to the placement of the granular layer. The slabs may bear on wall projections; however, they should be jointed so that the foundation walls can settle slightly without affecting the slabs.

Floor slab subgrade soils should be evaluated by a representative of the geotechnical engineer immediately prior to stone and concrete placement. This evaluation may include a combination of visual observations, proofrolling, hand-probing, and field density tests to verify that the subgrade soils have been prepared properly. Contractors should anticipate that remedial work could be required to achieve a stable subgrade prior to stone placement, even if the subgrade soils had previously been compacted to the required densities. All interior utility trenches should be backfilled and compacted in accordance with our *Earthwork* recommendations.

Below-Grade Wall Drainage, Backfill, and Design

The soils at this site predominantly consisted of silty sands (SM) and silty gravels (GM) with varying amounts of cobbles and boulders, overlying gneiss bedrock that appears to have a significant decomposed zone, and generally presents as silty sand with gravel and cobbles where excavated. These granular soils are considered suitable for foundation wall backfill, with some limitations as discussed herein. Foundation walls should be designed to resist the lateral soil pressure from the retained backfill. This will be a function of the height of the walls, the differential height of backfill, the type of material, the drainage conditions, and the method of placement and compaction.

Below grade foundation walls will need to be designed to resist the lateral earth pressure from the soil retained in addition to loads from surface surcharges as applicable. Walls that are braced to prevent rotation should be designed for at-rest earth pressures. Walls that are free to rotate can be designed for active earth pressures. Assuming the on-site granular soils will be placed and compacted as structural fill, we recommend below-grade walls be designed using the values tabulated below. Hydrostatic pressure is not included in the above values since it is assumed that adequate drainage will be provided as described below.

LATERAL EARTH PRESSURE SUMMARY

Soil Property	Recommended Values
Unit Weight, γ_m	130 pcf
Angle of Internal Friction, Φ	32º
Coefficient of Active Earth Pressure (Ka)	0.3
Coefficient of Passive Earth Pressure (Kp)	3.2
Coefficient of Earth Pressure at Rest (Ko)	0.47
Base Friction, tan δ	0.5
Equivalent Fluid Pressure (Unrestrained Top of Wall)	45 psf/ft
Equivalent Fluid Pressure (Restrained Top of Wall, Above Water Table)	65 psf/ft

An exterior perimeter drain consisting of a minimum 4-inch diameter perforated PVC pipe should be placed at the base of the walls and should be surrounded by at least 6 inches of open-graded crushed stone or washed gravel wrapped in a non-woven geotextile filter fabric. The perimeter drain should tie into a sump pit or, where possible, should drain by gravity to the storm sewer system or daylight. All below-grade walls should be water-proofed and include wall drainage connected to the foundation drain.

Wall backfill should be free of organic matter, rocks greater than 3 inches in diameter, and construction debris. Backfill should be placed and compacted in lifts in a manner that does not damage the foundation, damp- or water-proofing, and drainage system. Foundation wall backfill should not be placed until the concrete has achieved adequate strength, the basement and first floors have been constructed, or the walls have been adequately braced from the interior of the structure.

Site Retaining Walls

The plans indicate that several tiered retaining walls will be required along the northern site boundary and additional retaining walls will be constructed throughout the development area to achieve the proposed site grading. Site retaining walls may be supported by the undisturbed natural soils, rock, or controlled compacted fill. The excavated on-site granular soils with a maximum dimension of 4-inches will likely be suitable for use in the reinforced zone of segmental block retaining walls or as backfill behind cantilevered concrete walls. We recommend any fine-grained

soils be precluded from use as wall backfill. The reinforced or backfill soils should be compacted to at least 90 percent of the maximum dry density as determined by the ASTM D-1557 modified Proctor test procedure. For preliminary planning purposes, retaining walls may be designed assuming the soil properties provided in the table on page 18. The retaining walls should be designed with wall drainage tied to the storm system to prevent the buildup of hydrostatic pressures. We recommend that walls constructed in cut areas be designed with back drainage. The site storm piping should be run above the zone of stress influence of the walls.

According to the referenced plans, parking areas and surrounding roads will be located within the active wedge of some of the proposed the site retaining walls. All surcharge loads imposed by sloping backfill above the walls, pavement areas, etc. must be considered in wall design and global stability analyses. GTA recommends that a global stability analysis be performed where significant cuts will be required to install retaining walls into the existing hillside to evaluate if the slope will remain stable during wall construction. Additional borings and laboratory testing on undisturbed sample of the saprolite will be required for this analysis. It may be determined that a "top down" type of wall(s) will be needed in the significant cut areas to maintain a stable slope. Such walls could include soldier piles with lagging or soil nail walls.

Pavements

GTA recommends that the upper 18-inches of pavement subgrade be constructed of on-site materials with the following minimum soil properties:

Liquid Limit (AASHTO T-89)	30 or less
Plasticity Index (AASHTO T-89, T-90)	14 or less
Maximum Dry Density (AASHTO T-180)	105 pcf or greater
California Bearing Ratio (AASHTO T-193)	5 percent

The laboratory testing suggests that the on-site granular soils (GM, SM) will meet the above criteria. If the pavement is underlain by at least 18 inches of predominantly granular soils, whether natural or as a result of overexcavation and replacement of the natural soils, or as a result of the

planned site grading operations, then the pavements can likely be designed assuming a CBR value of approximately 7 to 10 percent. CBR testing should be performed to confirm these estimated values. The permanent and/or temporary pavement design must consider that construction traffic will traverse paved roads that have not yet received the surface course.

Prior to construction of pavement sections, the pavement subgrade should be tested to verify design parameters and proofrolled with a loaded tandem axle dump truck under the observation of a geotechnical engineer to evaluate stability. Unsuitable soil should be overexcavated to stable subgrade soils or a maximum depth of 1 to 2 feet below the proposed subgrade level. The resultant excavations should be backfilled with granular controlled compacted fill or subbase stone aggregate. Undercutting, reworking and drying, or the use of geosynthetics may be necessary in some areas for subgrade stabilization depending on the weather conditions at the time pavement construction proceeds. Prudent planning and earthwork procedures will reduce the potential necessity for remedial work due to disturbance caused by construction equipment.

The pavement section should be designed using applicable State or Local standards for the anticipated traffic loading, and should consider that construction traffic will traverse the paved surface prior to placing the surface course. GTA should be provided the opportunity to perform or review the pavement section design.

ADDITIONAL SERVICES

We recommended that GTA be retained during construction of the subject project to provide geotechnical consultation and construction observation and testing services as outlined below:

- Supervise and observe supplementary borings and test pit explorations to further identify and characterize the bedrock once the grading plans are more fully developed.
- Review final site, grading, and structural plans to evaluate if they conform to the intent of this report.
- Provide on-site observation of site stripping, subgrade evaluation, and testing of controlled fills.

- Observe excavated footings for compliance with the project drawings and the intent of this geotechnical report.

- Observe the proofrolling of floor slab and pavement subgrades to evaluate stability.

- Perform observation and materials testing during concrete and masonry construction.

LIMITATIONS

This report, including all supporting boring and test pit logs, field data, field notes, laboratory test data, calculations, estimates and other documents prepared by GTA in connection with this Project have been prepared for the exclusive use of Hurstmont Estate Acquisitions, LLC (Client) pursuant to the Agreement between GTA and Client dated August 3, 2022 and executed on August 7, 2022, and in accordance with generally accepted engineering practice. All terms and conditions set forth in the Agreement and the General Provisions attached thereto are incorporated herein by reference. No warranty, express or implied, is made herein. Use and reproduction of this report by any other person without the expressed written permission of GTA and Client is unauthorized and such use is at the sole risk of the user.

The analysis and recommendations contained in this report are based on the data obtained from limited observation and testing of the encountered materials. Borings and test pits indicate subsurface conditions only at specific locations and times, and only at the depths penetrated. They do not necessarily reflect strata or variations that may exist between the exploration locations. Consequently, the analysis and recommendations must be considered preliminary until the subsurface conditions can be verified by direct observation at the time of construction. If variations of subsurface conditions from those described in this report are noted during construction, recommendations in this report may need to be re-evaluated.

In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report are verified in writing. GTA is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or

reuse of the subsurface data or engineering analysis without the expressed written authorization of GTA.

The scope of our services for this geotechnical exploration did not include any environmental assessment or investigation for the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around this site. Any statements in this report or on the logs regarding odors or unusual or suspicious items or conditions observed are strictly for the information of our Client.

This report and the attached logs are instruments of service. The subject matter of this report is limited to the facts and matters stated herein. Absence of a reference to any other conditions or subject matter shall not be construed by the reader to imply approval by the writer.

31221732 **GEO-TECHNOLOGY ASSOCIATES, INC.**

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

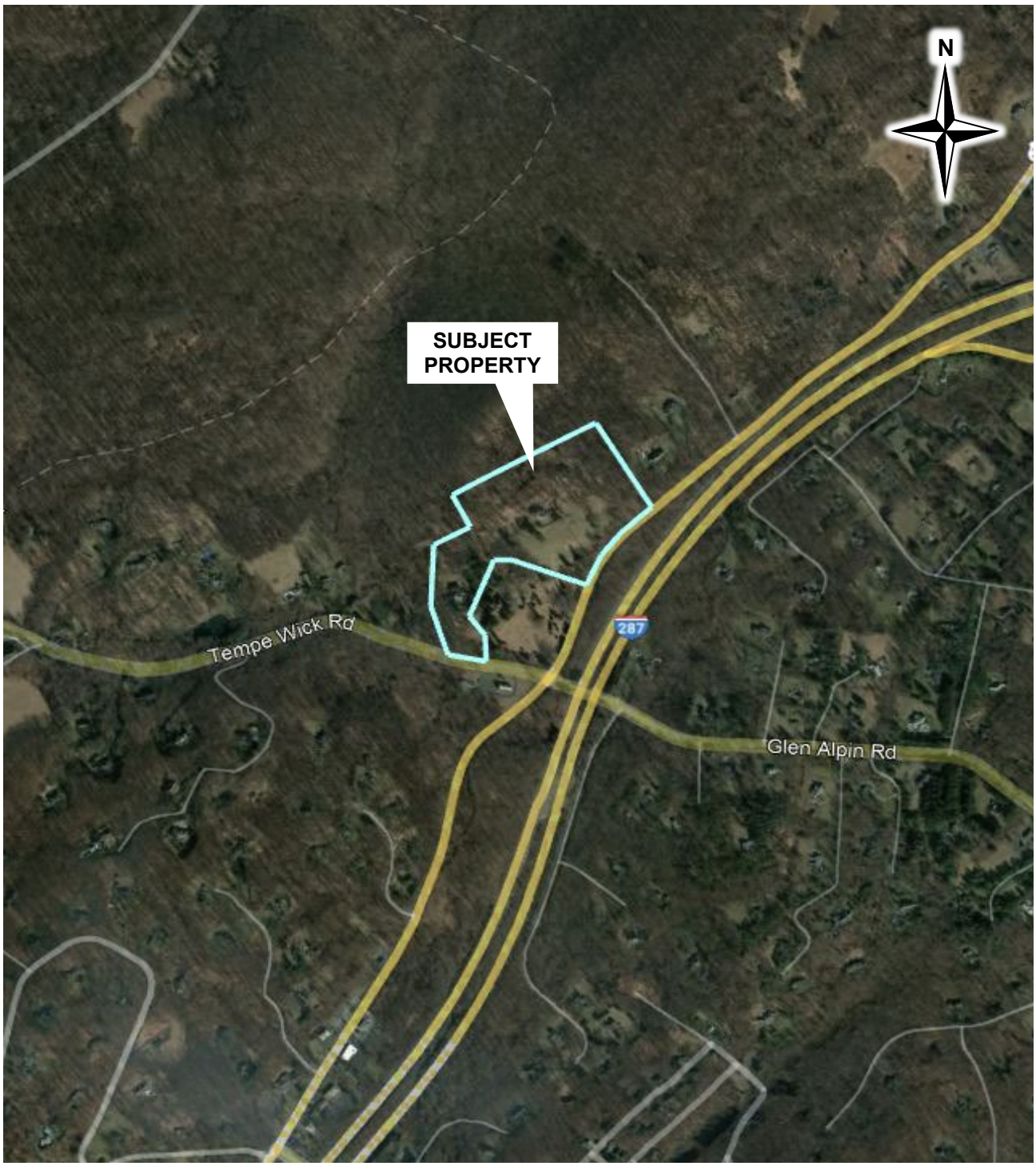
While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

APPENDIX A

Figures



Note: Site boundary is approximate.

SITE LOCATION MAP

14 Worlds Fair Drive, Suite A
Somerset, New Jersey 08873
(732) 271-9301
fax (732) 271-9306

GEO-TECHNOLOGY ASSOCIATES, INC.

HURSTMONT ESTATE

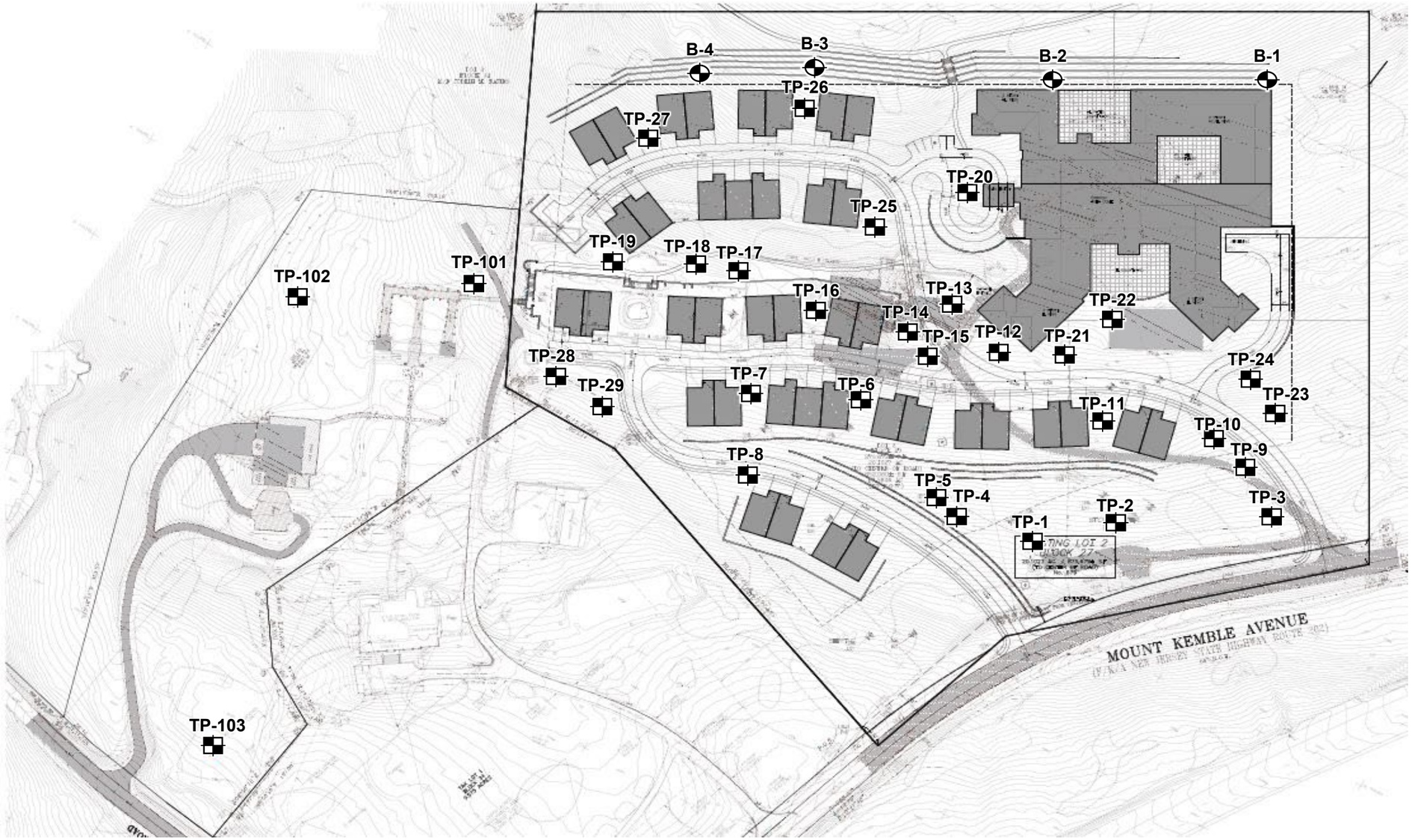
Harding Township,
Morris County, New Jersey

Prepared For: Hurstmont Estate Acquisition, LLC

SOURCE: Google Maps

SCALE: NTS	DATE: SEPT. 2022	PROJECT #: 31221732

Figure 1



*Base plan prepared by Gladstone Design, Inc. titled "Concept Plan" dated August 2, 2022.

LEGEND:

B-X Indicates the numberts and approximate locations of borings performed by GTA for this study.

TP-X Indicates the numbers and approximate locations of test pits performed by GTA for this study.

EXPLORATION LOCATION PLAN

14 Worlds Fair Drive, Suite A
Somerset, New Jersey 08873
(732) 271-9301
fax (732) 271-9306

GEO-TECHNOLOGY ASSOCIATES, INC.

HURSTMONT ESTATE

Harding Township,
Morris County, New Jersey

Prepared For: Hurstmont Estate Acquisition, LLC

DESIGN BY: *	DRAWN BY: DSP	REVIEWED BY: AMT
SCALE: NTS	DATE: SEPT. 2022	PROJECT #: 31221732

Figure 2

APPENDIX B

Exploration Logs

NOTES FOR EXPLORATION LOGS

KEY TO USCS TERMINOLOGY AND GRAPHIC SYMBOLS

MAJOR DIVISIONS (BASED UPON ASTM D 2488)				SYMBOLS GRAPHIC	SYMBOLS LETTER
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 15% PASSING THE NO. 200 SIEVE)			GW
					GP
		GRAVELS WITH FINES (MORE THAN 15% PASSING THE NO. 200 SIEVE)			GM
					GC
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LESS THAN 15% PASSING THE NO. 200 SIEVE)			SW
					SP
		SANDS WITH FINES (MORE THAN 15% PASSING THE NO. 200 SIEVE)			SM
					SC
FINE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILT OR CLAY (<15% RETAINED ON THE NO. 200 SIEVE) SILT OR CLAY WITH SAND OR GRAVEL (15% TO 30% RETAINED ON THE NO. 200 SIEVE) SANDY OR GRAVELLY SILT OR CLAY (>30% RETAINED ON THE NO. 200 SIEVE)	SILTS AND LEAN CLAYS LIQUID LIMIT LESS THAN 50			ML
					CL
					OL
		ELASTIC SILTS AND FAT CLAYS LIQUID LIMIT GREATER THAN 50			MH
					CH
					OH
HIGHLY ORGANIC SOILS					PT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE COARSE-GRAINED SOILS WHICH CONTAIN AN ESTIMATED 5 TO 15% FINES BASED ON VISUAL CLASSIFICATION OR BETWEEN 5 AND 12% FINES BASED ON LABORATORY TESTING; AND FINE-GRAINED SOILS WHEN THE PLOT OF LIQUID LIMIT & PLASTICITY INDEX VALUES FALLS IN THE PLASTICITY CHART'S CROSS-HATCHED AREA. FINE-GRAINED SOILS ARE CLASSIFIED AS ORGANIC (OL OR OH) WHEN ENOUGH ORGANIC PARTICLES ARE PRESENT TO INFLUENCE ITS PROPERTIES. LABORATORY TEST RESULTS ARE USED TO SUPPLEMENT SOIL CLASSIFICATION BY THE VISUAL-MANUAL PROCEDURES OF ASTM D 2488.

ADDITIONAL TERMINOLOGY AND GRAPHIC SYMBOLS

	DESCRIPTION		GRAPHIC SYMBOLS
ADDITIONAL DESIGNATIONS	TOPSOIL		
	MAN MADE FILL		
	GLACIAL TILL		
	COBBLES AND BOULDERS		
RESIDUAL SOIL DESIGNATIONS	DESCRIPTION	"N" VALUE	
	HIGHLY WEATHERED ROCK	50 TO 50/1"	
	PARTIALLY WEATHERED ROCK	MORE THAN 50 BLOWS FOR 1" OF PENETRATION OR LESS, AUGER PENETRABLE	

COARSE-GRAINED SOILS
(GRAVEL AND SAND)

DESIGNATION	BLOWS PER FOOT (BPF) "N"
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	>50

NOTE: "N" VALUE DETERMINED AS PER ASTM D 1586

FINE-GRAINED SOILS
(SILT AND CLAY)

CONSISTENCY	BPF "N"
VERY SOFT	<2
SOFT	2 - 4
MEDIUM STIFF	5 - 8
STIFF	9 - 15
VERY STIFF	16 - 30
HARD	>30

NOTE: ADDITIONAL DESIGNATIONS TO ADVANCE SAMPLER INDICATED IN BLOW COUNT COLUMN:
WOH = WEIGHT OF HAMMER
WOR = WEIGHT OF ROD(S)

SAMPLE TYPE

DESIGNATION	SYMBOL
SOIL SAMPLE	S-
SHELBY TUBE	U-
ROCK CORE	R-

WATER DESIGNATION

DESCRIPTION	SYMBOL
ENCOUNTERED DURING DRILLING	▽
UPON COMPLETION OF DRILLING	▼
24 HOURS AFTER COMPLETION	▼

NOTE: WATER OBSERVATIONS WERE MADE AT THE TIME INDICATED. POROSITY OF SOIL STRATA, WEATHER CONDITIONS, SITE TOPOGRAPHY, ETC. MAY CAUSE WATER LEVEL CHANGES.

LOG OF BORING NO. B-1

PROJECT: **Hurstmont Estate**
PROJECT NO.: **31221732**
PROJECT LOCATION: **Harding Township, Morris County, NJ**

WATER LEVEL (ft):	N/E	N/E	N/A
DATE:	8/25/2022	8/25/2022	-
CAVED (ft):	In casing	25 Ft.	BOC

DATE STARTED: **8/25/2022**
DATE COMPLETED: **8/25/2022**
DRILLING CONTRACTOR: **Environmental Technical Drilling, Inc.**
DRILLER: **Mike Kane**
DRILLING METHOD: **Mud Rotary**
SAMPLING METHOD: **Split-Spoon**

GROUND SURFACE ELEVATION: **499 Ft.**
DATUM: **Topo**
EQUIPMENT: **CME 55**
HAMMER TYPE: **Automatic**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S1	0.0	19	2-3-4-8	7	499.0	0	ML		8 In. of Topsoil Dark yellow-brown, moist, medium stiff, Sandy SILT - very stiff, with gravel and cobbles at 2 Ft. - hard at 4 Ft.	
S2	2.0	21	8-9-18-19	27	498.3					
S3	4.0	18	16-15-17-12	32						
S4	6.0	16	5-9-12-14	21	493.0		HW		Dark yellow-brown and gray, moist, medium dense, Decomposed Gneiss (Saprolite), presented as silty sand - very dense at 9 Ft.	
S5	8.0	19	13-14-30-47	44		10				
S6	10.0	22	47-42-28-45	70						
S7	13.0	4	50/4"	50/4"						- Sampler refusal at 13 Ft. 4 In.
S8	18.0	7	50-50/1"	50/1"		20				
S9	23.0	15	32-47-50/4"	97						
S10	28.0	4	50/4"	50/4"		30				
C1	35.0	52			464.0		ROCK		Gray, GNEISS ROCK, moderately weathered, moderately fractured Recovery: 86% RQD: 37%	- Roller bit refusal at 35 Ft.
					459.0	40			Boring complete at 40 Ft.	
						50				
						60				

NOTES: **Elevation and location are approximate.**
BOC: Backfilled on completion.

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF BORING NO. B-1

LOG OF BORING NO. B-2

PROJECT: **Hurstmont Estate**
PROJECT NO.: **31221732**
PROJECT LOCATION: **Harding Township, Morris County, NJ**

WATER LEVEL (ft):	N/E	N/E	N/A
DATE:	8/25/2022	8/25/2022	-
CAVED (ft):	In casing	22 Ft.	BOC

DATE STARTED: **8/25/2022**
DATE COMPLETED: **8/25/2022**
DRILLING CONTRACTOR: **Environmental Technical Drilling, Inc.**
DRILLER: **Mike Kane**
DRILLING METHOD: **Mud Rotary**
SAMPLING METHOD: **Split-Spoon**

GROUND SURFACE ELEVATION: **512 Ft.**
DATUM: **Topo**
EQUIPMENT: **CME 55**
HAMMER TYPE: **Automatic**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S1	0.0	10	4-8-9-8	17	512.0	0	ML		5 In. of Topsoil	
S2	2.0	22	11-11-13-14	24	511.6				Dark yellow-brown, moist, very stiff, Sandy SILT	
S3	4.0	17	24-19-17-16	36					- hard, with cobbles at 4 Ft.	
S4	6.0	22	8-8-8-10	16	506.0		HW		Dark yellow-brown and gray, moist, medium dense, Decomposed Gneiss (Saprolite), presented as silty sand	
S5	8.0	18	4-6-7-8	13		10				
S6	13.0	18	4-4-6-8	10						
S7	18.0	18	11-8-8-14	16		20				
S8	23.0	19	24-37-32-42	69					- very dense at 23 Ft.	
S9	28.0	0	50/1"	50/1"		30				- Sampler refusal at 28 Ft. 1 In.
					481.0				Boring complete at 31 Ft. due to refusal on competent rock.	- Roller bit refusal at 31 Ft.
						40				
						50				
						60				

NOTES: **Elevation and location are approximate.**
BOC: Backfilled on completion.

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF BORING NO. B-2

LOG OF BORING NO. B-3

PROJECT: **Hurstmont Estate**
PROJECT NO.: **31221732**
PROJECT LOCATION: **Harding Township, Morris County, NJ**

WATER LEVEL (ft):	N/E	N/E	N/A
DATE:	8/26/2022	8/26/2022	-
CAVED (ft):	In casing	20 Ft.	BOC

DATE STARTED: **8/26/2022**
DATE COMPLETED: **8/26/2022**
DRILLING CONTRACTOR: **Environmental Technical Drilling, Inc.**
DRILLER: **Mike Kane**
DRILLING METHOD: **Mud Rotary**
SAMPLING METHOD: **Split-Spoon**

GROUND SURFACE ELEVATION: **528 Ft.**
DATUM: **Topo**
EQUIPMENT: **CME 55**
HAMMER TYPE: **Automatic**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S1	0.0	6	6-5-9-12	14	528.0	0	SM		5 In. of Topsoil	
					527.6				Dark yellow-brown, moist, medium dense, Silty SAND with gravel and cobbles	- Hard drilling at 2 Ft.
S2	3.0	16	13-12-10-13	22	525.0		HW		Dark yellow-brown, moist, medium dense, Decomposed Gneiss (Saprolite), presented as silty sand	
S3	8.0	15	5-7-8-8	15		10				
S4	13.0	16	20-32-50/4"	82					- very dense at 13 Ft.	- Sampler refusal at 14 Ft. 4 In.
S5	18.0	2	50/5"	50/5"		20				
S6	23.0	2	50/2"	50/2"	504.0		ROCK		Gray, GNEISS ROCK, moderately weathered, moderately fractured,	- Roller bit refusal at 24 Ft.
C1	24.0	42							C-1 - Recovery: 100% RQD: 50%	
C2	27.5	22							C-2 - Recovery: 92% RQD: 77%	
					498.5	30			Boring complete at 29 Ft. 6 In.	
						40				
						50				
						60				

NOTES: **Elevation and location are approximate.**
BOC: Backfilled on completion.

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Somerset, NJ 08873

LOG OF BORING NO. B-3

LOG OF BORING NO. B-4

PROJECT: **Hurstmont Estate**
PROJECT NO.: **31221732**
PROJECT LOCATION: **Harding Township, Morris County, NJ**

WATER LEVEL (ft):	N/E	N/E	N/A
DATE:	8/26/2022	8/26/2022	-
CAVED (ft):	In casing	16 Ft.	BOC

DATE STARTED: **8/26/2022**
DATE COMPLETED: **8/26/2022**
DRILLING CONTRACTOR: **Environmental Technical Drilling, Inc.**
DRILLER: **Mike Kane**
DRILLING METHOD: **Mud Rotary**
SAMPLING METHOD: **Split-Spoon**

GROUND SURFACE ELEVATION: **516 Ft.**
DATUM: **Topo**
EQUIPMENT: **CME 55**
HAMMER TYPE: **Automatic**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S1	0.0	17	2-4-6-8	10	516.0	0	SM		5 In. of Topsoil	
					515.6				Dark yellow-brown, moist, loose to medium dense, Silty SAND with gravel	
S2	3.0	16	10-12-10-12	22	511.5		HW		Dark yellow-brown, moist, medium dense, Decomposed Gneiss (Saprolite), presented as silty sand	
S3	8.0	15	13-19-33-43	52		10			- very dense at 8 Ft.	
S4	13.0	11	46-49-50/2"	99						- Sampler refusal at 14 Ft. 2 In.
S5	18.0	1	50/1"	50/1"	497.5	20			Boring complete at 18 Ft. 6 In. due to refusal on competent rock.	- Roller bit refusal at 18 Ft. 6 In.
						30				
						40				
						50				
						60				

NOTES: **Elevation and location are approximate.**
BOC: Backfilled on completion.

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LOG OF BORING NO. B-4

LOG OF TEST PIT NO. TP-1

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/17/2022**
DATE COMPLETED: **8/17/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **411 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
410.3	0			9 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel, cobbles, and boulders	- Infiltration rate = 0 in/hr at 6 Ft.
403.0	5	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
396.0	10			Test pit complete at 15 Ft.	
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-1

LOG OF TEST PIT NO. TP-2

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **416 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
415.0				12 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel and cobbles	- Infiltration rate = 0.75 in/hr at 4 Ft.
	5				
409.5		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 6-1/2 Ft.
	10				
404.0				Test pit terminated at 12 Ft. due to refusal on weathered rock.	
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-2

LOG OF TEST PIT NO. TP-3

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **413 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
412.0				12 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel	
411.0		GM		Dark yellow-brown, moist, Silty GRAVEL with cobbles and boulders	
408.0	5	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 4 Ft. - Infiltration rate = 1.25 in/hr at 6 Ft.
	10				
398.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-3

LOG OF TEST PIT NO. TP-4

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/17/2022**
DATE COMPLETED: **8/17/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **415 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
414.6	0			5 In. of Topsoil	
				FILL - Dark yellow-brown, moist, silty sand with gravel - with metal pipe (2 In. diameter) at 1 Ft. - with an abandoned ceramic pipe (6 In. diameter) at 2 Ft.	
412.5		SM		Dark yellow-brown, moist, Silty SAND with gravel	
411.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	
	5				- Infiltration rate = 0 in/hr at 6 Ft.
406.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
400.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-4

LOG OF TEST PIT NO. TP-5

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**

PROJECT NO.: **31221732**

DATE STARTED: **8/17/2022**
DATE COMPLETED: **8/17/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **419 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
418.3	0			8 In. of Topsoil	
				FILL - Dark yellow-brown, moist, silty sand with gravel and cobbles	
416.0				- with metal pipe (3 In. diameter) at 2-1/2 Ft.	
415.0		SM		Dark yellow-brown, moist, Silty SAND	
	5	GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	- Hard excavating at 4 Ft. - Infiltration rate = 1 in/hr at 6 Ft.
411.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
404.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-5

LOG OF TEST PIT NO. TP-6

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/17/2022**
DATE COMPLETED: **8/17/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **439 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
438.6	0	SM		5 In. of Topsoil Dark yellow-brown, moist, Silty SAND with gravel	
437.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand and cobbles	
434.0	5	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
424.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-6

LOG OF TEST PIT NO. TP-7

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/17/2022**
DATE COMPLETED: **8/17/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **437 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
436.3				8 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel and cobbles	
432.0	5	GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	
430.5		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
422.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-7

LOG OF TEST PIT NO. TP-8

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/17/2022**
DATE COMPLETED: **8/17/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **420 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
419.2	0			10 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel - with cobbles at 2 Ft.	
	5				
411.0					
	10	CL-ML		Dark yellow-brown, moist, Gravelly Silty CLAY	
409.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand and cobbles	
407.5		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
405.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-8

LOG OF TEST PIT NO. TP-9

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **423 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
				4 In. of stone	
422.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand	
				- with cobbles and boulders at 3 Ft.	- Hard excavating at 3 Ft.
	5				- Infiltration rate = 1.5 in/hr at 6 Ft.
415.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
408.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-9

LOG OF TEST PIT NO. TP-10

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **428 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
427.0				12 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel	
425.5		GM		Dark yellow-brown, moist, Silty GRAVEL with sand and cobbles - with boulders at 3-1/2 Ft.	- Hard excavating at 2-1/2 Ft.
	5				
422.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Infiltration rate = 3 in/hr at 6 Ft.
	10				
415.0				Test pit terminated at 13 Ft. due to refusal on weathered rock.	
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-10

LOG OF TEST PIT NO. TP-11

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **439 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
438.0				12 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel	
436.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand and cobbles	- Hard excavating at 3 Ft.
	5				
432.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
428.0				Test pit terminated at 11 Ft. due to refusal on weathered rock.	
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-11

LOG OF TEST PIT NO. TP-12

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **450 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
449.2	0			10 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND	
446.0	5	GM		Dark yellow-brown, moist, Silty GRAVEL with sand and cobbles	- Infiltration rate = 2 in/hr at 6 Ft.
442.0	10	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
435.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-12

LOG OF TEST PIT NO. TP-13

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/18/2022**
DATE COMPLETED: **8/18/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **459 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
458.3	0			8 In. of Topsoil	
				FILL - Dark yellow-brown, moist, silty gravel with sand	
				- with concrete fragments at 3 Ft.	
	5			- Dark yellow-brown, moist, silty sand with gravel at 4 Ft.	
				- with boulders at 6 Ft.	- Infiltration rate = 5 in/hr at 6 Ft.
451.5				- with ceramic pipe (8 In. in diameter) at 7 Ft.	
451.0		SM		Dark yellow-brown, moist, Silty SAND	
		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 8 Ft.
	10				
444.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-13

LOG OF TEST PIT NO. TP-14

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **456 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0			FILL - Dark yellow-brown, moist, silty gravel with sand, cobbles, boulders, concrete, and asphalt fragments	
454.0		SM		Dark yellow-brown, moist, Silty SAND with gravel	
	5				
449.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Infiltration rate = 3.75 in/hr at 6-1/2 Ft.
	10				
441.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-14

LOG OF TEST PIT NO. TP-15

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **451 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
450.6	0			5 In. of Topsoil	
				FILL - Dark yellow-brown, moist, silty sand with gravel and cobbles	
449.0		SM		Dark yellow-brown, moist, Silty SAND	
	5				- Infiltration rate = 3 in/hr at 6 Ft.
444.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand	
	10				
440.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 12 Ft.
436.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-15

LOG OF TEST PIT NO. TP-16

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **455 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
454.2				10 In. of Topsoil	
				FILL - Dark yellow-brown, moist, silty sand with gravel	
				- with cobbles at 3-1/2 Ft.	
	5				
				- with buried topsoil (6 In. in thickness) at 7-1/2 Ft.	
447.0		SM		Dark yellow-brown, moist, Silty SAND	
446.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
440.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-16

LOG OF TEST PIT NO. TP-17

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **456 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
455.8	0			3 In. of Topsoil	
455.0		HW		FILL - Dark yellow-brown, moist, silty gravel with sand and cobbles	- Infiltration test attempted at 1 Ft., terminated due to leakage.
				Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite)	
451.0	5			Test pit terminated at 5 Ft. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-17

LOG OF TEST PIT NO. TP-18

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **456 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	DESCRIPTION	REMARKS
455.8	0		3 In. of Topsoil	- Cobbles and boulders at ground surface.
			FILL - Dark yellow-brown, moist, silty gravel with sand - Dark yellow-brown, moist, silty sand at 1-1/2 Ft. - with metal pipe at 2 Ft.	
453.5		SM	Dark yellow-brown, moist, Silty SAND	
	5			- Infiltration rate = 7.5 in/hr at 5-1/2 Ft.
448.0		HW	Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10			
441.0	15		Test pit complete at 15 Ft.	
	20			
	25			
	30			

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-18

LOG OF TEST PIT NO. TP-19

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **453 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
452.7	0			4 In. of Topsoil FILL - Dark yellow-brown, moist, silty sand with gravel and cobbles	
450.0	5	SM		Dark yellow-brown, moist, Silty SAND with cobbles	
447.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	
445.0	10	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
438.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-19

LOG OF TEST PIT NO. TP-20

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **485 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
484.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel and cobbles	
	5				
476.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
470.0	15			Test pit complete at 13 Ft. 6 In.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-20

LOG OF TEST PIT NO. TP-21

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **450 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
449.7	0	SM		4 In. of Topsoil Dark yellow-brown, moist, Silty SAND with gravel and cobbles - with boulder at 1 Ft.	- Infiltration rate = 1 in/hr at 4 Ft.
444.0	5	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
435.0	10 15			Test pit complete at 15 Ft.	
	20 25 30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-21

LOG OF TEST PIT NO. TP-22

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/19/2022**
DATE COMPLETED: **8/19/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **457 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
456.7	0			4 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel - with cobbles at 1 Ft.	
453.0	5	GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	- Infiltration rate = 3 in/hr at 5 Ft.
451.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	10				
442.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-22

LOG OF TEST PIT NO. TP-23

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **433 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
432.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel - with cobbles at 1 Ft.	- Infiltration rate = 6 in/hr at 1 Ft.
430.5		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 3 Ft.
	5				
426.0				Test pit terminated at 7 Ft. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-23

LOG OF TEST PIT NO. TP-24

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **445 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
444.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel	- Infiltration rate = 3 in/hr at 1-1/2 Ft.
442.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 3 Ft.
	5				
438.0				Test pit terminated at 7 Ft. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-24

LOG OF TEST PIT NO. TP-25

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/22/2022**
DATE COMPLETED: **8/22/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **478 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
477.9	0	SM		1 In. of Topsoil Dark yellow-brown, moist, Silty SAND with gravel	
475.0	5	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 3 Ft.
471.0				Test pit terminated at 7 Ft. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-25

LOG OF TEST PIT NO. TP-26

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/22/2022**
DATE COMPLETED: **8/22/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **513 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
512.9	0	GM		1 In. of Topsoil Dark yellow-brown, moist, Silty GRAVEL with sand	
511.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	- Hard excavating at 2 Ft.
507.0	5			Test pit terminated at 6 Ft. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-26

LOG OF TEST PIT NO. TP-27

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/22/2022**
DATE COMPLETED: **8/22/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **491 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
490.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel - with cobbles at 2 Ft.	
487.0	5	GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	
481.0	10	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
476.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-27

LOG OF TEST PIT NO. TP-28

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **431 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
430.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND wtih gravel	
				- with cobbles at 2 Ft.	
	5	ML		Sandy SILT	- Infiltration rate = 1.5 in/hr at 5 Ft.
421.0	10	ML		Dark yellow-brown, moist, Sandy SILT with gravel	
419.5		GM		Dark yellow-brown, moist, Silty GRAVEL with sand	
416.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-28

LOG OF TEST PIT NO. TP-29

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **428 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
427.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND	
426.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	
	5			- with large boulder at 7 Ft.	- Infiltration rate = 0.5 in/hr at 6 Ft. - Hard excavating at 7 Ft.
	10				
416.0				Test pit terminated at 12 Ft. due to refusal on boulder.	
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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Somerset, NJ 08873

LOG OF TEST PIT NO. TP-29

LOG OF TEST PIT NO. TP-101

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **429 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
428.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel and cobbles	
427.0		HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
	5				
420.5				Test pit terminated at 8 Ft. 6 In. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-101

LOG OF TEST PIT NO. TP-102

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **412 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
411.5	0			6 In. of Topsoil	
		SM		Dark yellow-brown, moist, Silty SAND with gravel	
408.0		GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	- Hard excavating at 4 Ft.
407.0	5	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
404.0				Test pit terminated at 8 Ft. due to refusal on weathered rock.	
	10				
	15				
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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LOG OF TEST PIT NO. TP-102

LOG OF TEST PIT NO. TP-103

PROJECT: **Hurstmont Estate**
PROJECT LOCATION: **Harding Township, Morris County, New Jersey**
CLIENT: **Hurstmont Estate Acquisition, LLC**
DATE STARTED: **8/23/2022**
DATE COMPLETED: **8/23/2022**
CONTRACTOR: **Heritage Contracting Company, Inc.**
EQUIPMENT: **Kobelco 135SR**

PROJECT NO.: **31221732**
GROUNDWATER ENCOUNTERED: **N/E**
GROUND SURFACE ELEVATION: **368 Ft.**
DATUM: **Topo**
LOGGED BY: **AFS**
CHECKED BY: **AMT**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
367.7	0	SM		4 In. of Topsoil Dark yellow-brown, moist, Silty SAND	
365.0	5	GM		Dark yellow-brown, moist, Silty GRAVEL with sand, cobbles, and boulders	
359.0	10	HW		Dark yellow-brown, gray, and white, moist, Decomposed Gneiss (Saprolite), presented as silty sand	
353.0	15			Test pit complete at 15 Ft.	
	20				
	25				
	30				

NOTES: **Location and elevation are approximate.**
Backfilled on completion.

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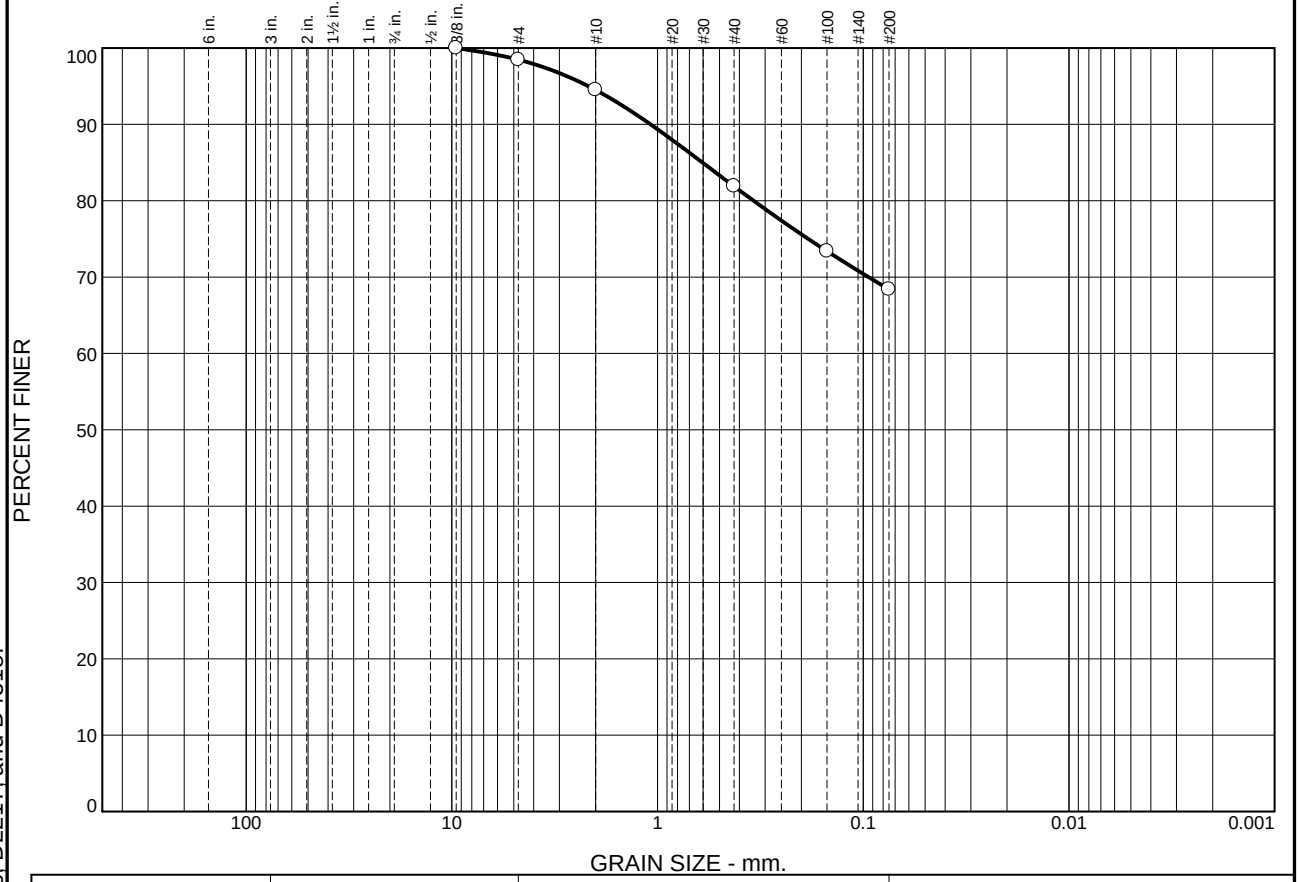
LOG OF TEST PIT NO. TP-103

APPENDIX C

Laboratory Data

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.5	4.0	12.6	13.5	68.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.6045							

Material Description	USCS	AASHTO
○ Sandy SILT	ML	A-4(0)

Project No. 31221732 **Client:** Hurstmont Estate Acquisition, LLC

Project: Hurstmont Estate

○ **Source of Sample:** B-2 **Depth:** 2 **Sample Number:** S2

Remarks:

○NMC = 14.4%

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Figure

ASTM Specifications performed my include: D421, D422, D2216, D2217, and D4318.

Tested By: DRC/BW **Checked By:** AMT

Particle Size Distribution Report

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	29.6	9.3	2.5	6.3	7.8	44.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NP	NP	30.3894	3.0811	0.2520					

Material Description	USCS	AASHTO
○ Silty GRAVEL with sand	GM	A-4(0)

Project No. 31221732 **Client:** Hurstmont Estate Acquisition, LLC

Project: Hurstmont Estate

○ **Source of Sample:** TP-4 **Depth:** 6

Remarks:

○NMC = 12.3%

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Figure

ASTM Specifications performed my include: D421, D422, D2216, D2217, and D4318.

Tested By: DRC/BW **Checked By:** AMT

Particle Size Distribution Report

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	20.0	9.3	0.8	3.3	6.7	59.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	27.0	21.4	20.7798	0.0762						

Material Description	USCS	AASHTO
○ Gravelly Silty CLAY	CL-ML	A-4(2)

Project No. 31221732 **Client:** Hurstmont Estate Acquisition, LLC

Project: Hurstmont Estate

○ **Source of Sample:** TP-8 **Depth:** 9

Remarks:

○NMC = 20.1%

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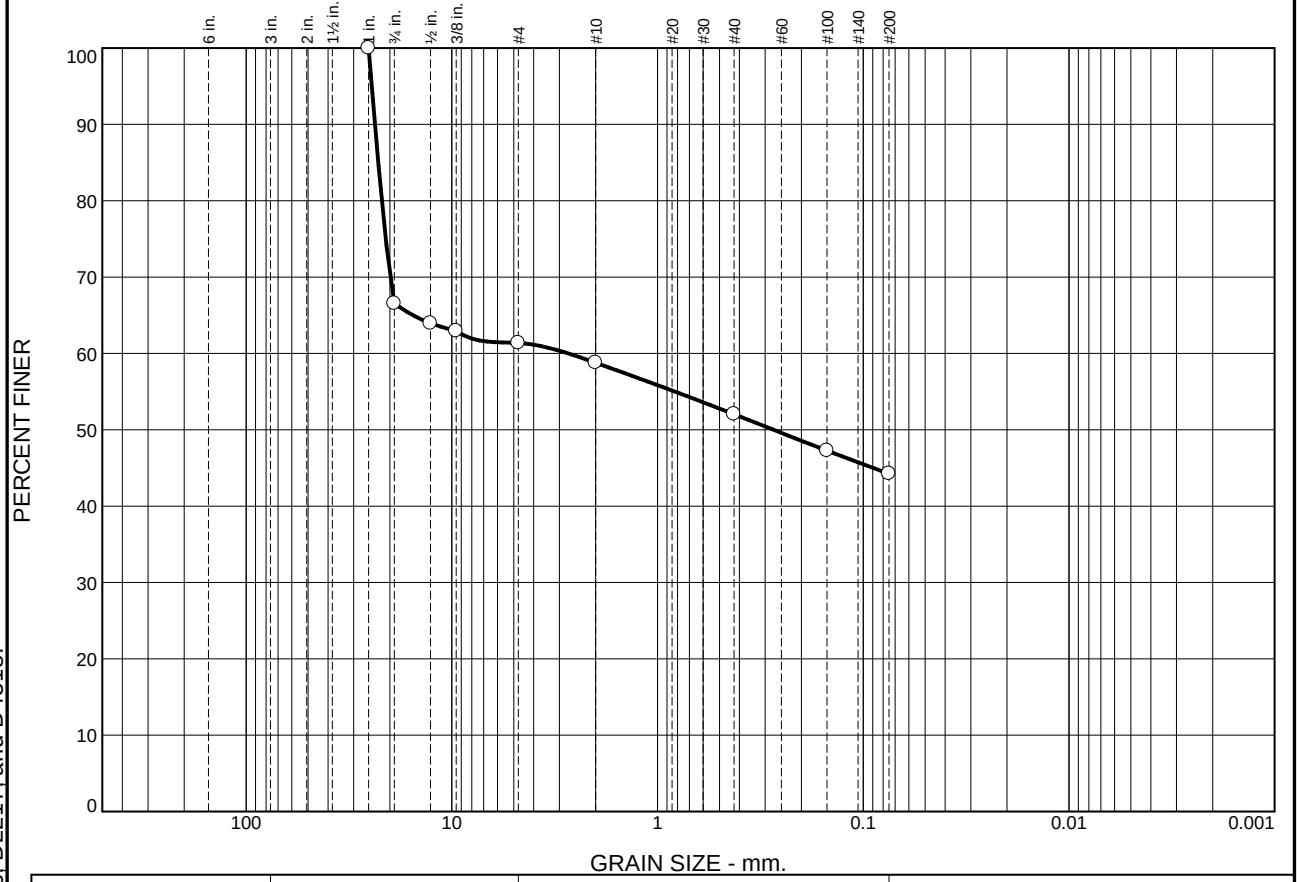
Figure

ASTM Specifications performed my include: D421, D422, D2216, D2217, and D4318.

Tested By: DRC/BW **Checked By:** AMT

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	33.5	5.1	2.6	6.8	7.7	44.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NP	NP	22.7769	2.7148	0.2730					

Material Description	USCS	AASHTO
○ Silty GRAVEL with sand	GM	A-4(0)

Project No. 31221732 **Client:** Hurstmont Estate Acquisition, LLC

Project: Hurstmont Estate

○ **Source of Sample:** TP-15 **Depth:** 7

Remarks:

○NMC = 16.2%

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Figure

ASTM Specifications performed my include: D421, D422, D2216, D2217, and D4318.

Tested By: DRC/BW **Checked By:** AMT

Particle Size Distribution Report

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.5	7.2	3.8	8.1	8.9	68.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NP	NP	1.8262							

Material Description	USCS	AASHTO
○ Sandy SILT	ML	A-4(0)

Project No. 31221732 **Client:** Hurstmont Estate Acquisition, LLC

Project: Hurstmont Estate

○ **Source of Sample:** TP-28 **Depth:** 5

Remarks:

○NMC = 12.4%

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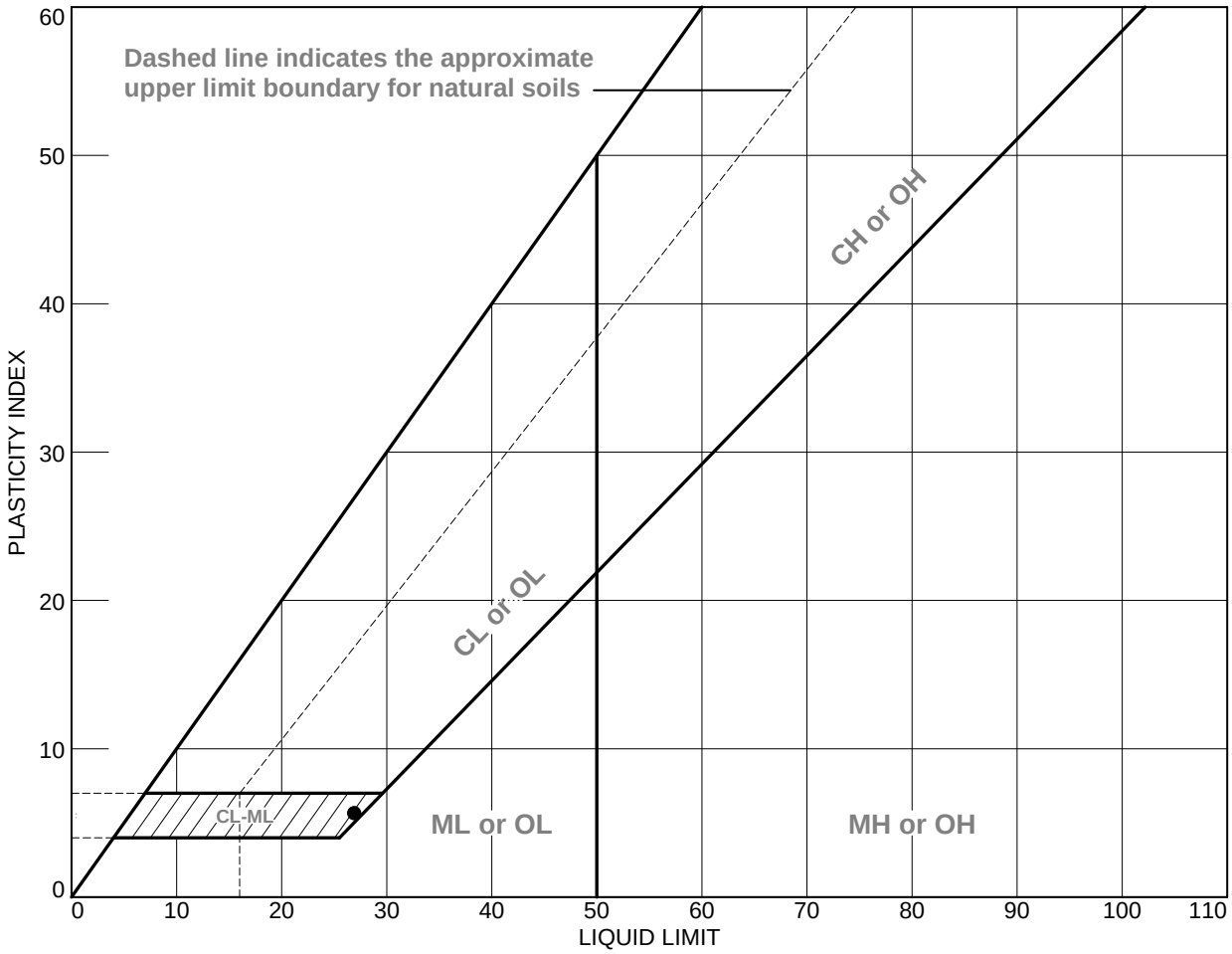
Figure

ASTM Specifications performed my include: D421, D422, D2216, D2217, and D4318.

Tested By: DRC/BW **Checked By:** AMT

LIQUID AND PLASTIC LIMITS TEST REPORT - ASTM D4318



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	TP-8		9	20.1	21.4	27.0	5.6	CL-ML

ASTM Specifications performed my include: D421, D422, D2216, D2217, and D4318.

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Client: Hurstmont Estate Acquisition, LLC
Project: Hurstmont Estate

Project No.: 31221732 **Figure**

Tested By: DRC **Checked By:** AMT