

GORDON SERVICES – KEENE PIT 2024 HYDROGEOLOGIC INVESTIGATION REPORT



57 Route 9, Keene, New Hampshire City of Keene Tax Map 215 Block 7 Town of Sullivan Tax Map 583 Lot 46 & 46-1

Prepared For:

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FRONTIER GEOSERVICES 127 OLD WARNER ROAD BRADFORD, NEW HAMPSHIRE 03221

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1.0 INTRODUCTION

Frontier Geoservices, LLC. (Frontier) has completed a hydrogeological investigation at the property located at 57 Route 9, in the City of Keene, Cheshire County, New Hampshire The parcels comprising the Site are identified by the City of Keene's Assessor's office on Tax Map 215 as Block 7 (102.7-acres) and the Town of Sullivan, New Hampshire, Assessor's office on Tax Map 5 Lot 46 (172-acres) and 46-1 (25.82-acres. The Site is currently owned by G2 Holdings, LLC. of 250 North Street, Jaffrey, New Hampshire. Please refer to **Figure 1** for a **Site Location Map**.

Currently, the Site operates as a gravel and earth removal operation for Gordon Services. The current operations are permitted to only encompass one area, Period 8, of the Site. Gordon Services wishes to expand their current operations to include additional excavation in Period 8 and new excavations in Periods 1-7. Please refer to **Figure 2** for a **Site Plan/Monitoring Well Location Map**.

Applicants proposing Earth Excavation are required to provide the information requested in The City of Keene's Article 25 Earth Excavation Regulation. This report provides the information required to fulfill The City of Keene's Article 25.3.4 Groundwater Quantity. Site activities included the installation of eight (8) overburden monitoring wells and eight (8) bedrock monitoring wells. Monitoring groundwater elevations in the wells was conducted over a minimum of a 2-week period. Additional information was provided through a Limited Hydrogeologic Investigation Report completed by SLR International Corporation of Bedford, New Hampshire, dated March 25, 2022.

It should be noted that based on the results of this investigation and the previous, dewatering of the proposed excavation is not required.

2.0 SITE SETTING

The Site consists of a total of 300.52 acres of undeveloped land. The Site has a central latitude of 42°58'27.03" north and longitude of 72°13'34.66" west. The Site currently operates as a gravel and earth removal operation for Gordon Services. As previously mentioned, the Site currently only operates within the limits of Period 8 as shown on the Site Plan.

2.1 Description of Structures, Roads and other Improvements

The Site is accessed from the northern side of Route 9 in Keene, New Hampshire via a gravel driveway. The gravel driveway directs traffic to the east and west when entering the pit area. Prior to entering the pit area there is a fueling area, storage shed, and porta-potty located to the east. The current pit area has an elevation of 880-ft above mean sea level (AMSL). Earth removal and processing equipment is staged on the pit floor. Surface water drainage is currently directed to an infiltration basin located on the western side of the current Period 8 excavation. The proposed project area is accessed via former logging roads which were recently cleared.

2.2 Current Use of Adjoining Properties

South of the Site is New Hampshire State Route 9. To the east of the Site is a property which consists of various buildings which are occasionally used by the Habitat for Humanity. This property is also owned by G2 Holdings, LLC. There are no other developed properties located to the east of the Site. Several residential properties exist approximately 1,000-feet northwest of the northern property boundary. There are no developed parcels abutting to the east of the Site.

2.3 Site Physical Setting

The target property is depicted on the Marlborough, New Hampshire United States Geological Survey (USGS) 7.5 Minute Topographic Map dated 2018 at approximately 42°58'27.03" north and 72°13'34.66" west with a current pit floor elevations of 880-feet above the North American Datum (NAD) of 1983.

Based on review of the *Bedrock Geologic Map of New Hampshire*, 1997, bedrock in the vicinity of the target property is classified as the Silurian-aged Rangeley Formation which is a rusty weathering schist, gray quartz-biotite and muscovite-plagioclase schist that contain local calc-silicate layers. It also has rare quartz-rich layers that appear sandy. A **Bedrock Geologic Map** is included in **Appendix A**.

According to the United States Department of Agriculture's Natural Resource Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx), soil beneath the target property consists of eight (8) soil types; the Colton gravelly sandy loam, 8 to 15 percent slopes, the Turnbridge-Berkshire complex, 15 to 25 percent slopes, very stony, the Turnbridge-Lyman-rock outcrop complex 8 to 15 percent slopes, the Turnbridge-Lyman-rock outcrop complex 25 to 60 percent slopes, the Berkshire fine sandy loam 15 to 25 percent slopes, the Marlow fine sandy loam 25 to 50 percent slopes, the Sunapee fine sandy loam 8 to 15 percent slopes. The soils identified at the Site are described as being excessively drained to well drained and having a depth to water of greater than 80-inches. Soil types at the Site are depicted in the NRCS Soil Map included in Appendix A which includes the NRCS Soil Descriptions.

The target property is located on the National Flood Insurance Program Flood Insurance Rate Map (FIRM) – Map Number 33005C0280E, effective May 23, 2006. The **FIRM Image** was available in the Federal Emergency Management Agency (FEMA) online database and was reviewed as part of this assessment and is included in **Appendix A**. The map depicts the Site in an area of Minimal Flood Hazard.

3.0 PREVIOUS HYDROGEOLOGIC INVESTIGATIONS

As previously mentioned, SLR International of Bedford, New Hampshire completed a Limited Hydrogeologic Investigation Report dated March 25, 2022. The investigation documented the completion of sixteen (16) test pits (TP-1 through TP-16), six (6) soil borings (SRL-1 through SLR-6) and the installation of three (3) groundwater monitoring wells (SRL-10 through SRL-12).

The test pits were excavated to depths ranging from a maximum of 15.5-feet below ground surface (bgs) at TP-4 to a minimum of 3-feet bgs at TP-8. Probable bedrock was encountered in test pits TP-7, TP-8, TP-9 and TP-10. The primary purpose of the test pits was to collect samples for gradation analyses performed in accordance with ASTM D442/D1140. Materials encountered in test pits TP-1, TP-2, TP-3, TP-5, TP-6, TP-7, TP9, TP-10, TP-13 and TP-14 were classified as glacial till. Materials encountered in test pits TP-4 and TP-12 were classified as glacial outwash. Samples were not collected from test pits TP-8, TP-11, TP-15 and TP-16. None of the test pits encountered saturated groundwater conditions.

Soil borings SRL-1 through SRL-6 were advanced to depths ranging from a maximum of 28-feet bgs at SRL-5 to a minimum of 2-feet bgs at SRL-2. Probable bedrock was encountered in soil borings

SRL-1, SRL-2, SRL-4, SRL-5 and SRL-6. The primary purpose of the soil borings was to collect samples for gradation analyses performed in accordance with ASTM D6913. Materials encountered in soil boring SRL-1 were classified as glacial till. Materials encountered in soil borings in soil borings SRL-4 and SRL-6 were classified as glacial outwash. SRL-5 materials had a combined consistency of glacial till and glacial outwash. Samples were not collected from SRL-2 and SRL-3. None of the soil borings encountered saturated groundwater conditions. SRL-6 did have "wet" materials at the bottom of the soil boring at 10-feet bgs. However, it should be noted that this boring was completed outside of the proposed project area.

Monitoring well SRL-10 was installed in the southwest corner of Period 8 to a depth of 55-feet bgs in overburden materials. Bedrock was not encountered at this location. The screened interval of the well was from 5-feet to 55-feet bgs. A water level of 42.9-feet bgs was recorded on March 22, 2022. This is interpreted to be the seasonal high for well SRL-10. More recently, a water level of 52.85-feet bgs was recorded on December 12, 2024.

Monitoring well SRL-11 was installed in the eastern section of the Period 8 area to a depth of 45.2-feet bgs in overburden materials. The advanced prior to the installation of the monitoring well was advanced to a depth of 76-feet bgs. Bedrock was not encountered at this location. The screened interval of the well was from 5-feet to 45.2-feet bgs. Groundwater was not encountered in the soil boring or observed during the March 22, 2022 gauging event. This well has since been destroyed.

Monitoring well SRL-12 was installed in bedrock in the north-central section of the Period 8 to a depth of 39.5-feet bgs. Bedrock was encountered at a depth of 11-feet bgs. The screened interval of the well was from 4.5-feet to 39.5-feet bgs. It should be noted that this well is cross-screened between the overburden and bedrock materials. A water bearing fracture was reportedly encountered at 28-feet bgs. A water level of 1.5-feet bgs was recorded on March 22, 2022. This is interpreted to be the seasonal high for well SRL-12. More recently, a water level of 7.5-feet bgs was recorded on December 12, 2024.

Please refer to **Appendix B** for a copy of the **SLR International Limited Hydrogeologic Investigation Report**.

4.0 JULY 2024 OVERBURDEN MONITORING WELL INSTALLATION

A total of eight (8) overburden locations were investigated for the potential of installation of a groundwater monitoring well on July 22 and 23, 2024. Prior to installation of a monitoring well a soil boring was conducted to refusal depth. Soils retrieved from the boring were logged for their lithologic and water content and also screened for volatile organic compounds (VOCs) using a MiniRae 3000 photo-ionization detector (PID). Monitoring wells were installed by advancing 4-inch diameter steel casing at the boring location. The casing was then "washed" using clean water. 2-inch diameter polyvinyl chloride (PVC) screen and riser of varying lengths were used in construction of the wells. The annulus surrounding the screen portion of the monitoring wells was filled using clean silica sand to a level of 1-foot above the screen/riser interface. Bentonite chips were emplaced around the riser to a depth of 1-foot bgs and the remaining portion of the borehole was filled with native materials.

Please refer to Figure 2 for a Monitoring Well Location Map.

4.1 Overburden Monitoring Well Installations

MW-1

Monitoring well MW-1 was installed in the on the boundary between proposed Period 1 and 2. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 3.3-feet bgs. A monitoring well was installed to a depth of 3.3-feet bgs and constructed using approximately 2-feet of PVC screen and 1.5-feet of solid riser. Groundwater was not encountered at this location.

MW-2

Monitoring well MW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 12.0-feet bgs. A monitoring well was installed to a depth of 12.0' bgs and constructed using approximately 10-feet of PVC screen and 2-feet of solid riser. Groundwater was not encountered at this location.

MW-3

Monitoring well MW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Overburden materials consisted of dry, brown, sandy gravel with occasional cobbles. Bedrock was encountered at a depth of 14.2-feet bgs. A monitoring well was installed to a depth of 14.2-feet bgs and constructed using approximately 10-feet of PVC screen and 5-feet of solid riser. Groundwater was not encountered at this location.

MW-4

Monitoring well MW-4 was installed in the southeastern portion of Period 5. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 3-feet bgs. A monitoring well was installed to a depth of 3-feet bgs and constructed using approximately 2-feet of PVC screen and 1-foot of solid riser. Groundwater was not encountered at this location.

MW-5

Monitoring well MW-5 was installed in the northeastern portion of Period 5. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 5-feet bgs. A monitoring well was installed to a depth of 5-feet bgs and constructed using approximately 4-feet of PVC screen and 1-foot of solid riser. Groundwater was not encountered at this location.

MW-6

Monitoring well MW-6 was installed in the northwestern portion of Period 6. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 0.9-feet bgs. A monitoring well was not installed at this location.

MW-7

Monitoring well MW-7 was installed upgradient of the central portion of Period 7. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 1.9-feet bgs. A monitoring well was not installed at this location.

MW-8

Monitoring well MW-8 was installed upgradient of the northern portion of Period 7. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 1.0-feet bgs. A monitoring well was not installed at this location.

Please refer to Appendix C for Overburden Boring and Monitoring Well Construction Logs.

4.1 Overburden Monitoring Well Groundwater Levels

Groundwater levels were measured on July 23, 2024, August 5, 2024 and October 17, 2024. Groundwater was not observed in any of the overburden groundwater monitoring wells.

5.0 OCTOBER 2024 BEDROCK MONITORING WELL INSTALLATION

Bedrock groundwater monitoring wells were installed at eight (8) locations on October 17 and 18, 2024. Monitoring wells were installed using a 3-inch diameter air hammer to a depth that was greater than or equal to 50-feet below the proposed pit elevation at the respective location. Lithology, water content and fracture occurrence were logged for each bedrock well. Samples were collected from the drill cuttings at each location for laboratory analysis of acid mine drainage potential which included acid base accounting and shake flask extraction. The results from the acid mine drainage potential analyses are included in a separate report titled "Gordon Services – Keene – Acid Mine Drainage Potential Report", dated December 18, 2024.

Please refer to **Figure 2** for a **Monitoring Well Location Map**.

5.1 Bedrock Well Installation

BRW-1

Monitoring well BRW-1 was installed in the on the boundary between proposed Period 1 and 2 adjacent to MW-1. Bedrock was encountered at a depth of 3.3-feet bgs. The bedrock well was installed as an open borehole to a depth of 54-feet bgs. The ground elevation at this location is 950-feet AMSL. The bottom of the borehole is at an elevation of 896-feet AMSL. The proposed pit floor elevation at this location is 950-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-2

Monitoring well BRW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Bedrock was encountered at a depth of 12.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 62-feet bgs. The ground elevation at this location is 944-feet AMSL. The bottom of the borehole is at an elevation of 882-feet AMSL. The proposed pit floor elevation at this location is 940-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-3

Monitoring well BRW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Bedrock was encountered at a depth of 14.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 51-feet bgs. The ground elevation at this location is 1,052-feet AMSL. The bottom of the borehole is at an elevation of 1,001-feet AMSL. The proposed pit floor elevation at this location is 1050-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-4

Monitoring well BRW-4 was installed in the southeastern portion of Period 5. Bedrock was encountered at a depth of 5.0-feet bgs. The bedrock well was installed as an open borehole to a depth

of 141-feet bgs. The ground elevation at this location is 1,103-feet AMSL. The bottom of the borehole is at an elevation of 962-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-5

Monitoring well BRW-5 was installed in the northeastern portion of Period 5. Bedrock was encountered at a depth of 3.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,112-feet AMSL. The bottom of the borehole is at an elevation of 971-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-6

Monitoring well BRW-6 was installed in the northwestern portion of Period 6. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 142-feet bgs. The ground elevation at this location is 1,192-feet AMSL. The bottom of the borehole is at an elevation of 1,050-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-7

Monitoring well BRW-7 was installed upgradient of the central portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.9-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,178-feet AMSL. The bottom of the borehole is at an elevation of 1,037-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 70-feet to the south of BRW-7 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 5.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.96-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 5.0-feet bgs.

BRW-8

Monitoring well BRW-8 was installed upgradient of the northern portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,182-feet AMSL. The bottom of the borehole is at an elevation of 1,041-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 125-feet to the southwest of BRW-8 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 9.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.84-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 9.0-feet bgs.

Below is a table summarizing the bedrock elevations, depths, groundwater levels and proposed pit floor elevations.

Well	Ground	Bedrock	Depth/Bottom	Proposed Pit	Groundwater
	Elevation	Depth	Elevation	Floor	Elevation
	(ft AMSL)	(feet)	(feet/ ft	Elevation	(ft AMSL)
			AMSL)	(ft AMSL)	
BRW-1	950	3	54/896	950	DRY
BRW-2	944	12	62/882	940	DRY
BRW-3	1052	14	51/1,001	1,050	DRY
BRW-4	1,103	3	81/1,022	1,098	DRY
BRW-5	1,112	3	141/971	1,098	DRY
BRW-6	1,192	1	142/1,050	1,098	DRY
BRW-7	1,178	1.9	141/1,037	1,098*	1,177.04
BRW-8	1,182	1	141/1,041	1,098*	1,179.16

^{*}Well is located outside of project area. The pit floor elevation that is noted is the proposed elevation of the nearest excavation.

Please refer to Appendix D for Bedrock Boring and Monitoring Well Construction Logs.

5.1 Bedrock Monitoring Well Groundwater Levels

Groundwater levels were measured on October 18, 2024, November 1, 2024 and November 8, 2024. All bedrock wells were found to be dry with the exception of wells BRW-7 and BRW-8. Water levels recorded at those locations during each sampling event were all less than 1-foot below ground surface.

6.0 HYDROGEOLOGICAL CONCEPTUAL MODEL

A hydrogeologic conceptual model has been developed based on the previous hydrogeologic investigation report and results from the installation and monitoring of the eight (8) overburden monitoring wells and eight (8) bedrock wells installed for the proposed project.

None of the overburden monitoring wells installed for this project had any observable groundwater. Previously installed overburden monitoring well SRL-10, located in Period 8 of the project area most recently had a groundwater elevation of 831.85 ft AMSL. An elevation of 841.8 ft AMSL.

It is interpreted that recharge to the overburden aquifer is limited at the Site due to the relatively steep topography. Much of the atmospheric water which falls on the Site either runs off as surface water drainage or taken up through plant water uptake (transpiration). Furthermore, the materials encountered in the soil borings advanced prior to the installation of the overburden monitoring wells consisted primarily of a sand and gravel assortment. These materials are generally of very high hydraulic conductivity, suggesting that they have a high capacity to transmit water. Water which does infiltrate into the subsurface has a low residence time due to the steep topography and sloping bedrock interface. Water which may infiltrate into the overburden materials is transported relatively quickly to a base elevation for overburden groundwater which is interpreted to be demonstrated by the water levels observed in SRL-10.

Bedrock groundwater at the Site is controlled by fracture flow due to the crystalline nature of the bedrock which does not have any pore space. Fractures or groundwater bearing zones were not encountered at monitoring wells BRW-1 through BRW-6. A water bearing fracture was encountered during the previous hydrogeologic investigation at SRL-12 at a depth of 28-feet bgs, elevation 862-feet AMSL. The proposed grading in Period 1 does not encounter this elevation. The proposed grading from Period 1 to Period 8 located to the south maintains a separation of approximately 150-feet from the fracture. Water levels observed in SRL-12 are suspect to interference between overburden groundwater and bedrock groundwater due to the cross-screening of the overburden/bedrock interface. However, the proposed grading of the project does not call for excavation into the area of SRL-12 and therefore groundwater is unlikely to be encountered in Period 1.

Bedrock monitoring wells BRW-7 and BRW-8 encountered fractures at shallow depth of 5-feet and 9-feet respectively. These fractures yielded less than 5 gallons per minute. These wells are in an area where the topography slopes to the north, as opposed to the rest of the Site which slopes to the south. It is interpreted that groundwater flow from these wells is to the north, towards the adjacent wetlands.

7.0 PROPOSED WATER LEVEL MONITORING

Based on the results of the previous hydrogeologic investigation and the most recent it is proposed that groundwater level monitoring be conducted monthly at the Site in accordance with the City of Keene's Article 25.3.4C, although no groundwater dewatering is proposed at the Site. Overburden groundwater level monitoring is to be conducted at Site wells including; SRL-10, SRL-12, MW-2 and MW-4. Bedrock groundwater level monitoring is proposed to be conducted SRL-12, BRW-7 and BRW-8. Surface water levels are proposed to be collected from the six (6) wetland areas located adjacent to the project area. Additionally, precipitation data will be collected from a central location at the Site.

Please refer to Figure 3 for a Proposed Water Level Monitoring Location Map.

Water levels will be reviewed in comparison to the precipitation data and noted for anomalous readings which do not align with the conceptual hydrogeologic model of the Site. Results from water level monitoring will be forwarded to the City of Keene on an annual basis in January of each calendar year. If anomalous groundwater levels are encountered the City of Keene will be notified with 24-hours and groundwater level monitoring of all domestic wells within ½-mile of the Site will be initiated. If water quantity disruptions have been observed in a domestic water supply well with 1/2-mile of the Site as a result of excavation activities, a licensed New Hampshire Well Contractor will be immediately retained for installation of a new water supply well in an unaffected area.

8.0 PROPOSED SITE GROUNDWATER QUALITY MONITORING

Due to the potential for groundwater at the Site to be affected by blasting activities, it is proposed that wells SRL-10, SRL-12, BRW-7 and BRW-8 be monitored on a bi-annual basis in the months of April and October for field parameters including; pH, specific conductance, oxidation reduction potential, dissolved oxygen and turbidity and laboratory analysis of volatile organic compounds and nitrate. Baseline, pre-excavation monitoring will consist of the collection of two (2) rounds of samples collected a minimum of 14 calendar days apart. Results will be reviewed in comparison to the New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality

Standards (AGQS). All results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

9.0 PROPOSED OFF-SITE GROUNDWATER QUALITY MONITORING

In accordance with Article 25.3.5 all landowners with $\frac{1}{2}$ -mile of the Site will be offered groundwater quality monitoring. Notification will be made to all landowners via United States Postal Service Certified Mail. The notification will include a description of the requirement to offer sampling and analysis of the landowner's domestic drinking water supply well and an option to decline the offer. It should be noted that landowners may opt in or opt out for sampling at any time during the term of the permit.

Baseline, pre-excavation monitoring of participating landowner wells will consist of the collection of two (2) rounds of drinking water samples collected a minimum of 14 calendar days apart. The samples will be analyzed for volatile organic compounds and nitrate. Sample results will be provided to the landowner via standard United State Postal Service mailing. Additionally, baseline results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

On-going, post-excavation monitoring of participating landowner wells will consist of the collection of drinking water samples on a bi-annual basis during the term of the permit and 2 years following the cease of operations at the Site and reclamation. Results will be forwarded to landowners and the City of Keene Community Development Department similarly as noted above.

Drinking water results will be compared to the NHDES AGQS. If adverse impacts are noted, the applicant will immediately be notified to cease bedrock excavation. Additionally, NHDES and the City of Keene will be notified. If monitoring indicates that the excavation activities caused the identified contamination, a licensed New Hampshire Well Contractor will be immediately retained for installation of a new water supply well in an area that has not been impacted by contamination.

10.0 PROPOSED GROUNDWATER OCCURRENCE MONITORING

As previously mentioned, bedrock groundwater at the Site is controlled by fracture flow due to the crystalline nature of the bedrock. The blast hole driller shall maintain a log of all boreholes at the Site and note the location of the borehole, depth of the borehole and any fractures or water bearing zones encountered. If a fracture or water bearing zone is encountered in a borehole no blasting shall occur at that location.

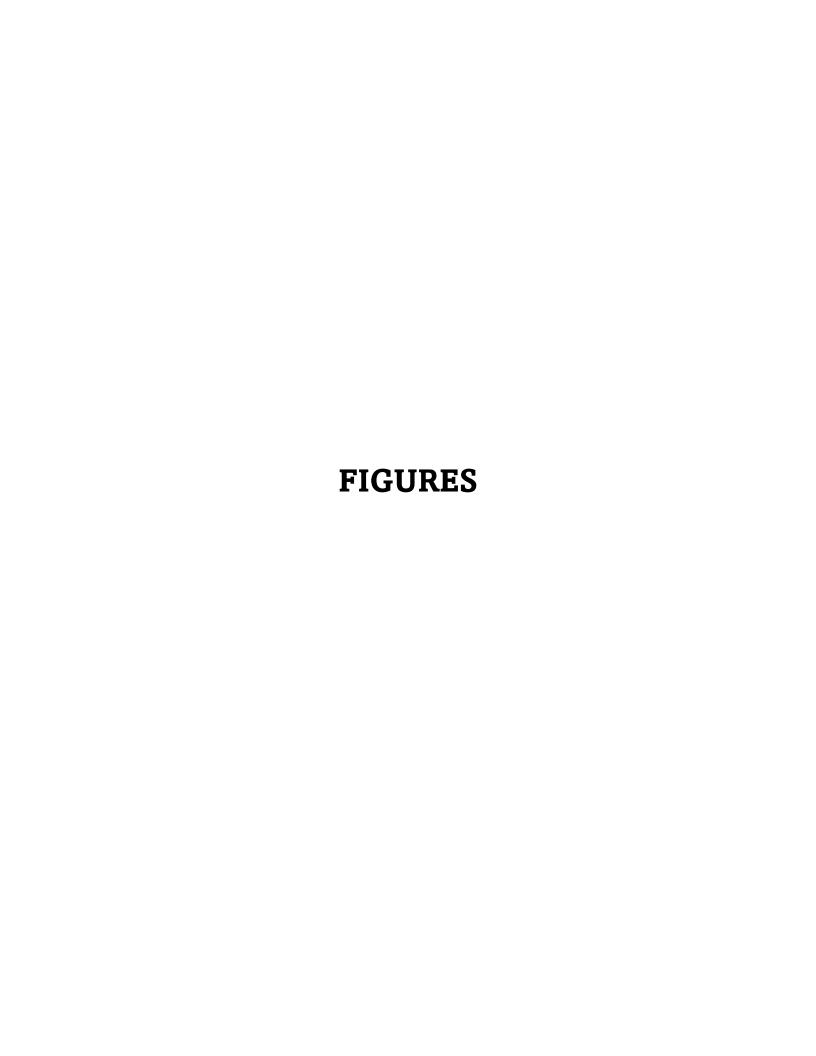


Figure 1
Site Location Map

Figure 1 - Site Location Map Legend Site Location Skillits OTTER BROOK STATE PARK Map Scale 1: 24,000 © NH DES, http://des.nh.gov Map Generated: 12/16/2024 Brook Notes

Figure 2 Site Plan/ Monitoring Well Location Map

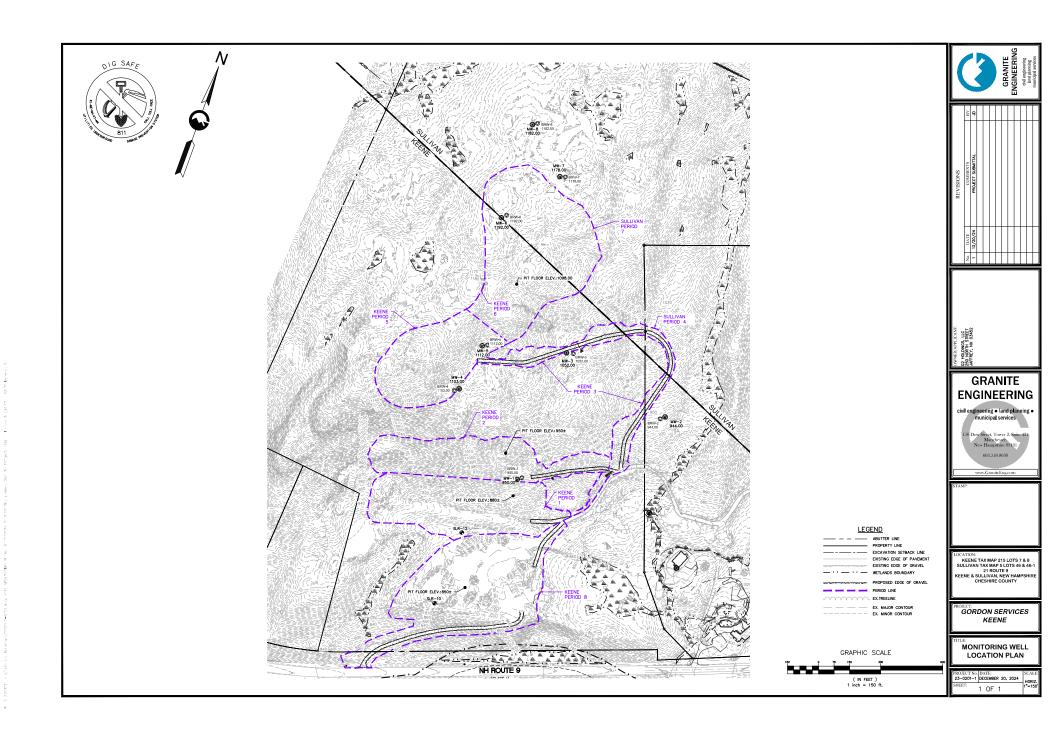
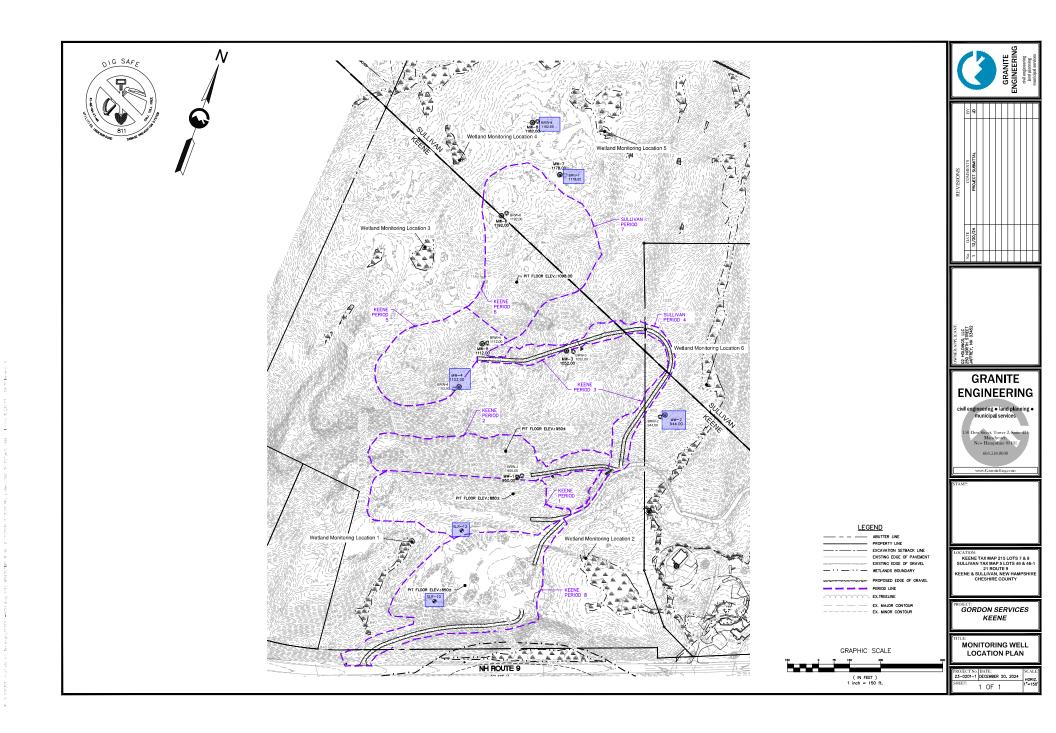
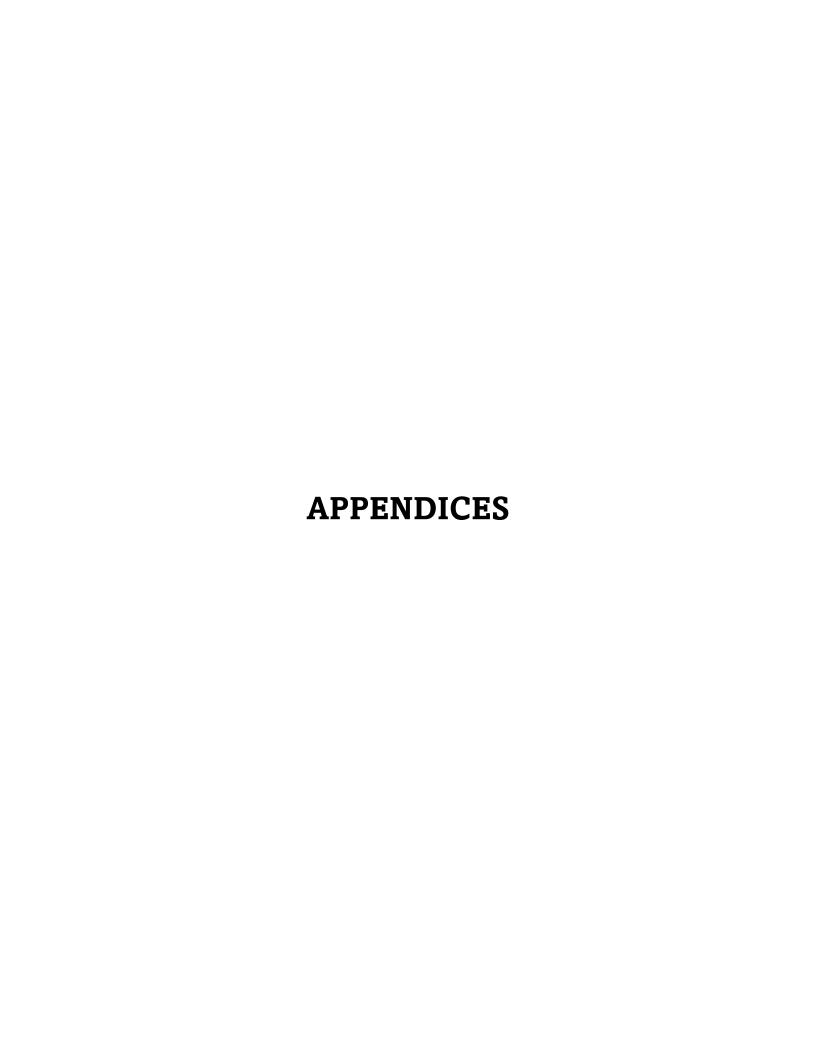
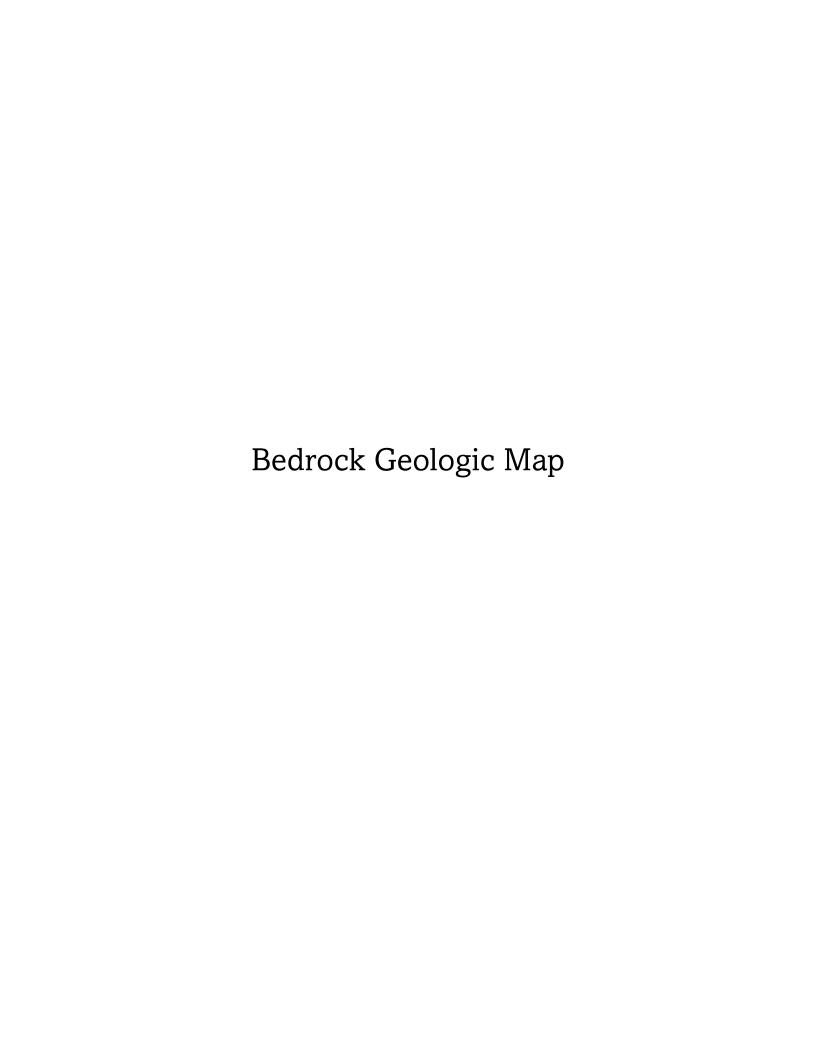


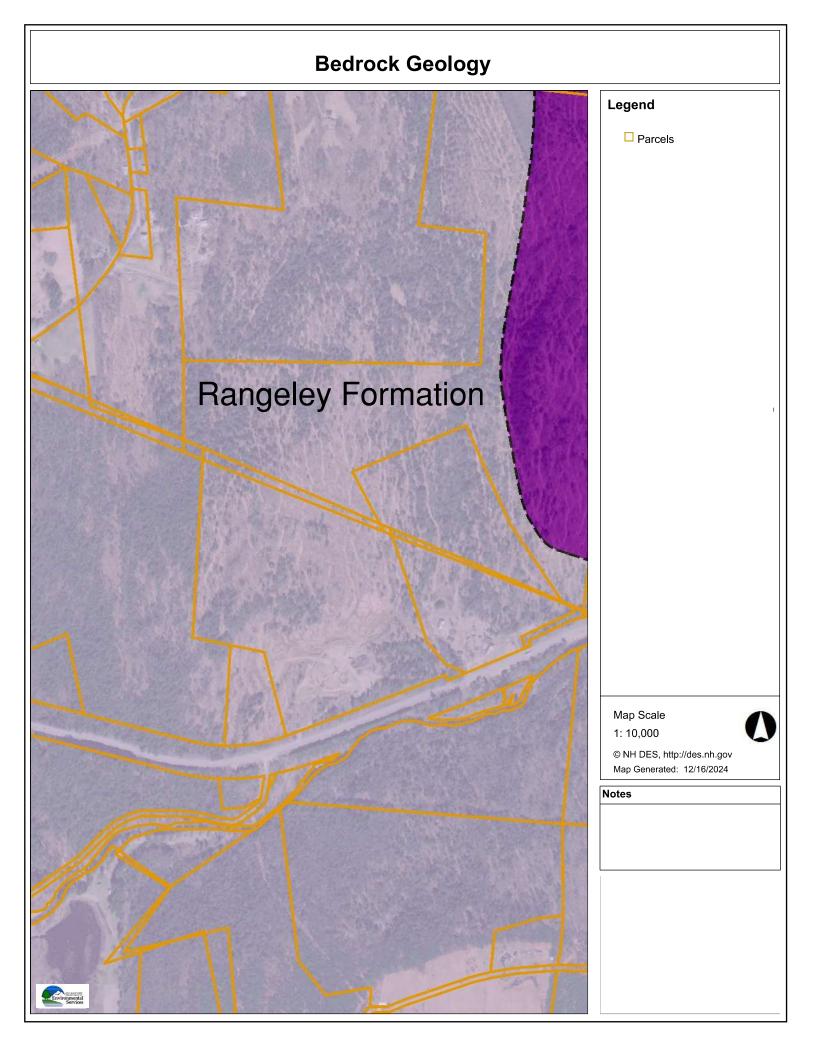
Figure 3 Proposed Water Level Monitoring Location Map

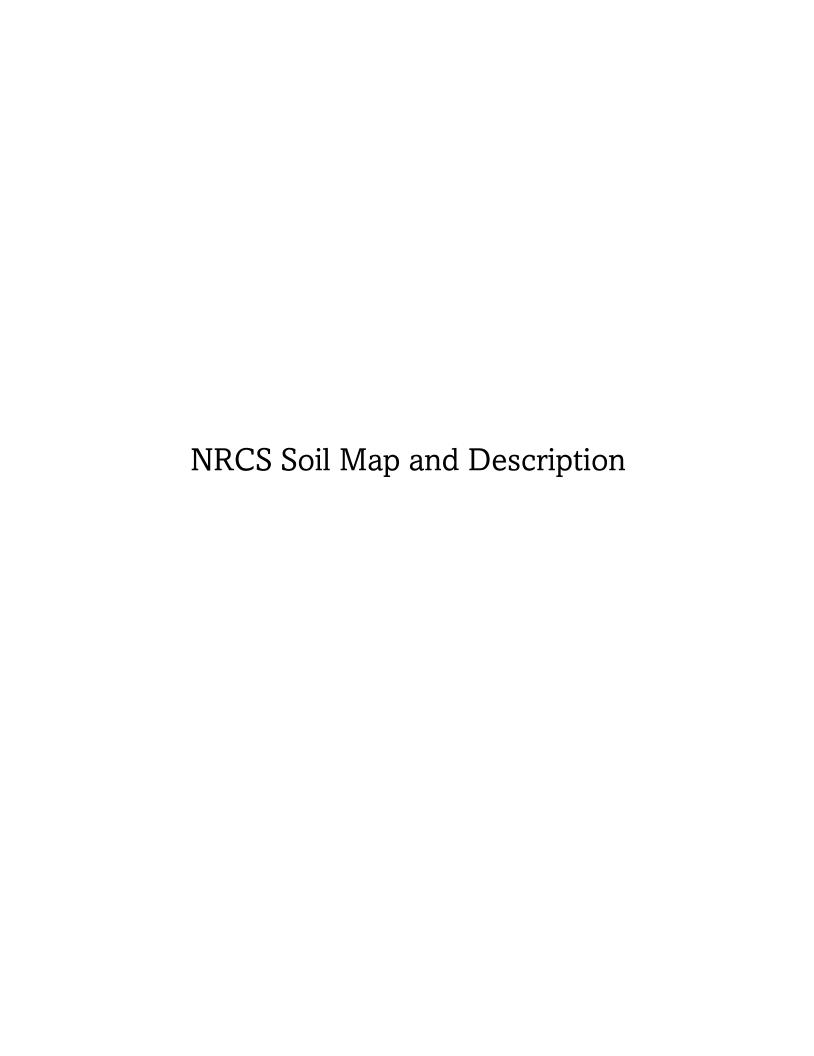


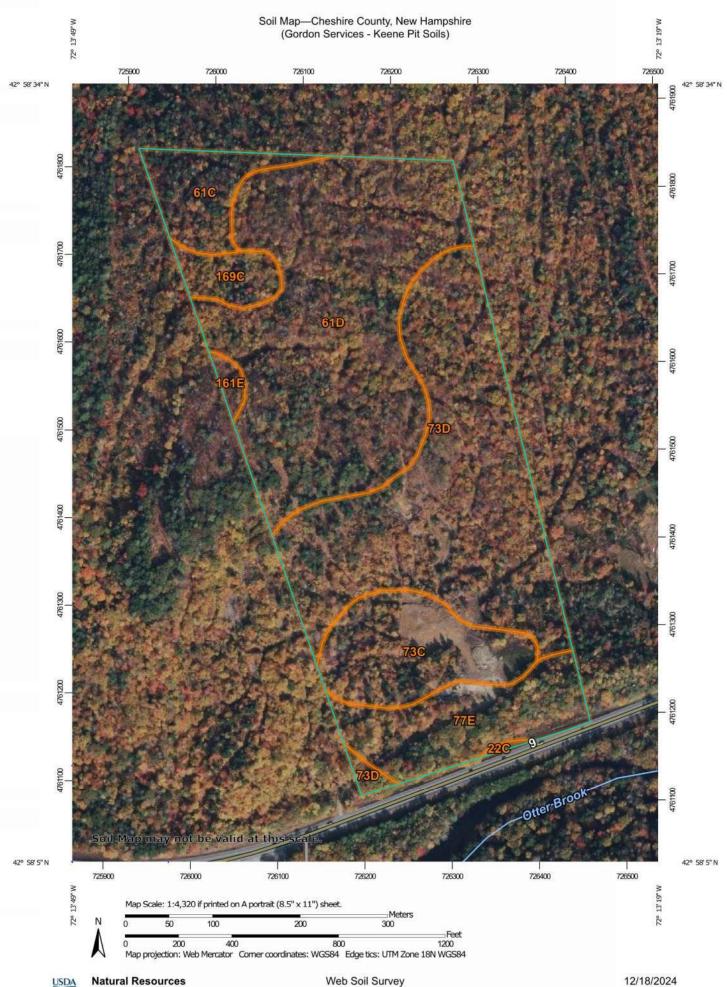


Appendix A Physical Setting Documentation









MAP LEGEND

Soils Area of Interest (AOI) Special Point Features X) Mine or Quarry Marsh or swamp Lava Flow Landfill **Gravelly Spot** Gravel Pit Closed Depression Clay Spot Borrow Pit Blowout Soil Map Unit Points Soil Map Unit Lines Soil Map Unit Polygons Miscellaneous Water Area of Interest (AOI) Background Water Features Fransportation | Į 4 0 W Rails Other Stony Spot Aerial Photography US Routes Interstate Highways Streams and Canals Local Roads Major Roads Special Line Features Wet Spot Very Stony Spot Spoil Area

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cheshire County, New Hampshire Survey Area Data: Version 28, Sep 3, 2024

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

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

Slide or Slip
Sodic Spot

Severely Eroded Spot

Sandy Spot

Saline Spot

Perennial Water
Rock Outcrop

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22C	Colton gravelly sandy loam, 8 to 15 percent slopes	0.1	0.2%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	2.9	5.3%
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	20.6	37.5%
73C	Berkshire fine sandy loam, 8 to 15 percent slopes, very stony		10.3%
73D	Berkshire fine sandy loam, 15 to 25 percent slopes, very stony	18.1	33.0%
77E	Marlow fine sandy loam, 25 to 50 percent slopes, very stony	5.6	10.1%
161E	Lyman-Tunbridge-Rock outcrop complex, 25 to 60 percent slopes	0.4	0.7%
169C	Sunapee fine sandy loam, 8 to 15 percent slopes, very stony	1.6	2.8%
Totals for Area of Interest		54.9	100.0%

Cheshire County, New Hampshire

22C—Colton gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2yjfn Elevation: 10 to 2,000 feet

Mean annual precipitation: 31 to 65 inches Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Colton and similar soils: 85 percent *Minor components:* 15 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

Description of Colton

Setting

Landform: Outwash terraces

Landform position (two-dimensional): Summit, backslope Landform position (three-dimensional): Side slope, base slope

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

Parent material: Sandy-skeletal glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: gravelly sandy loam
Bs - 7 to 14 inches: gravelly loamy sand
BC - 14 to 24 inches: very gravelly coarse sand
C - 24 to 65 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0

mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Ecological site: F146XY071ME - Sandy

Hydric soil rating: No

Minor Components

Adams

Percent of map unit: 10 percent Landform: Outwash terraces

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: No

Sheepscot

Percent of map unit: 3 percent Landform: Outwash terraces

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope

Down-slope shape: Concave Across-slope shape: Linear Hydric soil rating: No

Croghan

Percent of map unit: 2 percent Landform: Outwash terraces

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope

Down-slope shape: Linear Across-slope shape: Concave

Hydric soil rating: No

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

Survey Area Data: Version 28, Sep 3, 2024

Cheshire County, New Hampshire

61C—Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2trpj Elevation: 160 to 3,480 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 60 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Tunbridge, very stony, and similar soils: 39 percent Lyman, very stony, and similar soils: 30 percent

Rock outcrop: 19 percent Minor components: 12 percent

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

Description of Tunbridge, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, mountaintop,

mountainbase, side slope, crest

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

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material Oa - 3 to 5 inches: highly decomposed plant material

E - 5 to 8 inches: fine sandy loam Bhs - 8 to 11 inches: fine sandy loam Bs - 11 to 26 inches: fine sandy loam BC - 26 to 28 inches: fine sandy loam

R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

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

to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

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

inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: F144BY702ME - Shallow and Moderately-deep Till

Hydric soil rating: No

Description of Lyman, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, mountaintop,

mountainbase, side slope, crest

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

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam

Bs2 - 11 to 18 inches: channery loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 11 to 24 inches to lithic bedrock

Drainage class: Somewhat excessively drained

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

to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: F144BY702ME - Shallow and Moderately-deep Till

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, mountaintop,

mountainbase, side slope, crest

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

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 0 inches to lithic bedrock

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

to very high (0.00 to 14.17 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Ecological site: F144BY801ME - Rockland (reserved)

Hydric soil rating: Unranked

Minor Components

Peru, very stony

Percent of map unit: 5 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, mountaintop,

mountainbase, side slope, crest

Microfeatures of landform position: Open depressions, open depressions, closed depressions closed depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: No

Moosilauke, very stony

Percent of map unit: 4 percent Landform: Mountains, hills

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainflank, mountaintop,

mountainbase, side slope, crest

Microfeatures of landform position: Open depressions, open depressions, closed depressions depressions

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

Monadnock, very stony

Percent of map unit: 3 percent



Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountaintop,

mountainbase, side slope, crest

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

Survey Area Data: Version 28, Sep 3, 2024

Cheshire County, New Hampshire

61D—Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2trpk Elevation: 520 to 1,970 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 60 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Tunbridge, very stony, and similar soils: 40 percent Lyman, very stony, and similar soils: 29 percent

Rock outcrop: 18 percent Minor components: 13 percent

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

Description of Tunbridge, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, mountaintop,

side slope, crest Down-slope shape: Convex Across-slope shape: Convex

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material Oa - 3 to 5 inches: highly decomposed plant material

E - 5 to 8 inches: fine sandy loam Bhs - 8 to 11 inches: fine sandy loam Bs - 11 to 26 inches: fine sandy loam BC - 26 to 28 inches: fine sandy loam

R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

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

to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

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

inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: F144BY702ME - Shallow and Moderately-deep Till

Hydric soil rating: No

Description of Lyman, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, mountaintop,

side slope, crest

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

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam Bs1 - 7 to 11 inches: loam

Bs2 - 11 to 18 inches: channery loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 11 to 24 inches to lithic bedrock

Drainage class: Somewhat excessively drained

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

to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: F144BY702ME - Shallow and Moderately-deep Till

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, mountaintop,

side slope, crest Down-slope shape: Convex Across-slope shape: Convex

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 0 inches to lithic bedrock

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

to very high (0.00 to 14.17 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Ecological site: F144BY801ME - Rockland (reserved)

Hydric soil rating: Unranked

Minor Components

Peru, very stony

Percent of map unit: 6 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, mountaintop,

side slope, crest

Microfeatures of landform position: Open depressions, open

depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: No

Moosilauke, very stony

Percent of map unit: 4 percent Landform: Mountains, hills

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainflank, mountaintop,

side slope, crest

Microfeatures of landform position: Open depressions, open

depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

Monadnock, very stony

Percent of map unit: 3 percent



Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank, mountaintop,

side slope, crest Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

Survey Area Data: Version 28, Sep 3, 2024

73C—Berkshire fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wllw Elevation: 130 to 1,840 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 55 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Farmland of local importance

Map Unit Composition

Berkshire, very stony, and similar soils: 87 percent

Minor components: 13 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

Description of Berkshire, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

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

Parent material: Loamy supraglacial meltout till derived from phyllite and/or loamy supraglacial meltout till derived from granite and gneiss and/or loamy supraglacial meltout till derived from mica schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 4 inches: fine sandy loam
E - 4 to 5 inches: fine sandy loam
Bs1 - 5 to 7 inches: fine sandy loam
Bs2 - 7 to 13 inches: fine sandy loam
Bs3 - 13 to 21 inches: fine sandy loam
BC1 - 21 to 28 inches: fine sandy loam
BC2 - 28 to 33 inches: fine sandy loam
C - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F144BY501ME - Loamy Slope (Northern

Hardwoods)

Hydric soil rating: No

Minor Components

Peru, very stony

Percent of map unit: 5 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

Microfeatures of landform position: Open depressions, closed depressions, open depressions, closed depressions

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

Hydric soil rating: No

Tunbridge, very stony

Percent of map unit: 3 percent Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Marlow, very stony

Percent of map unit: 3 percent Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Lyme, very stony

Percent of map unit: 2 percent Landform: Mountains, hills

Landform position (two-dimensional): Footslope, toeslope Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope Microfeatures of landform position: Open depressions, closed depressions, open depressions, closed depressions Down-slope shape: Concave Across-slope shape: Concave Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

73D—Berkshire fine sandy loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wllx Elevation: 460 to 1,840 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 55 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Berkshire, very stony, and similar soils: 88 percent

Minor components: 12 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

Description of Berkshire, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, nose slope,

side slope

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

Parent material: Loamy supraglacial meltout till derived from phyllite and/or loamy supraglacial meltout till derived from granite and gneiss and/or loamy supraglacial meltout till derived from mica schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 4 inches: fine sandy loam
E - 4 to 5 inches: fine sandy loam
Bs1 - 5 to 7 inches: fine sandy loam
Bs2 - 7 to 13 inches: fine sandy loam
Bs3 - 13 to 21 inches: fine sandy loam
BC1 - 21 to 28 inches: fine sandy loam
BC2 - 28 to 33 inches: fine sandy loam
C - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 15 to 25 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F144BY501ME - Loamy Slope (Northern

Hardwoods)

Hydric soil rating: No

Minor Components

Peru, very stony

Percent of map unit: 5 percent Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Microfeatures of landform position: Open depressions, open

depressions

Down-slope shape: Convex, concave Across-slope shape: Convex, concave

Hydric soil rating: No

Lyman, very stony

Percent of map unit: 4 percent Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Lyme, very stony

Percent of map unit: 2 percent Landform: Mountains, hills

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Microfeatures of landform position: Open depressions, closed depressions, open depressions, closed depressions

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

Marlow, very stony

Percent of map unit: 1 percent Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainflank, nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

77E—Marlow fine sandy loam, 25 to 50 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty5t Elevation: 360 to 2,360 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Marlow, very stony, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

Description of Marlow, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, nose slope,

side slope

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

Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy

lodgment till derived from phyllite

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 5 inches: fine sandy loam
E - 5 to 8 inches: fine sandy loam
Bs1 - 8 to 15 inches: fine sandy loam
Bs2 - 15 to 19 inches: fine sandy loam

BC - 19 to 33 inches: gravelly fine sandy loam

Cd - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 25 to 50 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent Depth to restrictive feature: 20 to 41 inches to densic material

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Ecological site: F144BY501ME - Loamy Slope (Northern

Hardwoods)

Hydric soil rating: No

Minor Components

Peru, very stony

Percent of map unit: 5 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Microfeatures of landform position: Open depressions, open

depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: No

Berkshire, very stony

Percent of map unit: 4 percent Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Tunbridge, very stony

Percent of map unit: 4 percent Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Down-slope shape: Convex Across-slope shape: Convex Hydria politrating: No.

Hydric soil rating: No

Pillsbury, very stony

Percent of map unit: 2 percent Landform: Mountains, hills

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainflank, nose slope,

side slope

Microfeatures of landform position: Open depressions, open

depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

161E—Lyman-Tunbridge-Rock outcrop complex, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2trpr Elevation: 460 to 2,490 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 55 degrees F

Frost-free period: 60 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Lyman, very stony, and similar soils: 50 percent Tunbridge, very stony, and similar soils: 26 percent

Rock outcrop: 12 percent Minor components: 12 percent

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

Description of Lyman, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

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

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam Bs1 - 7 to 11 inches: loam

Bs2 - 11 to 18 inches: channery loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 25 to 60 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 11 to 24 inches to lithic bedrock

Drainage class: Somewhat excessively drained

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

to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: F143XY702ME - Shallow And Moderately Deep Till

Hydric soil rating: No

Description of Tunbridge, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

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

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material Oa - 3 to 5 inches: highly decomposed plant material

E - 5 to 8 inches: fine sandy loam Bhs - 8 to 11 inches: fine sandy loam Bs - 11 to 26 inches: fine sandy loam BC - 26 to 28 inches: fine sandy loam

R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 25 to 60 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

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

to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

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

inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: C

Ecological site: F143XY702ME - Shallow And Moderately Deep Till, F143XY703ME - Shallow And Moderately Deep Humic Till

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, free face,

side slope, free face Down-slope shape: Convex Across-slope shape: Convex

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 25 to 60 percent

Depth to restrictive feature: 0 inches to lithic bedrock

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

to very high (0.00 to 14.17 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s Ecological site: F143XY801ME - Rockland

Hydric soil rating: Unranked

Minor Components

Monadnock, very stony

Percent of map unit: 7 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Marlow, very stony

Percent of map unit: 3 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Cabot, very stony

Percent of map unit: 2 percent Landform: Hills, mountains

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Mountainflank, side slope Microfeatures of landform position: Open depressions, open

depressions

Down-slope shape: Concave



Across-slope shape: Concave Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

169C—Sunapee fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2trs8 *Elevation:* 690 to 2,200 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Farmland of local importance

Map Unit Composition

Sunapee, very stony, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

Description of Sunapee, Very Stony

Setting

Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

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

Parent material: Loamy supraglacial meltout till derived from phyllite

and/or granite and gneiss and/or mica schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

A - 2 to 3 inches: fine sandy loam

E - 3 to 5 inches: gravelly fine sandy loam
Bhs - 5 to 6 inches: gravelly fine sandy loam
Bs1 - 6 to 8 inches: gravelly fine sandy loam
Bs2 - 8 to 17 inches: gravelly fine sandy loam
Bs3 - 17 to 26 inches: gravelly fine sandy loam

C1 - 26 to 38 inches: gravelly sandy loam C2 - 38 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.03 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: None Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

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

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: F143XY501ME - Loamy Slope

Hydric soil rating: No

Minor Components

Lyme, very stony

Percent of map unit: 6 percent Landform: Mountains, hills

Landform position (two-dimensional): Footslope, toeslope Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

Microfeatures of landform position: Open depressions, closed depressions, open depressions, closed depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

Berkshire, very stony

Percent of map unit: 5 percent Landform: Mountains, hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope Microfeatures of landform position: Rises, rises

Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Peru, very stony

Percent of map unit: 2 percent Landform: Mountains, hills

Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope

Down-slope shape: Convex Across-slope shape: Linear Hydric soil rating: No

Monadnock, very stony

Percent of map unit: 2 percent Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

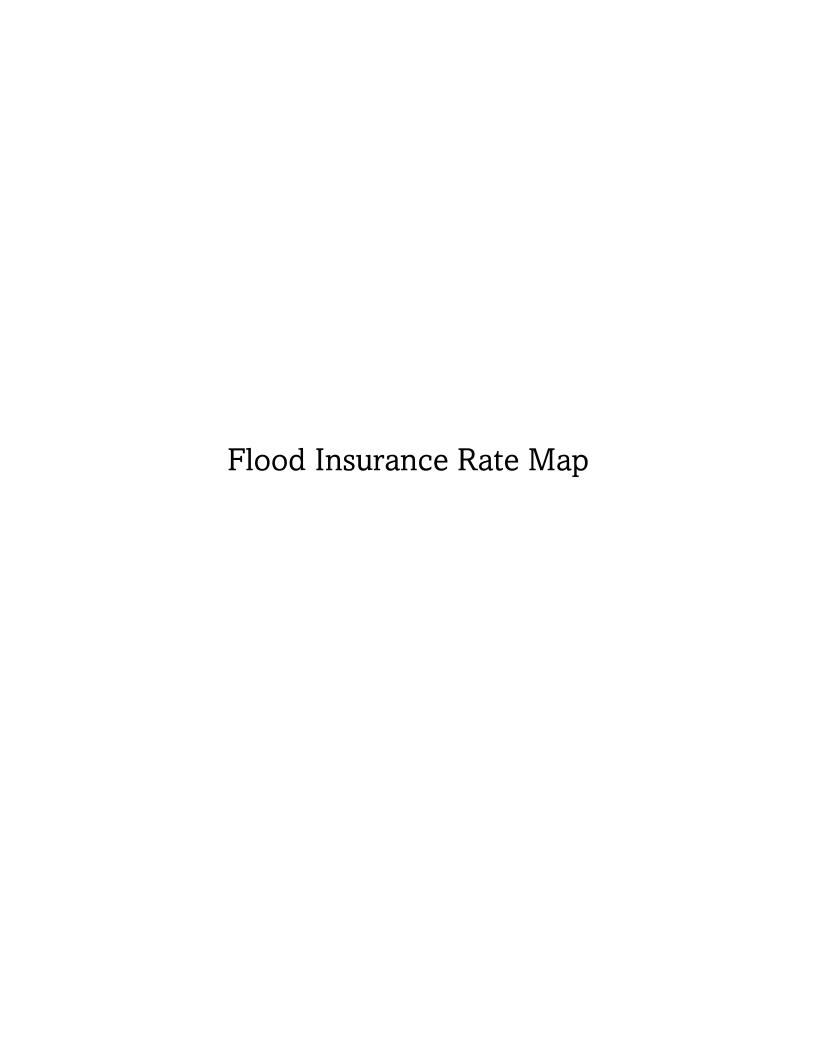
Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, nose slope, side slope Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex Hydric soil rating: No

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire



National Flood Hazard Layer FIRMette



2°13′58″W 42°58′30′N



Legend

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

SPECIAL FLOOD HAZARD AREAS

TOWN OF SULLIVAN

Regulatory Floodway

With BFE or Depth Zone AE, AO, AH, VE, AR Without Base Flood Elevation (BFE) Zone A, V, A99

Chance Flood Hazard Zone X Future Conditions 1% Annual 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average

areas of less than one square mile Zone A depth less than one foot or with drainage

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

Area with Flood Risk due to Levee Zana D

NO SCREEN Area of Minimal Flood Hazard Zone Effective LOMRs

Channel, Culvert, or Storm Sewer Area of Undetermined Flood Hazard Zone D

GENERAL

Water Surface Elevation Cross Sections with 1% Annual Chance

Limit of Study Base Flood Elevation Line (BFE) Coastal Transect

Coastal Transect Baseline Jurisdiction Boundary

Profile Baseline

Hydrographic Feature

FEATURES

OTHER

Digital Data Available

Unmapped

No Digital Data Available



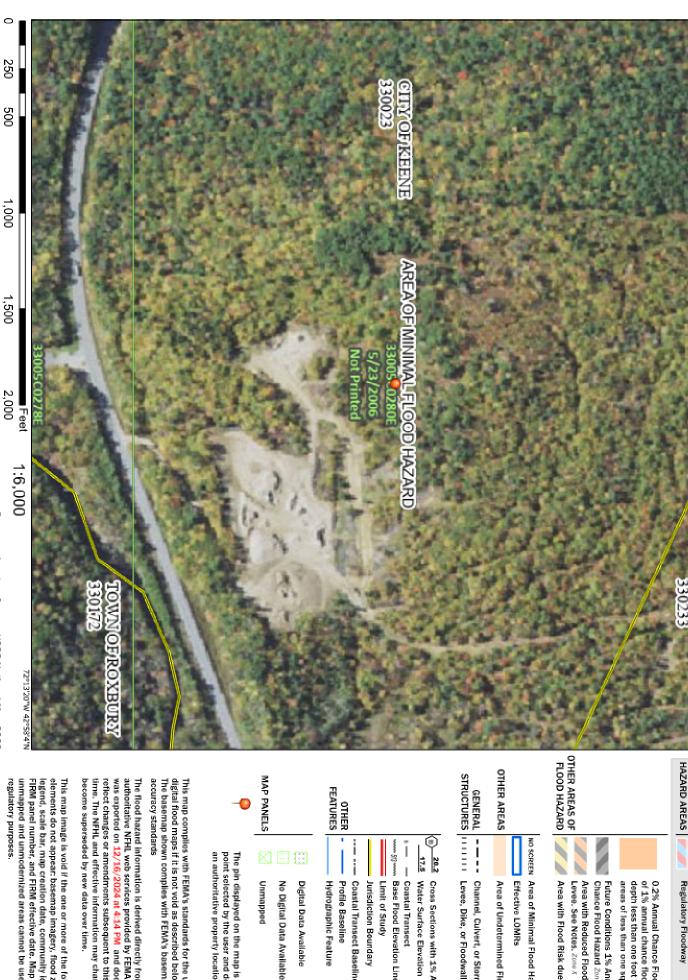
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

become superseded by new data over time. time. The NFHL and effective information may change or reflect changes or amendments subsequent to this date and was exported on 12/16/2024 at 4:14 PM and does not authoritative NFHL web services provided by FEMA. This map The flood hazard information is derived directly from the

elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for This map image is void if the one or more of the following map

Basemap Imagery Source: USGS National Map 2023



Appendix B SLR International Limited Hydrogeologic Investigation Report



March 25, 2022

Mr. Jeff Kevan TF Moran, Inc. 48 Constitution Drive Bedford, NH 03110

RE: Limited Hydrogeologic Investigation

Proposed Sand and Gravel Pit

Tax Map 215, Lot 7 Route 9 Keene, NH SLR #144.16535.00023

Dear Jeff:

SLR International Corporation (SLR) has completed a Limited Hydrogeologic Investigation for TF Moran, Inc. (TFM) in accordance with the March 2, 2022 proposed scope of work for the proposed sand and gravel pit to be located at the property identified as City of Keene Tax Map 215, Lot 7 situated off of New Hampshire Route 9 in Keene, NH. It is SLR's understanding that the City of Keene requires a 6 foot vertical separation distance between bottom of excavation and seasonal high water table (SHWT). Prior review of the TF Moran Sheet 1 of 3 dated January 21, 2022 indicated proposed excavation depths of approximately 15± feet to 30± feet.

On March 15, 16, and 17, 2022, SLR personnel supervised the installation of three borings that were each developed as groundwater monitoring wells (SLR-10, SLR-11, SLR-12) to approximately 40± to 55± feet deep that also penetrated at least 10± feet below the proposed sand and gravel pit bottom excavation depth. The purpose of these monitoring wells was to provide information regarding depth to groundwater and bedrock depth, where encountered. The results of this Limited Hydrogeologic Investigation are intended to aid your office in the evaluation of groundwater depths and flow direction in the area of the proposed sand and gravel pit.

PRIOR TEST PITS - SEPTEMBER 10 AND OCTOBER 22, 2020

On September 10, 2020, eleven test pits TP-1 through TP-11, as shown on Figure 1, were excavated under the observation of a geotechnical engineer from our office to evaluate geologic conditions for the proposed sand and gravel pit.

The surface and near surface shallow soil conditions encountered in the test pits consist of forest mat/topsoil materials. Granular fill materials were encountered in TP-1 and TP-7. Granular glacial outwash



deposits were encountered in test pits TP-2, -3, -4, -5, -6, -12, and -13. The main component of the subsurface materials below the upper level outwash deposits consists of glacial till deposits.

Miscellaneous fill was encountered in TP-1 and TP-7 to depths of approximately 5-feet and 2-feet, respectively. Below the fill in TP-7 are sand and silt subsoil materials. These materials consist of grey-brown coarse to fine sand, some silt, little cobbles/boulders. The fill materials likely consist of remolded glacial till from elsewhere on the site.

Glacial outwash deposits consisting of brown coarse to fine sand, and little gravel, little silt was encountered in TP-2, TP-3, TP-4, TP-5, and TP-6.

Each exploration encountered glacial till deposits. These till deposits consist of olive brown to grey coarse to fine sand some silt with varying amounts of gravel. Note that cobbles and boulders were encountered within the till deposits.

Probable bedrock was encountered in TP-7, TP-8, TP-9, and TP-10. Note that bedrock outcrops and large glacial erratics were observed near TP-8 and TP-9.

Selected soil samples were obtained from the test pits, and gradation analyses were conducted in general accordance with ASTM D422/D1140. Results of these analyses are attached and summarized in the below table:

		Test Pit Summ	nary	
Test Pit ID	Total Depth (feet)	Sieve Sample Depth (feet)	Geologic Stratum	% Finer than #200 Sieve
TP-1	15	6-8	Till	41.6
TP-2	15	10-12	Till	11.9
TP-3	14	7-9	Till	59.7
TP-4	15.5	2-4	Outwash	14.6
TP-5	13	8-10	Till	31.2
TP-6	14	4-7	Till	42.6
TP-7	12	4-6	Till	15.1
TP-8	3		Not Taken	
TP-9	9	4-6	Till	11.2
TP-10	5.5	1-3	Till	13.7
TP-11	14		Not Taken	
TP-12	8	3-4	Outwash	3.8
TP-13	6	4-5	Till	20.7
TP-14	6.5	1-3	Till	28.1
TP-15	6		Not Taken	
TP-16	5		Not Taken	



The Surficial Geologic Map of the Marlborough 7.5 Minute quadrangle, Cheshire County, New Hampshire notes that the site is underlain by Glacial Till Deposits. The 1997 Bedrock Geologic Map of New Hampshire has the bedrock mapped as the lower part of the Rangeley Formation consisting of gray, thinly laminated metapelite with local lentils of turbidites and thin quartz conglomerates; including sparse calc-silicate pods and coticule.

For reference, the test pit logs are attached to this report. The results of this test pit soil investigation were presented in the October 7 and 30, 2020 individual reports to TFM.

PRIOR TEST BORINGS - DECEMBER 9, 2021

On December 9, 2021, SLR documented the installation of six test borings designated SLR-1 to SLR-6 as shown on Figure 1. These borings were installed by New England Boring Contractors of Derry, New Hampshire using standard hollow stem auger boring drilling techniques to depths of 5± feet to 28± with split spoon samples recovered generally at 2-foot intervals. Ground surface elevations at boring locations were estimated by linear interpolation based on topographic contour intervals shown on the Grading and Drainage Plan provided by TFM. Boring locations and elevations should be considered accurate to the degree implied by the measuring methods used.

Soil samples from the test borings were classified in the field by SLR in general accordance with the Burmeister Soil Classification System. As presented in the attached boring logs, the surface and near surface shallow soil conditions at the site consist of forest mat/topsoil materials. Granular glacial outwash deposits were encountered in test borings SLR-1, SLR-4, SLR-5, and SLR-6. The main component of the subsurface materials below the upper level outwash deposits consists of glacial till deposits.

Refusal conditions encountered in SLR-1, SLR-2, SLR-4, SLR-5, and SLR-6 were inferred to be indicative of tightly nested boulders, hard weathered bedrock, or competent bedrock. Selected soil samples were obtained from the test borings as well as one from an existing processed soil stockpile on-site. Gradation analyses were conducted in general accordance with ASTM D6913. Results of these analyses are attached hereto and are summarized in the below table.

		Test Boring Su	mmary	
Boring Sample	Total Depth (feet)	Sieve Sample Depth (feet)	Geologic Stratum	% Finer than #200 Sieve
SLR-1	20.5	9-11	Till	37.1
SLR-2	5		Not taken	
SLR-3	25		Not taken	
SLR-4	14.7	4-6	Outwash	14.5
SLR-5	28	4-6	Outwash	7.1
SLR-5	28	9-11	Outwash	8.7
SLR-5	28	14-16	Till	62.5
SLR-6	10	4-6	Outwash	19.7



No groundwater monitoring wells were installed at these borings. For reference, boring logs are attached to this report. The results of this test boring investigation were presented in the January 5, 2021 letter report to TFM.

WELL INSTALLATION - MARCH 15-17, 2022

On March 15 to 17, 2022, SLR personnel observed the installation of three groundwater monitoring wells (SLR-10, SLR-11, SLR-12) as shown on the attached Figure 1 to evaluate depths to groundwater relative to the proposed excavation depths of the proposed sand and gravel pit. The groundwater monitoring wells, which were located approximately 350± to 450± feet apart, were advanced using hollow stem augers through the overburden soil and an air hammer through bedrock where encountered. No soil or bedrock core sampling was performed for these well installations. The borings were advanced depths of 39.5± to 76± feet below ground surface in order to be at least 10± feet below proposed bottom of excavation depths.

Table 1 summarizes the ground surface elevation, proposed sand and gravel pit excavation depth, total boring and well depths, well elevation, well screen interval, and depth/elevation to groundwater (where encountered). Each of the wells was installed with a steel guard pipe protective cover 3 to 4 feet above surface grades. The construction logs for each well are attached hereto.

Boring/well SLR-10

Boring/well SLR-10, which is located in the southwest corner of the proposed sand and gravel pit area, was installed to a depth of 55± feet below the ground surface elevation of EL 883±. The bottom elevation of the boring/well was EL 828± feet relative to a proposed excavation depth of EL 854± feet, the well screen interval was set at 5 to 55 feet, and groundwater was measured at EL 840.2± feet. Depth to groundwater shown in Table 1 was measured from surface grade and not the PVC well, which has a stickup inside the steel guard pipe approximately 1.7 feet above grade.

The soils encountered during drilling of boring SLR-10 consisted of native fill from 0 to 6 feet underlain by glacial till from 6 to 55 feet below grade. No bedrock was encountered.

Boring/well SLR-11

Boring/well SLR-11, which is located in the east side of the proposed sand and gravel pit area, was installed to a depth of 76± feet for the boring itself and a depth of 45.2± feet for the groundwater monitoring well from a ground surface elevation of 863±. The bottom elevation of the well was 817.8± feet relative to a proposed excavation depth of 856± feet, the well screen interval was 5 to 45 feet, no groundwater was observed at the bottom of the well to at least EL 817.8± feet. The dimensions shown in Table 1 were measured from surface grade and not the PVC well, which has a stickup inside a steel guard pipe of 2.3 feet above grade.



The soils encountered during installation of boring SLR-11 consisted of native fill from 0 to 14 feet underlain by glacial till from 14 to 76 feet below grade. No bedrock or apparent groundwater was encountered during drilling activities.

Boring/well SLR-12

Boring/well SLR-12, which is located in the northwest corner of the proposed sand and gravel pit area, was installed to a depth of 39.5± feet below the ground surface at EL 890±. The bottom elevation of the boring/well was EL 850.5± feet relative to a proposed excavation depth of EL 858± feet, the well screen interval was 4.5 to 39.5 feet, and groundwater elevation was measured at EL 888.5± feet. Depth to groundwater shown in Table 1 was measured from surface grade and not the PVC well, which was a stickup inside a steel guard pipe of 2.7 feet above grade.

The soils encountered during installation of boring SLR-10 consisted of glacial till from 0 to 9 feet underlain by weathered bedrock from 9 to 11 feet and competent bedrock between 11 to 39.5 feet below grade. An apparent water bearing fracture was encountered at 28± feet below grade.

Groundwater Depth and Flow Direction

The results of groundwater elevations obtained on March 22, 2022, which were measured from existing ground surfaces adjacent to well locations, indicate that depth to groundwater was observed at 42.5 feet below grade at well SLR-10, not observed to at least 45.2 feet below grade at well SLR-11, and observed at 1.5 feet below grade at well SLR-12. Prior to completing the SLR-11 well installation at 45.2 feet below grade, boring SLR-11 was advanced to 76 feet below grade in which no bedrock nor overt evidence of groundwater was observed.

Based on relative groundwater elevations observed in wells SLR-10 and SLR-12 and lack of groundwater observed at the bottom of well SLR-11, the inferred groundwater flow direction in the proposed sand and gravel pit area is east/southeasterly. This groundwater flow direction generally mimics surface topography that slopes downward toward the intersection where an unnamed brook/stream, which is located along the east boundary of the subject property, flows into Otter Brook, which is located approximately several hundred feet to the south on the south side of Franklin Pierce Highway Route 9. Inferred groundwater contour intervals and flow direction are illustrated on the attached Figure 1.

Please do not hesitate to contact this office should you have any questions on the above or require further information.



Sincerely,

SLR International Corporation

Stephen H. Honchy

Stephan H. Landry, LSP, WWTPO 2-I, Geologist

Principal Consultant

Charles E. Teale, PE, LSP

Sr. Principal Engineer

Enclosures: Figure 1 – Exploration and Groundwater Flow Plan

Table 1 – Ground Surface, Well and Groundwater Elevations

Test Pit Logs - TP-1 to TP-16 Boring Logs - SLR-1 to SLR-6

Well Construction Logs - SLR-10, SLR-11, SLR-12

Soil Gradation Test Results

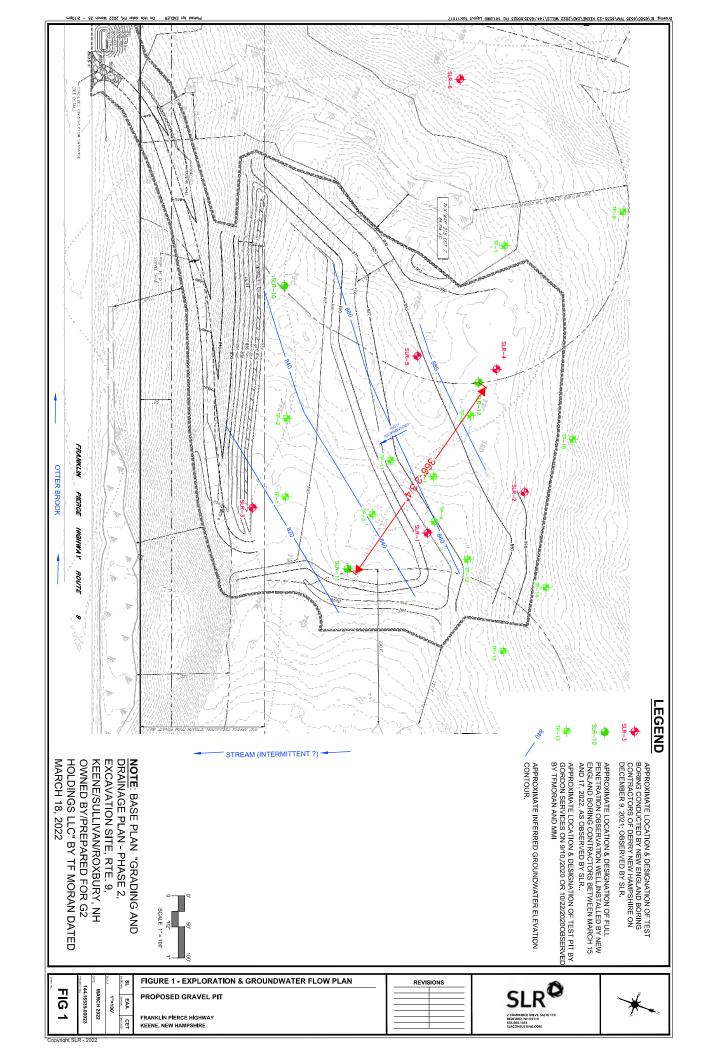




TABLE 1 GROUND SURFACE, WELL, AND GROUNDWATER ELEVATIONS

Tax Map 215, Lot 7 Route 9, Keene, New Hampshire Project # 144.16535.00023

Well ID	Ground Surface Elevation (feet)	Proposed Excavation Depth	Well Elevation At Top PVC (feet)		Bottom Well Elevation from Ground Surface (feet)	Screen Interval	Depth to Groundwater Date		
SLR-10	883 ±	854 ±	884.7 ±	55	828 ±	5-55	3/22/22	42.9	840.1 ±
SLR-11	863 ±	856 ±	865.3 ±	45.2	817.8 ±	5-45	3/22/22	dry at 45.2	817.8 ±
SLR-12	890 ±	858 ±	892.7 ±	39.5	850.5 ±	4.5-39.5	3/22/22	1.5	888.5 ±

Notes:

- 1. Ground surface and well elevation at monitoring well locations were provided by TF Moran
- 2. Groundwater level readings taken 3/22/22 using an electronic water level meter.
- 3. 2-inch PVC wells installed 3/15-17/22.
- 4. Proposed excavation depths taken from TFM Grading and Drainage Plan dated 3/18/22

					TES	T PI	r Log					
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	T	P-1	SHEET:	1 of 1
<i>(</i>)	MILON	E &	LOCATION:	Franklin P	ierce High	nway, Keene,	NH	CONTRACTOR:	Gordo	n Services		
N.	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran				INSPECTOR:	E. Adle	er		
Boalei	(603) 668-165		DATE:	Septembe	er 10, 2020)		GROUND SURF	ACE ELEV	ATION:	±872	<u>)</u>
	EQU	JIPMENT			IMENSIONS	GF	OUNDWATER OBS	ERVATIONS			OTHER	
type Make/Moi	DEI		avator	LENGTH (F	T) 20					FIELD TEST	ING PRY TESTING	
REACH (FT)			Т 320 15	WIDTH	4	ELAPSED TIME (H DEPTH (FT)	K)			PID SCREE		
CAPACITY (.25	DEPTH	15	X	NO GROUNDW	ATER ENCOUNTER	ED			
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BURI		CK CLASSIFICATION-DES		K)		STRATUM <u>CHANGE</u> DESCRIPTION	PID (PPM)
		(QTT/CLASS)		Light hro			D, little Gravel,		-	re no	FILL	
	E			odor, moi		to line SAIN	o, iittie Gravei,	iittie Siit, 110	Structu	16, 110	1.0	
1						narse to fine	SAND, some S	ilt little (+) (obbles		FILL	
				'			u, no odor, mo		.000103/	,		
2	_			1	9		-, ,					
	E											
3												
4				1								
											5	
5				Brown co	arse to fin	e SAND, littl	e (+) Silt, trace	Gravel, no c	dor, mo	oist.	5.5	
							SAND, some S				TILL	
6				4			II bonded in-si					
_	D											
'												
8												
9												
9												
10												
"												
11												
	D											
12												
13												
14												
15				Bottom o	f Explorati	on at ± 15'					15	
Remark	s:	<u> </u>		1 110111 0		BOULDER DE	SIGNATION	E	XCAVATION	N EFFORT	PROPORTIO	ONS
						ZE (IN)	DESIGNATIO	N	E = E/	ASY	trace = 0% t	
						to 18 3 to 36	A B		M = MOD		little = 10% t some = 20%	
						36+	C		D = DIFF	ICULT	and = 35 to	

					TES	T PI	r LOG				
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	TP-2	SHEET:	1 of 1
<i>(</i>)	MILON	E &	LOCATION:	Franklin P	ierce High	nway, Keene,	NH	CONTRACTOR:	Gordon Service	S	
~	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran				INSPECTOR:	E. Adler		
	(603) 668-165	54	DATE:	Septembe)		GROUND SURFA	ACE ELEVATION:	±877	7
	EQU	JIPMENT			IMENSIONS	GF	OUNDWATER OBS	ERVATIONS		OTHER	
type Make/Moi)EI		avator T 320	LENGTH	T) 20	ELAPSED TIME (H	D)		FIELD T	ESTING ATORY TESTING	
REACH (FT)			15	WIDTH	4	DEPTH (FT)	к)			REENING	
CAPACITY (.25	DEPTH	15	IX	NO GROUNDW	VATER ENCOUNTERI			
Donth	EXCAVATION	BOULDER	REMARK			SOIL AND BO	CK CLASSIFICATION-DE	SCRIPTION	· · · · · ·	STRATUM	PID
Depth (FT)	EFFORT	COUNT (QTY/CLASS)	NUMBER		BURI		L) U.S. CORPS OF ENGIN		()	<u>CHANGE</u> DESCRIPTION	(PPM)
	М			Red-brow		n to fine SAN	ID, little Gravel	l, little (+) Silt	, no structure,	OUTWASH	
1 2 3 4 5 6 7 8 9	M D			Note redo	oximorphi wn coarse		±3.5' D, some (-) Silt, Il bonded in-si			3.5 4.0 TILL	
11											
12											
'-	D										
13											
14				1							
15										15	
				Bottom o	f Explorati	on at ± 15'					
Remark	s:					BOULDER DE			CAVATION EFFORT	PROPORTI	
						ZE (IN)	DESIGNATIO	N	E = EASY	trace = 0%	
						to 18 3 to 36	А В		M = MODERATE	little = 10% t some = 20%	
						36+	С		D = DIFFICULT	and = 35 to	

					TES	T PI	r LOG				
			PROJECT:	Proposed	d Gravel P	Pit		TEST PIT NO.:	TP-3	SHEET:	1 of 1
<i>(</i> ())	MILON	E &	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTOR:	Gordon Services	3	
~	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran	l			INSPECTOR:	E. Adler		
200,01	(603) 668-165		DATE:	•	er 10, 2020	ס		GROUND SURFA	CE ELEVATION:	±879)
TYPE	EQU	IIPMENT	watar	-1	IMENSIONS	GI	ROUNDWATER OBS	ERVATIONS	FIELD TE	OTHER	
MAKE/MOI	DEL		rvator Γ 320	LENGTH	т) 16	ELAPSED TIME (H	R)		=	TORY TESTING	
REACH (FT)		,	15	WIDTH	4	DEPTH (FT)			PID SCRI		
CAPACITY (CY)	0 BOULDER	.25 I	DEPTH	14	X	NO GROUNDW	VATER ENCOUNTERE	D	STRATUM	I
Depth (FT)	EXCAVATION EFFORT	COUNT (QTY/CLASS)	REMARK NUMBER		BURI		CK CLASSIFICATION-DE IL) U.S. CORPS OF ENGIN)	CHANGE DESCRIPTION	PID (PPM)
1 2 3	M			-			ne Gravel, little e, no odor, mo	* *	(-) cobbles/	OUTWASH	
4 5 6 7 8	D			-	Grey-brown SILT, some coarse to fine Sand, little Gravel, trace cobbles/ boulders, mps=18", well bonded in-situ, platey, no odor, moist.						
9 10 11 12 13	D			-							
14				D .:	ce i :					14	
15				Rottom o	t Explorati	ion at ± 14'					
15											
Remark	s:				CI	BOULDER DE ZE (IN)	SIGNATION DESIGNATIO		CAVATION EFFORT	PROPORTIO	
					6 18	to 18 3 to 36 36+	A B C		E = EASY M = MODERATE D = DIFFICULT	trace = 0% t little = 10% t some = 20% and = 35 to	to 35%

					TES	T PI	r LOG					
			PROJECT:	Proposed	d Gravel F	Pit		TEST PIT NO.:	TP-	4	SHEET:	1 of 1
	MILON	E&	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTOR:	Gordon S	ervices		
80	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran	l			INSPECTOR:	E. Adler			
	(603) 668-165	i4	DATE:	•	er 10, 2020	0		GROUND SURFA	ACE ELEVATIO	N:	±889)
7.405	EQU	IPMENT		4	IMENSIONS	GI	OUNDWATER OBS	ERVATIONS		Teleup recr	OTHER	
TYPE MAKE/MOI	DEI		avator T 320	LENGTH (F	1 5	ELAPSED TIME (H	D)	1	 	FIELD TEST	ING DRY TESTING	
REACH (FT)			15	WIDTH	4	DEPTH (FT)	K)			PID SCREE		
CAPACITY			.25	DEPTH	15.5	X	NO GROUNDW	ATER ENCOUNTER	ED	Ī .		
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BUR		CK CLASSIFICATION-DES		<)		STRATUM <u>CHANGE</u> DESCRIPTION	PID (PPM)
1	М			4		e SAND, littl re, no odor,	e (-) Gravel, litt moist.	le (+) Silt, tra	ace cobble	S,	outwash	
3				Note red	oximorphi	c mottling at	±3.5'				3.5	
											4.0	
4												
5 6				4			O and Silt, little				TILL	
8	D											
9				_								
10 11												
12												
13												
											14	
14				Grey med	lium to fin	e SAND, trad	e (+) Silt, no st	tructure, no d	odor, mois	t.	15	
15	D			Grey-bro	wn coarse	to fine SANI	D, little Gravel,	some Silt, tra	ace cobble	S.		
13				Bottom o	f Explorati	ion at ± 15.5					15.5	
Remark	s:					BOULDER DE			XCAVATION EFF	ORT	PROPORTIO	
						ZE (IN)	DESIGNATIO	N	E = EASY		trace = 0% t	
						to 18 3 to 36	А В		M = MODERA	TE	little = 10% to some = 20% to	
						36+	С		D = DIFFICUL	Т	and = 35 to	

					TES	T PI	r LOG				
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	TP-5	SHEET:	1 of 1
	MILON	E &	LOCATION:	Franklin P	ierce High	nway, Keene,	NH	CONTRACTOR: G	ordon Services		
3	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran				INSPECTOR: E	. Adler		
	(603) 668-165		DATE:	•	er 10, 2020)		GROUND SURFAC	E ELEVATION:	±891	
	EQU	IPMENT		-	IMENSIONS	GF	OUNDWATER OBS	ERVATIONS		OTHER	
TYPE	NF!		avator		T) 15				FIELD TES		
Make/Moi Reach (FT)			Т 320 15	LENGTH WIDTH	15 4	ELAPSED TIME (H DEPTH (FT)	R)		PID SCREE	ORY TESTING	
CAPACITY (.25	DEPTH	13	DEPTH (FI)	NO GROUNDW	VATER ENCOUNTERED		DINING	
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER			SOIL AND RO	CK CLASSIFICATION-DE	SCRIPTION	, <u>, , , , , , , , , , , , , , , , , , </u>	STRATUM <u>CHANGE</u> DESCRIPTION	PID (PPM)
1 2 3				-	own coars odor, moi		ND, trace (-) G	ravel, trace (+)	Silt, trace	OUTWASH 3.0	
4 5				4	Grey-brown coarse to fine SAND, some Silt, little Gravel, trace cobbles/boulders, mps=8", no structure, no odor, moist.						
6 7				_				tle Gravel, trac y, no odor, mo		TILL	
9				-							
10				_							
11				1							
12										13	
13 14 15				Bottom o	f Explorati	on at ± 13'					
Remark	s:		•	•		BOULDER DE	SIGNATION	EXC	AVATION EFFORT	PROPORTIO	ONS
					6 18	ZE (IN) to 18 to 36 36+	DESIGNATIO A B C	М	E = EASY = MODERATE = DIFFICULT	trace = 0% t little = 10% t some = 20% t and = 35 to	o 20% to 35%

					TES	T PI	Γ LOG				
			PROJECT:	Proposed	d Gravel P	Pit		TEST PIT NO.:	TP-6	SHEET:	1 of 1
// \	MILON MACBE	E &	LOCATION:	Franklin F	ierce High	nway, Keene,	NH	CONTRACTOR: G	ordon Services	l .	
~	MACBE	MOOS	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S d, New Hampshi		CLIENT:	TF Moran	l			INSPECTOR: E	. Adler		
Bodion	(603) 668-165		DATE:	Septembe	er 10, 2020)		GROUND SURFAC	E ELEVATION:	±894	1
TYPE	EQU	IPMENT	water	-	IMENSIONS	GI	ROUNDWATER OBS	SERVATIONS	FIELD TES	OTHER	
MAKE/MOI	DEL		avator T 320	LENGTH	T) 14	ELAPSED TIME (H	R)		=	ORY TESTING	
REACH (FT)		,	15	WIDTH	4	DEPTH (FT)			PID SCREE	NING	
CAPACITY (CY)		.25	DEPTH	14	X	NO GROUNDY	VATER ENCOUNTERED		STRATUM	ı
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BURI		CK CLASSIFICATION-DE IL) U.S. CORPS OF ENGI			CHANGE DESCRIPTION	PID (PPM)
1				Yellow-br no odor,		se to fine SA	ND, little Silt, t	race Gravel, no	structure,	OUTWASH	
				Note fain	t redoximo	orphic mottl	ng at ±2.5'			3.0	
4 5 6 7 8		Note faint redoximorphic mottling at ±2.5' Olive brown coarse to fine SAND and Silt, little Gravel, trace cobbles/ boulders, mps=14", well bonded, trending to platey at ±10', no odor, moist.							TILL		
10										10	
11										TILL	
13											
14				Rottom o	f Evalorati	ion at ± 14'				14	
15					Explorati	iuii al I 14					
Remark	 s:				ı	BOULDER DE	SIGNATION	EVC	AVATION EFFORT	PROPORTIO	ONS
Remarks:					6 18	ZE (IN) to 18 3 to 36 36+	DESIGNATIO A B C	DN M	E = EASY = MODERATE = DIFFICULT	trace = 0% to little = 10% to some = 20% or and = 35 to	to 10% to 20% to 35%

					TES	T PI	r LOG					
			PROJECT:	Proposed	d Gravel P	Pit		TEST PIT NO.:	Т	P-7	SHEET:	1 of 1
<i>(</i> 1)	MILON	E&	LOCATION:	Franklin F	ierce High	nway, Keene,	NH	CONTRACTOR:	Gordo	n Services		
82	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S		CLIENT:	TF Moran				INSPECTOR:	E. Adle	r		
Bedion	d, New Hampsh (603) 668-165		DATE:	Septembe	er 10, 2020)		GROUND SURFA	CE ELEV <i>A</i>	ATION:	±898	3
	EQU	IPMENT		TEST PIT D	IMENSIONS	GF	ROUNDWATER OBS	FRVATIONS			OTHER	
TYPE			avator		T)					FIELD TEST		
Make/Moe Reach (ft)			Г 320 15	LENGTH WIDTH	12 4	ELAPSED TIME (H DEPTH (FT)	R)	 		LABORATO	DRY TESTING	
CAPACITY (.25	DEPTH	12	IX	NO GROUNDW	ATER ENCOUNTERE	D	I FID SCREE	MING	
Depth	EXCAVATION	BOULDER	REMARK				CK CLASSIFICATION-DE	SCRIPTION	<u> </u>		STRATUM	PID
(FT)	EFFORT	COUNT (QTY/CLASS)	NUMBER		BURI		IL) U.S. CORPS OF ENGIN)		<u>CHANGE</u> DESCRIPTION	(PPM)
		(QTT/CLASS)		Black mov		•	ne Si l t, many ro			ıro		
				slight org			ne siit, many it	ous/logs, no	Structu	ire,	FILL	
1												
2											2.0	
				Yellow-br	own coars	se to fine SA	ND, little (+) S	ilt, trace Grav	el, no		SUBSOIL	
,				structure,	no odor,	moist.					3.0	
5					over coarse to fine CAND, some Croyal little (+) Silt trace cobbles/							
				Brown co	wn coarse to fine SAND, some Gravel, little (+) Silt, trace cobbles/							
4				boulders,	lders, mps=24", slightly bonded in-situ, no odor, moist.							
_					lders, mps=24", slightly bonded in-situ, no odor, moist.							
5												
6				=								
7												
8												
9												
10				<u> </u>								
11				<u> </u>								
4.5				Note larg	e boulder,	/possible be	drock at 12'				12	
12						ion at ± 12'						
4.5					•							
13				_								
14												
15				1								
Remark	s:	•	•	•		BOULDER DE			CAVATION	I EFFORT	PROPORTI	
						ZE (IN)	DESIGNATIO	N	E = EA	ASY	trace = 0%	
						to 18 3 to 36	А В		M = MOD		little = 10% t some = 20%	
						36+	C		D = DIFF	CULT	and = 35 to	

					TES	T PI	r Log					
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.	:	TP-8	SHEET:	1 of 1
	MILON MACBE	E&	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTO	R: Gordo	on Services		
3	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran	1			INSPECTOR:	E. Adl	er		
Bedier	(603) 668-165		DATE:	Septembe	er 10, 2020)		GROUND SU	RFACE ELEV	/ATION:	±930)
	EQU	IPMENT			IMENSIONS	GF	OUNDWATER OBS	ERVATIONS			OTHER	
TYPE MAKE/MOI) []		avator	LENGTH	T) 10	ELAPSED TIME (H				FIELD TEST	ING DRY TESTING	
REACH (FT)			T 320 15	WIDTH	10 4	DEPTH (FT)	K)			PID SCREE		
CAPACITY (.25	DEPTH	3	X	NO GROUNDW	ATER ENCOUNT	TERED			
Depth	EXCAVATION	BOULDER	REMARK			SOIL AND RO	CK CLASSIFICATION-DES	SCRIPTION			STRATUM	PID
(FT)	EFFORT	COUNT (QTY/CLASS)	NUMBER		BURI		L) U.S. CORPS OF ENGIN		OCK)		<u>CHANGE</u> DESCRIPTION	(PPM)
		(QTT/CLASS)		Corost M			-, -, -, -, -, -, -, -, -, -, -, -, -, -				DESCRIPTION	
				Forest Ma	at/Topson						0.7	
1				Brown co	arse to fin	e SAND littl	e Gravel, little S	Silt redoxi	morphic	markings		
	М				odor, mo		e Gravei, inche s	one, reachi	morpriic	markings	TILL	
2					ouoi, iiio	151.					IILL	
	D											
3	Refusal on probable bedrock										3.0	
	Bottom of Exploration at ± 3'											
4												
4												
5				1								
6				-								
7				_								
8												
ľ												
_												
9				1								
10				1								
11				-								
12												
42												
13				1								
14				1								
15			<u> </u>	-								
Remark	s:					BOULDER DE	SIGNATION	1	EXCAVATIO	N FFFORT	PROPORTI	ONS
					SIZ	ZE (IN)	DESIGNATIO	N			trace = 0%	
					6	to 18	А		E =		little = 10% t	
						to 36	В		M = MO D = DIF		some = 20%	
						36+	С		5 - 511		and = 35 to	50%

					TES	T PI	r Log				
			PROJECT:	Proposed	d Gravel F	Pit		TEST PIT NO.:	TP-9	SHEET:	1 of 1
<i>(</i> 1)	MILON MACBE	E&	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTOR:	Gordon Services	5	
3	MACBE	MOOS	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S d, New Hampshi		CLIENT:	TF Moran	l			INSPECTOR:	E. Adler		
Bedion	(603) 668-165		DATE:	•	er 10, 2020)		GROUND SURFA	CE ELEVATION:	±934	4
	EQU	IPMENT		TEST PIT D	IMENSIONS	GI	ROUNDWATER OBS	ERVATIONS		OTHER	
TYPE			avator		T)				FIELD TE		
Make/Moe Reach (ft)	DEL		Т 320 15	LENGTH WIDTH	12 4	ELAPSED TIME (H DEPTH (FT)	R)		LABORA	TORY TESTING	
CAPACITY (CY)		.25	DEPTH	9	DEPTH (FT)	NO GROUNDY	VATER ENCOUNTERE		EENING	
		BOULDER								STRATUM	nio.
Depth (FT)	EXCAVATION EFFORT	COUNT (QTY/CLASS)	REMARK NUMBER		BUR		ck classification-de IL) U.S. Corps of Engli		ı	<u>CHANGE</u> DESCRIPTION	PID (PPM)
				Forest Ma	at/Top Soi	l				0.5	5
1 2 3 4	M						ne (+) Gravel, l e, no odor, mo		race cobbles/	TILL	
5	D									5)
6 7 8				Bedrock s						8	3
J					}	1 -	coarse to fine				
9							ce cobbles/bou	ılders, no odo	r, moist.	9)
10					•	e bedrock at ion at ± 9'	±9'				
11											
12											
13				1							
14				-							
15				1							
Remark	s:		<u> </u>			BOULDER DE	SIGNATION	l EX	CAVATION EFFORT	PROPORT	IONS
Remarks: Note significant bedrock outcrops in test pit vicinity.					6 18	ZE (IN) to 18 3 to 36 36+	DESIGNATIC A B C	N	E = EASY M = MODERATE D = DIFFICULT	trace = 0% little = 10% some = 20% and = 35 to	to 10% to 20% to 35%

					TES	T PI	r LOG				
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	TP-10	SHEET:	1 of 1
	MILON	E&	LOCATION:	Franklin F	Pierce High	ıway, Keene,	NH	CONTRACTOR: (Gordon Services		
	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran	ı			INSPECTOR:	E. Adler		
Bealer	(603) 668-165		DATE:	Septembe	er 10, 2020)		GROUND SURFA	CE ELEVATION:	±915	,
	EQU	JIPMENT			IMENSIONS	GI	ROUNDWATER OBSE	RVATIONS		OTHER	
TYPE MAKE/MOI	DEL		avator T 320	LENGTH (F	T) 15	ELAPSED TIME (H	R)		FIELD TEST	ING DRY TESTING	
REACH (FT)			15	WIDTH	4	DEPTH (FT)			☐ PID SCREE		
CAPACITY ((CY)		.25	DEPTH	5.5	X	NO GROUNDW	ATER ENCOUNTERE			
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BURÎ		ck classification-des IL) U.S. Corps of Engin			STRATUM <u>CHANGE</u> DESCRIPTION	P I D (PPM)
	Е			Forest Ma	at/Top Soi					0.33	
1	L			Light bro	wn fine SA	ND, little Sil	t - SUBSOIL-			1.0	
2	Е						ND, some Grav e, no odor, moi		trace cobbles/	TILL	
3										3.0	
Grey-brown coarse to fine SAND, some Silt, little Gravel, trac boulders, mps=36", well bonded in-situ, no odor, moist.										TILL 4.0	
boulders, mps=36", well bonded in-situ, no odor, moist.										TILL	
5				Refusal at	t ±4-5.5' o	n probable l	oedrock.			5.5	
6						on at ± 5.5'					
7				_							
8											
9											
10											
11											
12											
13											
14											
15											
Remark	s:	1	1	I		BOULDER DE			CAVATION EFFORT	PROPORTIO	ONS
						ZE (IN)	DESIGNATIO	N	E = EASY	trace = 0% t	
						to 18 to 36	A B		M = MODERATE	little = 10% t some = 20% t	
						36+	С		D = DIFFICULT	and = 35 to	

					TES	T PI	r Log					
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	Т	P-11	SHEET:	1 of 1
<i>/</i> //\	MILON	E &	LOCATION:	Franklin P	Pierce High	ıway, Keene,	NH	CONTRACTOR:	Gordo	n Services		
~	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S d, New Hampsh		CLIENT:	TF Moran	l			INSPECTOR:	E. Adle	er		
Bedion	(603) 668-165		DATE:	•	er 10, 2020)		GROUND SURFA	CE ELEV	ATION:		
	EQU	IPMENT		TEST PIT D	IMENSIONS	G	OUNDWATER OBS	FRVATIONS			OTHER	
TYPE			avator		T)					FIELD TEST		
Make/Moe Reach (FT)			Т 320 15	LENGTH WIDTH	16 4	ELAPSED TIME (H DEPTH (FT)	R)			LABORATO PID SCREE	ORY TESTING	
CAPACITY (.25	DEPTH	14	DEPTH (FI)	NO GROUNDW	ATER ENCOUNTER	D	III JCKEE	VIING	
		BOULDER									STRATUM	
Depth (FT)	EXCAVATION EFFORT	COUNT (QTY/CLASS)	REMARK NUMBER		BURN		CK CLASSIFICATION-DES L) U.S. CORPS OF ENGIN		()		<u>CHANGE</u> DESCRIPTION	PID (PPM)
	Е			Brown co	arse to fin	e SAND, littl	e Silt, trace Gra	vel, roots.			0.66	
1 2 3 4	M			-			D, some Silt, litt d in-situ, no od		ice cob	bles/	TILL	
5				Grey-brov	wn coarse	to fine SANI	 D, some(+) Silt,	little Gravel,	trace o	cobbles/	6 TILL	
8 9	D			boulders,	mps=12",	well blende	d in-situ, plate	y, no odor, m	noist.			
10 11	D											
12												
13												
13											14	
14				Bottom o	f Explorati	on at ± 14'						
15				†								
Remark	s:	-	-	-		BOULDER DE			(CAVATIO	N EFFORT	PROPORTIO	ONS
					6 18	ZE (IN) to 18 to 36 36+	DESIGNATIO A B C		E = E. M = MOD D = DIFF	ERATE	trace = 0% t little = 10% to some = 20% t and = 35 to	o 20% :o 35%

					TES	T PI	r Log					
			PROJECT:	Proposed	d Gravel F	it		TEST PIT NO.:	TF	P-12	SHEET:	1 of 1
<i>(</i> <u>)</u>	MILON MACBE	E&	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTOR: (Gordor	Services		
~	MACBE	MOOS	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S d, New Hampshi		CLIENT:	TF Moran	l			INSPECTOR: [. Adleı	r		
Bodioi	(603) 668-165		DATE:	October 2	22, 2020			GROUND SURFAC	E ELEVA	TION:		
	EQU	IPMENT		-	IMENSIONS	GI	ROUNDWATER OBS	ERVATIONS			OTHER	
type Make/Moi)EI		avator T 320	LENGTH	T) 10	ELAPSED TIME (H		 		FIELD TEST		
REACH (FT)			15	WIDTH	4	DEPTH (FT)	N)			PID SCREE		
CAPACITY (CY)	0	.25	DEPTH	8	X	NO GROUNDW	ATER ENCOUNTERED				
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BUR		CK CLASSIFICATION-DE				STRATUM <u>CHANGE</u> DESCRIPTION	PID (PPM)
		(411/62133)		Brown co			Silt, many roo				FOREST	
	E			Brown co	arse to mi	c 5/ 11 15 and	Sile, many 100				MAT	
1											1.25	
				Grev-hrov	wn to red-	hrown coars	se to fine SAND) little Gravel	trace (·+)	OUTWASH	
2				- 1			odor, moist.	, ittle Graver,	trace (. ')	OO! WASII	
				Silt, Tedo/	amorphic	stairiirig, 110	odor, moist.					
3				_								
	D											
4												
5				_								
6												
7												
	D										7.5	
8					d bedrock						8	
					refusal at							
9				Bottom o	f Explorati	on at ± 8'						
10												
11												
12												
13												
13												
14												
14												
45												
15												
Remark		Idore in visici	hv.			BOULDER DE			AVATION	EFFORT	PROPORTIO	
inote larg	e surficial bou	iueis III VICINIT	ıy.			ZE (IN) to 18	DESIGNATIO A	IN	E = EA	SY	trace = 0% t little = 10% t	
						to 36	В		= MODE		some = 20% t	
						36+	С) = DIFFK	LULI	and = 35 to	50%

					TES	T PI	Γ LOG					
			PROJECT:	Proposed	d Gravel F	Pit		TEST PIT NO.:	TI	P-13	SHEET:	1 of 1
W	MILON	E &	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTOR:	Gordor	n Services		
~	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
	mmerce Drive, S d, New Hampshi		CLIENT:	TF Moran	l			INSPECTOR:	E. Adle	r		
	(603) 668-165	i4	DATE:	October 2				GROUND SURFA	ACE ELEVA	TION:		
T) (D.E.	EQU	IPMENT		4	IMENSIONS	Gi	ROUNDWATER OBS	ERVATIONS		Tels o recr	OTHER	
TYPE MAKE/MOI	DFL.		rvator Γ320	LENGTH	T) 10	ELAPSED TIME (H	IR)			FIELD TEST		
REACH (FT)			15	WIDTH	4	DEPTH (FT)				PID SCREE		
CAPACITY ((CY)	0.	.25	DEPTH	6	X	NO GROUNDW	VATER ENCOUNTER	ED			
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BUR		CK CLASSIFICATION-DE		()		STRATUM <u>CHANGE</u> DESCRIPTION	PID (PPM)
	_			Forest Ma	at						0.6	
1	E				n coarse	to fine SANE), little Gravel, l	little Silt, no s	tructure	e, no	OUTWASH	
_				Vallow br		ium to fino C	AND, trace Silt				2.5	
3				Yellow-br	own mea	ium to line s	AND, trace Silt	., no structure	e, no od	or.	3.0	
4	M			Grey-brov in-situ, no			D, some Silt, lit	tle Gravel, we	ell blend	led	TILL	
5 6	D			Excavator	refusal at	: 6' on proba	ble bedrock.				6	
7				Bottom o	f Explorati	ion at ± 6'						
8				_								
10				<u> </u> -								
11				_								
12				_								
13				_								
14												
15				1								
Remark		Id			_	BOULDER DE			KCAVATION	EFFORT	PROPORTIO	
ivote larg	e surficial bou	iaers in vicinit	y.		6 18	ZE (IN) to 18 3 to 36 36+	DESIGNATIO A B C		E = EA M = MODI D = DIFFI	ERATE	trace = 0% t little = 10% t some = 20% t and = 35 to	o 20% to 35%

					TES	T PI	r LOG					
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	TP-1	4	SHEET:	1 of 1
<i>(</i>)\	MILON	E &	LOCATION:	Franklin F	ierce High	ıway, Keene,	NH	CONTRACTOR:	Gordon Se	ervices		
~	MACBI	ROOM	PROJ. NO:	6535-23				FOREMAN:				
2 Cor Bedfor	mmerce Drive, S d, New Hampsh	Suite 110 ire 03110	CLIENT:	TF Moran				INSPECTOR:	E. Adler			
	(603) 668-165		DATE:	October 2	22, 2020			GROUND SURF	ACE ELEVATION	N:		
TVDE	EQL	JIPMENT		-	IMENSIONS	Gi	OUNDWATER OBS	ERVATIONS		ELEI D. TECT	OTHER	
TYPE MAKE/MOI	DEL		avator T 320	LENGTH	T) 8	ELAPSED TIME (H	R)			FIELD TEST LABORATO	RY TESTING	
REACH (FT)			15	WIDTH	4	DEPTH (FT)				PID SCREE		
CAPACITY (CY)		.25	DEPTH	6.5	X	NO GROUNDW	ATER ENCOUNTER	ED		STRATUM	
Depth (FT)	EXCAVATION EFFORT	BOULDER COUNT (QTY/CLASS)	REMARK NUMBER		BURI		ck classification-de: L) U.S. Corps of Engin		K)		CHANGE DESCRIPTION	PID (PPM)
	Е			Forest Ma	at						0.5	
1	_						D, little (+) Silt, redoximorphic			st.	TILL	
3	М										3.0	
											4.0	
4	D				_							
5												
6											6.5	
7					•	e bedrock at on at ± 6.5'	±3 to ±6.5'					
8					rexplorati	011 ut ± 0.5						
9												
10												
11												
12												
13												
14												
15												
Remark	s:	l	I		I	BOULDER DE	SIGNATION	l E	XCAVATION EFFO	RT	PROPORTIO	ONS
		lders in vicinit	y.			ZE (IN)	DESIGNATIO		E = EASY		trace = 0% t	:o 10%
						to 18 to 36	А В		M = MODERAT	E	little = 10% t some = 20% t	
						36+	С		D = DIFFICULT	-	and = 35 to	

					TES	T PI	r Log					
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	-	ГР-15	SHEET:	1 of 1
// \	MILON MACBE	E &	LOCATION:	Franklin F	Pierce High	nway, Keene,	NH	CONTRACTOR	: Gord	on Services		
•	MACBE	ROOM	PROJ. NO:	6535-23				FOREMAN:				
2 Cor Bedfor	mmerce Drive, S d, New Hampshi	Suite 110 ire 03110	CLIENT:	TF Moran	١			INSPECTOR:	E. Adl	er		
	(603) 668-165	i4	DATE:	October 2				GROUND SUR	FACE ELEV	/ATION:		
TYPE	EQU	IIPMENT	water	-	IMENSIONS	GI	ROUNDWATER OBS	ERVATIONS		FIELD TEST	OTHER	
MAKE/MOI	DEL		avator T 320	LENGTH	T) 8	ELAPSED TIME (H	R)			. =	DRY TESTING	
REACH (FT)		,	15	WIDTH	4	DEPTH (FT)				PID SCREE	NING	
CAPACITY (CY)	BOULDER	.25 I	DEPTH	6	X		VATER ENCOUNTE	RED		STRATUM	
Depth (FT)	EXCAVATION EFFORT	COUNT (QTY/CLASS)	REMARK NUMBER		BURI		ck classification-de IL) U.S. Corps of Engin		CK)		CHANGE DESCRIPTION	PID (PPM)
	Е			Forest Ma	at						0.5	
2	М				wn coarse o odor, mo		D, some Silt, tr	ace Gravel,	well ble	ended	TILL	
4				Red-brow	vn coarse t	o fine SAND	and Gravel, tr	ace Silt, roc	k matri:	x intact,	4.5 WEATHERED	
5	D			no odor,		ent bedrock	at +6'				BEDROCK 6	
6				1	f Explorati		at ±0				0	
7												
,												
8				1								
9				1								
10				<u> </u>								
11				_								
12												
13												
14												
15												
Remark: Note large	s: e surficial bou	Iders in vicinit			CI.	BOULDER DE ZE (IN)	SIGNATION DESIGNATIO		EXCAVATIO	ON EFFORT	PROPORTIO	
. vote large	c sarricial bou	iacis in viciill	·J·			to 18	DESIGNATIO A	114	E =		trace = 0% t little = 10% t	
					18	to 36	В		M = MC D = DIF		some = 20%	to 35%
						36+	С		- DII		and = 35 to	50%

					TES	T PIT	LOG				
			PROJECT:	Proposed	d Gravel P	it		TEST PIT NO.:	TP-16	SHEET:	1 of 1
	MILON	E &	LOCATION:	Franklin P	Pierce High	nway, Keene,	NH	CONTRACTOR:	Gordon Services	1	
2	MACBI	ROOM	PROJ. NO:	6535-23				FOREMAN:			
	mmerce Drive, S		CLIENT:	TF Moran	1			INSPECTOR:	E. Adler		
Bedfor	d, New Hampsh (603) 668-165		DATE:	October 2	22, 2020			GROUND SURF	ACE ELEVATION:		
T) (D.F.	EQU	JIPMENT	<u> </u>		IMENSIONS	GR	OUNDWATER OBSI	ERVATIONS	Tels p yea	OTHER	
TYPE MAKE/MOI	DEL		avator T 320	LENGTH (F	т) Т	ELAPSED TIME (H	₹)		FIELD TES	ORY TESTING	
REACH (FT))		15	WIDTH		DEPTH (FT)			☐ PID SCRE		
CAPACITY ((CY)	0 BOULDER	.25	DEPTH			NO GROUNDW	ATER ENCOUNTER	ED	STRATUM	ı
Depth (FT)	EXCAVATION EFFORT	COUNT (QTY/CLASS)	REMARK NUMBER		BURI		CK CLASSIFICATION-DES L) U.S. CORPS OF ENGIN		<)	CHANGE DESCRIPTION	PID (PPM)
				Forest Ma	at					0.4	
1				Olive-bro	wn coarse	to fine SAN	D, some Silt, lit	tle Gravel, lit	tle cobbles/	TILL	
	М			boulders,	mps=1', v	vell blended	in-situ, no odc	or, moist.			
2				_							
3				_							
4	М										
5							able bedrock.			5	
				Bottom o	f Explorati	on at ± 5'					
6											
7				_							
8				_							
9											
10											
11											
12				_							
13											
14											
15											
Remark					_	DOI:: DED	CICNIATION	<u> </u>	VCAVATION FFFORT	DDODOS-	ONIC
	e surficial bou	ılders in vicinit	ty.		SI	BOULDER DE ZE (IN)	DESIGNATION DESIGNATIO		XCAVATION EFFORT	trace = 0%	
						to 18	A		E = EASY M = MODERATE	little = 10%	
						36+	В С		D = DIFFICULT	some = 20% and = 35 to	

TEST BORING LOG SLR-1 BORING NO.: PROJECT: **Proposed Sand & Gravel Pit** SHEET: 1 of 1 OCATION: Franklin Pierce Highway CONTRACTOR: **New England Boring Contractors** PROJ. NO: 144.16535.00023 FOREMAN: M. Thompson CLIENT: TF Moran INSPECTOR: E. Adler Bedford, New Hampshire 03110 603-668-1654 December 9, 2021 **GROUND SURFACE ELEVATION:** DATE: GROUNDWATER OBSERVATIONS EQUIPMENT: AUGER CASING SAMPLER COREBRL. FIELD TESTING HSA ELAPSED TIME (HR) 0 LABORATORY TESTING MONITORING WELL INSTALLED SIZE ID (IN) 3 1/4 1 3/8 CASING AT (FT) 19 HAMMER WT (LB) 140 DEPTH (FT) 14 PID SCREENING --HAMMER FALL (IN) 30 NO GROUNDWATER ENCOUNTERED RECOVERY SOIL AND ROCK CLASSIFICATION-DESCRIPTION SAMPLE BLOWS Depth STRATUM CHANGE PID (PPM (FT) NUMBER (IN) PER 6" BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) DESCRIPTION **FILL** Loose dark brown medium to fine SAND, some Silt, trace organics, 2 slight organic odor, moist. 4.5 **S1** 6 Loose red-brown coarse to fine SAND, little SILT, trace Gravel, no 4 3 structure, no odor, moist. 4 Auger action indicates strata change at ±8' 8 9 Dense grey-brown medium to fine SAND, some Silt, trace Gravel, 15 **S2** 22 18 well blended in-situ, no odor, moist. 10 27 30 11 12 13 14 Very dense grey-brown medium to fine SAND, some Silt, trace (+) 26 24 **S3** 40 Gravel, well blended in-situ, no odor, moist. 15 79 74 16 Auger cuttings indicate wet material at ±17' 17 Auger action indicates material change at ±18' 18 18 19 Very dense grey medium to fine SAND, little (-) Silt, trace Gravel, 31 **S4** 16 Clay, layered with frequent fine SAND partings/lenses and clay varves, 47 20 57 20.5 Bottom of Exploration at ± 20.5' 21 No Refusal 22 COHESIONLESS SOILS **COHESIVE SOILS** SAMPLE TYPE PROPORTIONS C = ROCK CORE 1) TYPE OF RIG: CME 550X, ATV Mounted trace = 0% - 10% N = 0 - 4 = VERY LOOSE N = 0-2 = VERY SOFT 2) HAMMER/HOIST TYPE: Automatic 4-10 = LOOSE 2-4 = SOFTS = SPLIT SPOON little = 10% - 20% 10-30 = MEDIUM 4 - 8 = MEDIUM UP = UNDISTURBED PISTON some = 20% - 35% 30-50 = DENSE 8-15 = STIFF UT = UNDISTURBED THINWALL and = 35% - 50%)\6535 TFM\6535-23 Keene\2021 Borings\[144.16535.00023 TBLog.xls] 50 + = VERY DENSE 30 + = HARD

				1	EST	BORI	NG LO	G					
			PROJECT:	Proposed	Sand & Gr	avel Pit		BORING NO	u:	SLR	-2	SHEET:	1 of 1
C	LR	, 🔾	LOCATION:	Franklin Pi	erce Highv	vay		CONTRACTO	or: New E	ngla	nd Borin	g Contracto	rs
	L		PROJ. NO:	144.16535	.00023			FOREMAN:	M. The	omp	son		
	2 Commerce Dri edford, New Har		CLIENT:	TF Moran				INSPECTOR	E. Adle	er			
	603-668-	-1654	DATE:	December	9, 2021			GROUND SU	JRFACE ELEVATI	ON:			
EQUIPMENT	Γ:	AUGER	CASING	SAMPLER	COREBRL.		GROUNDWATER OBSER	RVATIONS	_		FIELD TESTI	NG	
TYPE		HSA		S 1 3 / 9		ELAPSED TIME (HR)					LABORATO		
SIZE ID (IN) HAMMER W	/T (LB)	3 1/4		1 3/8 140		CASING AT (FT) DEPTH (FT)					PID SCREEN	ng well installe Iing	D
HAMMER FA	ALL (IN)			30		X	NO GROUNDV	VATER ENCOU	NTERED		Ĭ		
Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"		BURMIS		ASSIFICATION-DESCRIPTIC S. CORPS OF ENGINEERS SY					TUM <u>CHANGE</u> SCRIPTION	PID (PPM)
1													
,				}									
2				}									
,				1									
_ 4	S1	5	29 50/2"			wn coarse to no odor, moi	fine SAND, little st.	(+) Silt, t	race			ŗ	5
5				Auger refu Bottom of	ısal at ±5'								
6				Bottom or	LXPIOIALIO	n at ± 5							
7				1									
8				1									
9]									
10				1									
11				1									
12				1									
13				1									
14				_									
				1									
15]									
16				1									
17				1									
18				1									
19				1									
20				}									
21				}									
22				1									
				<u> </u>									
Notes: 1) TYPE OF	RIG: CME 550)	X. ATV Mounte			N = 0 - 4 = V	ONLESS SOILS ERY LOOSE	N = 0-2 = VERY SOF		SAMPL C = ROCK CORE	E TYPE		PROPORT trace = 0% - 1	
	ER/HOIST TYPE:				4-10 = L0		2 - 4 = SOFT		S = SPLIT SPOON			little = 10% -	
					10-30 = N		4 - 8 = MEDIUM		JP = UNDISTURBED			some = 20% - 3	
FILE:)\6535 TFM\6535	-23 Keene\2021 E	sorings\[144.1653	5.00023 TBLog.xls]5	30-50 = D 50 + = V	ERY DENSE	8 -15 = STIFF 30 + = HARD		JT = UNDISTURBED	, IHINN	VALL	and = 35% - 5	JU70

				1	EST	BORI	NG LO	G					
			PROJECT:	Proposed	Sand & Gr	avel Pit		BORING NO.:		SLR-	-3	SHEET:	1 of 2
C	LF	, 🔾	LOCATION:	Franklin Pi	erce Highv	vay		CONTRACTOR	: New E	nglar	nd Borin	g Contractor	'S
2			PROJ. NO:	144.16535	.00023			FOREMAN:	M. Th	omp	son		
	2 Commerce Dri edford, New Ha		CLIENT:	TF Moran				INSPECTOR:	E. Adle	er			
	603-668	-1654	DATE:	December	9, 2021			GROUND SUR	FACE ELEVATI	ON:			
EQUIPMENT	Т:	AUGER	CASING	SAMPLER	COREBRL.		GROUNDWATER OBSER	VATIONS			FIELD TESTI	NG	
TYPE		HSA		S 4.3/2		ELAPSED TIME (HR)		0			LABORATO		
SIZE ID (IN) HAMMER W	/T (I B)	3 1/4		1 3/8 140		CASING AT (FT) DEPTH (FT)		25 DRY		F	PID SCREEN	NG WELL INSTALLEI IING)
HAMMER FA				30		X	NO GROUNDW	ATER ENCOUNTE	RED	F	T FID SCREEN	iiivo	
Depth	SAMPLE	RECOVERY	BLOWS				ASSIFICATION-DESCRIPTIC	DN			STRA	TUM <u>CHANGE</u>	PID (PPM)
(FT)	NUMBER	(IN)	PER 6"	Auger pro		ster system (soil) u.	s. CORPS OF ENGINEERS SY	YSTEM (ROCK)				SCRIPTION	()
1				Granular F		mine ground	water					FILL	
_ ء				_								2	2
3				Grey coars	se to fine S	AND, some Si	lt, trace Gravel					TILL	
4				1									
5													
				1									
6													
7				_									
8				_									
9													
10													
11				1									
12				-									
13				_									
14													
15				_									
16													
17													
18													
19													
20													-
21													
22				1									
Not													
Notes: 1) TYPE OF	RIG: CME 550)	X. ATV Mounte	d		N = 0 - 4 = V	ONLESS SOILS ERY LOOSE	N = 0 -2 = VERY SOF		SAMPL ROCK CORE	E TYPE		PROPORT trace = 0% - 1	
	ER/HOIST TYPE:		-		4-10 = L		2 - 4 = SOFT		SPLIT SPOON			little = 10% - 2	
					10-30 = N		4 - 8 = MEDIUM		= UNDISTURBED			some = 20% - 3	
FILE:)\6535 TFM\6535	-23 Keene\2021 E	orings\[144.1653	5.00023 TBLog.xls]\$	30-50 = D 50 + = V	ENSE ERY DENSE	8 -15 = STIFF 30 + = HARD	UT	= UNDISTURBED	THINV	/ALL	and = 35% - 5	0%

				1	EST	BORI	NG LO	G					
			PROJECT:	Proposed	Sand & Gra	avel Pit		BORING N	IO.:	SLR	≀-3	SHEET:	2 of 2
C	LF		LOCATION:	Franklin Pi	erce Highw	vay		CONTRAC	TOR: New	Engla	nd Borin	g Contractor	`S
	LI		PROJ. NO:	144.16535	.00023			FOREMAN	ı: M.T	homp	son		
	2 Commerce Dri edford, New Ha		CLIENT:	TF Moran				INSPECTO	r: E. Ac	ller			
	603-668	-1654	DATE:	December	9, 2021			GROUND	SURFACE ELEVA	TION:			
EQUIPMENT	·	AUGER	CASING	SAMPLER	COREBRL.		GROUNDWATER OBSER	VATIONS			FIELD TEST	NG	
TYPE		HSA		S		ELAPSED TIME (HR)		0		_ [LABORATO		
SIZE ID (IN) HAMMER W	T (LB)	3 1/4		1 3/8 140		CASING AT (FT) DEPTH (FT)		25 DRY		┨╏	PID SCREEN	NG WELL INSTALLEI JING)
HAMMER FA				30		X	NO GROUNDW		UNTERED	וַ בֿ			
Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"		BURMIS		LASSIFICATION-DESCRIPTIC S. CORPS OF ENGINEERS SY		()			TUM <u>CHANGE</u> ESCRIPTION	PID (PPM)
23				1									
24				Bottom of	Exploratio	n at ± 25', No	Refusal.					25	
25						· · · · · · · · · · · · · · · · · · ·							
26													
27													
28				1									
29													
30				1									
31				}									
32													
33				}									
34				}									
35]									
36				1									
37				1									
38				1									
39				1									
40]									
41				1									
42				1									
43				1									
44				}									
"				1									
Notes:				-		ONLESS SOILS	COHESIVE SOIL			PLE TYPI	•	PROPORT	
	RIG: CME 550) :R/HOIST TYPE:	X, ATV Mounted Automatic	a		N = 0 - 4 = V 4-10 = L0		N = 0 -2 = VERY SOF 2 - 4 = SOFT	ī	C = ROCK CORE S = SPLIT SPOO			trace = 0% - 1 little = 10% - 2	
					10-30 = N	1EDIUM	4 - 8 = MEDIUM		UP = UNDISTURE	ED PISTO		some = 20% - 3	5%
FILE:)\6535 TFM\6535	-23 Keene\2021 E	orings\[144.1653	5.00023 TBLog.xls]S	30-50 = D 50 + = VI	ENSE ERY DENSE	8 -15 = STIFF 30 + = HARD		UT = UNDISTURB	ED THIN	WALL	and = 35% - 5	0%

				1	EST	BORI	NG LO	G					
			PROJECT:	Proposed	Sand & Gr	avel Pit		BORING N	0.:	SLR	-4	SHEET:	1 of 1
C	LF	,	LOCATION:	Franklin Pi	erce Highv	<i>ı</i> ay		CONTRAC	tor: New E	ngla	nd Borin	g Contractor	s
	LI		PROJ. NO:	144.16535	.00023			FOREMAN	: M. Th	omp	son		
	2 Commerce Dri edford, New Hai		CLIENT:	TF Moran				INSPECTO	r: E. Adl	er			
	603-668-	-1654	DATE:	December	9, 2021			GROUND S	SURFACE ELEVAT	ION:			
EQUIPMENT	:	AUGER	CASING	SAMPLER	COREBRL.		GROUNDWATER OBSER	RVATIONS			FIELD TESTI	NG	
TYPE		HSA		S 1 3 / 9		ELAPSED TIME (HR)		0 14			LABORATO		
SIZE ID (IN) HAMMER W	T (LB)	3 1/4 		1 3/8 140		CASING AT (FT) DEPTH (FT)		13			PID SCREEN	IG WELL INSTALLED ING	,
HAMMER FA	ALL (IN)			30			NO GROUNDW	VATER ENCO	UNTERED		<u> </u>		
Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"		BURMIS		ASSIFICATION-DESCRIPTICS. CORPS OF ENGINEERS S		:)			TUM <u>CHANGE</u> SCRIPTION	PID (PPM)
1 2													
4 5	S1	16	21 20 24				and Gravel, trac rse gravel in spo		edoximorphi	с		5.7	,
6 7 8 9	5 24 50/3" 8 9												
9 Vory done brown coarse to fine SAND and Gravel, trace Silt, no													
14 15 16	S3	0	100/1"	Very dense Auger refu Bottom of	sal at ±14.	very. 7' n at ± 14.7'						14.7	,
17 18 19													
20													
21 22				-									
				1									
2) HAMME	RIG: CME 550X R/HOIST TYPE: 0\6535 TFM\6535	Automatic		5.00023 TBLog.xls]\$	N = 0 - 4 = V 4-10 = L0 10-30 = N 30-50 = D	oose 1edium	COHESIVE SOIL N = 0 -2 = VERY SOF 2 - 4 = SOFT 4 - 8 = MEDIUM 8 -15 = STIFF 30 + = HARD		SAMPL C = ROCK CORE S = SPLIT SPOON UP = UNDISTURBED UT = UNDISTURBED	O PISTO) N	PROPORTION trace = 0% - 10 little = 10% - 2 some = 20% - 3 and = 35% - 5	0% 0% 5%

TEST BORING LOG SLR-5 **Proposed Sand & Gravel Pit** BORING NO.: PROJECT: SHEET: 1 of 2 OCATION: Franklin Pierce Highway CONTRACTOR: **New England Boring Contractors** PROJ. NO: 144.16535.00023 FOREMAN: M. Thompson CLIENT: TF Moran INSPECTOR: E. Adler Bedford, New Hampshire 03110 603-668-1654 December 9, 2021 **GROUND SURFACE ELEVATION:** DATE: EQUIPMENT: AUGER CASING SAMPLER COREBRL. **GROUNDWATER OBSERVATIONS** FIELD TESTING HSA ELAPSED TIME (HR) 0.2 LABORATORY TESTING MONITORING WELL INSTALLED SIZE ID (IN) 3 1/4 1 3/8 CASING AT (FT) 28 HAMMER WT (LB) 140 DEPTH (FT) DRY PID SCREENING ----HAMMER FALL (IN) 30 NO GROUNDWATER ENCOUNTERED X RECOVERY SOIL AND ROCK CLASSIFICATION-DESCRIPTION SAMPLE BLOWS Depth STRATUM CHANGE PID (PPM (FT) NUMBER (IN) PER 6" BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK) DESCRIPTION Dense olive-brown coarse to fine SAND, some Gravel, trace (+) Silt, 13 **S1** 17 no structure, no odor, moist. 20 25 30 8 Auger action indicates cobble at ±8.5' 8.5 9 Dense brown coarse to fine SAND, little Gravel, trace (+) Silt, 12 **S2** 16 15 well blended in-situ, no odor, moist. 10 15 17 11 12 13 14 Dense olive-grey and red-brown SILT, trace fine Sand, trace Clay, 13 24 **S3** 17 layered with frequent fine sand partings and clay varves, no odor, 15 21 moist. 16 17 18 19 Very dense olive-grey and red-brown SILT, little (-) fine SAND, trace 10 **S4** 16 Clay, layered with frequent fine SAND partings/lenses and clay varves, 20 20 30 no odor, moist. 21 22 COHESIONLESS SOILS **COHESIVE SOILS** SAMPLE TYPE PROPORTIONS 1) TYPE OF RIG: CME 550X, ATV Mounted N = 0 - 4 = VERY LOOSE N = 0 -2 = VERY SOFT C = ROCK CORE trace = 0% - 10% 2) HAMMER/HOIST TYPE: Automatic 4-10 = LOOSE 2 - 4 = SOFT S = SPLIT SPOON little = 10% - 20% 10-30 = MEDIUM 4 - 8 = MEDIUM UP = UNDISTURBED PISTON some = 20% - 35% UT = UNDISTURBED THINWALL 30-50 = DENSE 8-15 = STIFF and = 35% - 50%)\6535 TFM\6535-23 Keene\2021 Borings\[144.16535.00023 TBLog.xls] 50 + = VERY DENSE 30 + = HARD

				1	EST	BORI	NG LO	G					
			PROJECT:	Proposed	Sand & Gr	avel Pit		BORING I	NO.:	SLI	₹-5	SHEET:	2 of 2
C	LF		LOCATION:	Franklin Pi	erce Highv	<i>ı</i> ay		CONTRAC	ctor: Ne	w Engl	and Borin	g Contractor	`S
2			PROJ. NO:	144.16535	.00023			FOREMA	n: M.	Thom	pson		
	2 Commerce Dr edford, New Ha		CLIENT:	TF Moran				INSPECTO	DR: E. A	Adler			
	603-668	-1654	DATE:	December	9, 2021			GROUND	SURFACE ELE	VATION:			
EQUIPMENT	Γ:	AUGER	CASING	SAMPLER	COREBRL.		GROUNDWATER OBSER	VATIONS			FIELD TEST	ING	
TYPE		HSA		S		ELAPSED TIME (HR)		0.2			LABORATO		
SIZE ID (IN) HAMMER W	/T (LB)	3 1/4		1 3/8 140		CASING AT (FT) DEPTH (FT)		28 DRY			PID SCREEN	NG WELL INSTALLEI IING)
HAMMER FA				30		X	NO GROUNDV		DUNTERED				
Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"		BURMI		LASSIFICATION-DESCRIPTIC S. CORPS OF ENGINEERS SY		:K)			TUM <u>CHANGE</u> ESCRIPTION	PID (PPM)
						,					Di	SCRIPTION	
23				_									
24		10	12	Very dense	e grev and	red-brown SI	LT, little fine SAN	ND, fred	quent fine				
25	S5	18	24 40	sand parti	ngs, occasi	onal fine sand	d lenses, no odoi	r, moist	· ·				
26			40	Auger acti	on indicate	s coarse grav	el/cobble at ±26	5'				26	5
27													
				Auger refu	sal at 28'							28	3
28				Bottom of	Exploratio	n at ± 28'							
29				_									
30				_									
31													
32													
33													
34				_									
35													
36													
37													
38				_									
39		<u> </u>											
40													
41													
42		ļ		1									
43				_									
44													
Notes:	1	1	1	1	COHESIG	ONLESS SOILS	COHESIVE SOIL	s	SA	AMPLE TYI	PE	PROPORT	IONS
		X, ATV Mounte	d		N = 0 - 4 = V		N = 0 -2 = VERY SOF	Т	C = ROCK CC			trace = 0% - 1	
Z) HAIVIIVI	ER/HOIST TYPE:	. Automatic			4-10 = L0 10-30 = N		2 - 4 = SOFT 4 - 8 = MEDIUM		S = SPLIT SPO UP = UNDISTU		ON	little = 10% - 2 some = 20% - 3	
I					30-50 = D		8 -15 = STIFF		UT = UNDISTU			and = 35% - 5	
FILE:)\6535 TFM\6535	i-23 Keene\2021 E	orings\[144.1653	5.00023 TBLog.xls]5	50 + = V	ERY DENSE	30 + = HARD						

				٦	EST	BORI	NG LO	G						
			PROJECT:	Proposed	Sand & Gra	avel Pit		BORING	NO.:	9	SLR	-6	SHEET:	1 of 1
C	LR		LOCATION:	Franklin Pi	erce Highw	/ay		CONTRA	CTOR:	New Er	ngla	nd Borinį	g Contractor	S
	L		PROJ. NO:	144.16535	.00023			FOREMAN: M. Thomp				oson		
	2 Commerce Dri edford, New Har	mpshire 03110	CLIENT:	TF Moran		INSPECTOR: E. Adl			E. Adle	er				
	603-668-		DATE:	December	9, 2021				GROUND SURFACE ELEVATION:					
EQUIPMENT:		AUGER	CASING	SAMPLER	COREBRL.		GROUNDWATER OBSER	RVATIONS				FIELD TESTI	NG	
TYPE		HSA		S 4.2/0		ELAPSED TIME (HR)		0				LABORATO		
SIZE ID (IN) HAMMER WI	Γ (LB)	3 1/4		1 3/8 140		CASING AT (FT) DEPTH (FT)		4			F	PID SCREEN	NG WELL INSTALLEI IING)
HAMMER FA				30			NO GROUNDV		OUNTERED		Ė			
Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"		BURMIS		ASSIFICATION-DESCRIPTIC		CK)				TUM <u>CHANGE</u> SCRIPTION	PID (PPM)
1 · 2 · 3 ·				-										
4 - 5 - 6 -	S1	18	15 22 33 40	structure,	no odor, m	arse to fine S noist to wet. es strata chan	AND, little Grave	el, little	e Silt, no	o			7	
9 10	S2	6	26 100/3"	Very denso Gravel, we Auger refu	ll blended	/ to brown co in-situ, no od	arse to fine SAN or, wet.	D and	SILT, tr	ace			10	
11- 12- 13- 14- 15-					Exploratio	n at ± 10'								
17 - 18 -				-										
19 - 20 - 21 - 22 -														
				1										
2) HAMME	R/HOIST TYPE:			5.00023 TBLog.xls]\$	N = 0 - 4 = VI 4-10 = L0 10-30 = N 30-50 = D	DOSE IEDIUM	COHESIVE SOIL N = 0 -2 = VERY SOF 2 - 4 = SOFT 4 - 8 = MEDIUM 8 -15 = STIFF 30 + = HARD		S = SPL UP = UN	SAMPLE CK CORE IT SPOON DISTURBED DISTURBED	PISTO) N	PROPORT trace = 0% - 1 little = 10% - 2 some = 20% - 3 and = 35% - 5	0% :0% 5%



BURMISTER SOIL CLASSIFICATION SYSTEM

		A. CLASSIFICATION OF SOI	L COMPONENTS					
PRINCIPAL COMPONENT	DESCRIPTIVE PARTICLE SIZE	SMALLEST DIAMETER OF ROLLED THREAD (IN.)	SIEVE SIZE	OVERALL PLASTICITY AND PLASTICITY INDEX				
GRAVEL	Coarse Fine		3/4" to 3" No. 4 to 3/4"					
SAND	Coarse Medium Fine		No. 10 to No. 4 No. 40 to No. 10 No. 200 to No. 40	 				
SILT			Passing No. 200	Non-Plastic 0				
Clayey Silt		1/4	Passing No. 200	Slight 1 to 5				
SILT and CLAY		1/8	Passing No. 200	Low 5 to 10				
CLAY and SILT		1/16	Passing No. 200	Medium 10 to 20				
Silty Clay		1/32	Passing No. 200	High 20 to 40				
CLAY		1/64	Passing No. 200	Very High 40 and greater				
PEAT	PEAT Partially decomposed fibrous organic matter without living fibers							

B. INDENTIFICATION	OF DESCRIPTION TERMS
DESCRIPTION OF SOIL COMPONENTS	PERCENTAGE OF SAMPLE BY WEIGHT
PRINCIPAL COMPONENT	
GRAVEL, SAND, SILT CLAY, etc.	50 or more
MINOR COMPONENTS	
and fine to coarse SAND, and GRAVEL, etc.	35 to 50
some some Gravel, some Silt, etc.	20 to 35
little little Gravel, little Silt, etc.	10 to 20
trace trace Gravel, trace Silt, etc.	1 to 10

C. DEFINITION OF TERMS IDENTIFYING THE GRADATION OF THE GRANULAR COMPONENT						
GRADATION DESIGNATIONS FOR IDENTIFICATION	DEFINING PROPORTIONS					
fine to coarse	all fractions greater than 10 percent					
medium to coarse	less than 10 percent fine					
fine to medium	less than 10 percent coarse					
medium	less than 10 percent coarse and fine					
fine	less than 10 percent coarse and medium					

PLUS (+) NEARER THE UPPER LIMIT OF THE PROPORTION OR OVERALL PLASTICITY

D. DENSITY OR CONSISTENCY						
<u>GRANULAR SOILS</u>						
Standard Penetration Resistance (N value) blows/foot	Relative Density					
0 - 4 4 - 10 10 - 30 30 - 50 50+	Very loose Loose Medium dense Dense Very dense					
PLAS	TIC SOILS					
Standard Penetration Resistance (N value) Blows/foot	Consistency					
0 - 2 2 - 4 4 - 8 8 - 15 15 - 30 30+	Very soft Soft Medium Stiff Very stiff Hard					

MINUS (-) NEARER THE LOWER LIMIT OF THE PROPORTION OR OVERALL PLASTICITY	TOPSOIL - SURFICIAL SOILS THAT SUPPORT PLANT LIFE AND WHICH CONTAIN CONSIDERABLE
NO SIGN - MIDDLE RANGE OF THE PROPORTION OR OVERALL PLASTICITY	AMOUNTS OF ORGANIC MATTER
COBBLES - ROUNDED PIECES OR ROCK BETWEEN 3 TO 6 INCHES	<u>DECOMPOSED VEGETATION</u> - PARTIALLY DECOMPOSED ORGANIC MATTER WHICH RETAINS
BOULDERS - ROUNDED PIECES OF ROCK LARGER THAN 6 INCHES	ITS ORIGIANAL CHARACTER;
ROCK FRAGMENTS - ANGULAR PIECES OF ROCK WHICH HAVE SEPARATED	<u>LIGNITE</u> - IMMATURE COALS WITH LOW FIXED CARBON CONTENT GENERALLY EXHIBITING
FROM PARENT ROCK AND ARE PRESENT IN A SOIL MATRIX	DISTINCT TEXTURE OF WOOD;
QUARTZ - A HARD SILICA MINERAL OFTEN FOUND IN SOME GLACIAL LAYERS	HUMUS - COMPLETELY DECOMPOSED ORGANICMATTER
IRONITE - CEMENTED DEPOSITS OF IRON OXIDE WITHIN A SOIL LAYER	FILL - MAN MADE DEPOSIT CONTAINING SOIL, ROCK OR FOREIGN MATTER
CEMENTED SAND - VARIOUS SIZED AND GRAINS CEMENTED BY CALCIUM	PROBABLE FILL - SOILS WHICH CONTAIN NO VISUALLY DETECTABLE FOREIGN MATTER BUT
CARBONATE OR OTHER MINERALS WITHIN THE SOIL DEPOSIT	WHICH ARE SUSPECT WITH RESPECT TO ORIGIN
VARVED DEPOSITS - ALTERNATING LIGHT AND DARK LAYERS OF COHESIVE	LENSES - LAYER LESS THAN 1/2 INCH LAYERS - 1/2 TO 12 INCH THICK LAYER
CLAYS AND SILTS DEPOSITED AS GLACIAL LAKE SEDIMENTATION	POCKET - DISCONTINUOUS LAYERS LESS THAN 12 INCHES
FISSURED CLAYS - COHESIVE SOILS AND EXHIBITING A JOINT STRUCTURE,	<u>STRATUM</u> - CONTINUOUS LAYERS GREATER THAN 12 INCHES
GENERALLY SLIGHTLY TO HIGHLY OVER CONSOLIDATED	<u>COLOR SHADING</u> - LIGHT OR DARK TO INIDCATE SUBSTANTIAL DIFFERENCE IN COLOR

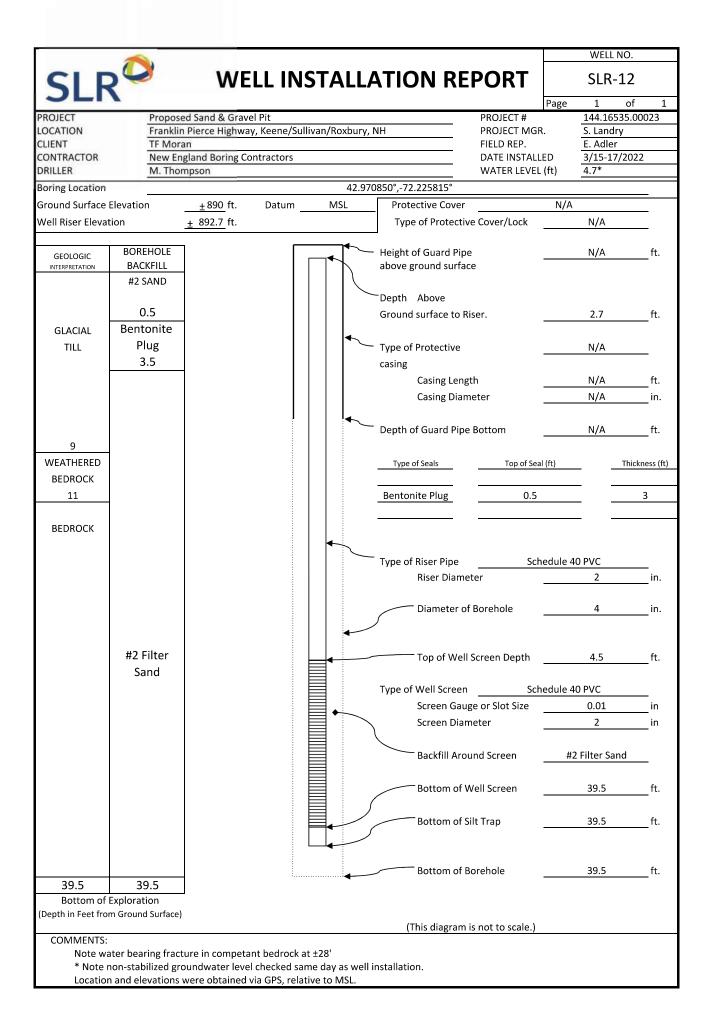
E. GLOSSARY OF MISCELLANEOUS TERMS

ORGAINIC MATTER (EXCLUDING PEAT):

MOISTURE CONDITIONS - WET, MOIST, OR DRY PER VISUAL OBSERVATION

								WELL 1	NO.
SLF	3	WE	ELL INS	STALL/	ATION REF	PORT		SLR-	
		10 10 0	1.50			SPOJECT #	Page	1	of
ROJECT		sed Sand & Grav in Pierce Highwa		: /Daybury	KILL	PROJECT MCP			35.00023
DCATION LIENT	TF Mor		ay, Keene/Suii	van/koxpury,	NH	PROJECT MGR FIELD REP.		S. Landr E. Adler	
ONTRACTOR		ran Ingland Boring Co	`antractors			DATE INSTALLI		3/16-17	
RILLER		ompson	Officiacions			WATER LEVEL		42.2	/2022
		Пірэоп		42.06	2004 49 72 2256209	WAILNELVEE	(11)	42.2	
oring Location					59814°,-72.225620°				
round Surface		<u>± 883</u> ft.	Datum	MSL	Protective Cover		N/A		
ell Riser Eleva	tion	<u>± 884.7</u> ft.			Type of Protective	Cover/Lock		N/A	
GEOLOGIC	BOREHOLE	٦	Г		 Height of Guard Pipe 			N/A	ft.
INTERPRETATION	BACKFILL	_		1 1	above ground surface	;			
	NATIVE		'						
	BACKFILL		'	~					
MISC	3.9				Ground surface to Rise			1.7	ft.
	Bentonite	4	'		Gloulla surface to mo-	er.		1.,	
NATIVE			'						
FILL	Plug		'	_	 Type of Protective 			N/A	
	5		'		casing				
		4	'		Casing Length	i _		N/A	ft.
			'						
6	4				Casing Diame	eter .		N/A	in
			! !	🗠	Depth of Guard Pipe B	Bottom		N/A	ft
			1			70111		•••	
			1		Type of Seals	Top of Seal	(ft)		Thickness
			1		Bentonite Plug	3.9		- –	1.1
					Type of Riser Pipe Riser Diamete		edule 40	PVC 2	in
					Diameter of B	3orehole		4	in
GLACIAL TILL	#2 Filter Sand				Top of Well So	creen Depth		5	ft
					Type of Well Screen	Sch	edule 40	PVC	
				╡∷	Screen Gauge	e or Slot Size		0.01	 in
			1		Screen Diame			2	ir
			1		Backfill Arour	nd Screen	#2	Filter Sar	nd
			1					Thee.	<u></u>
					Bottom of We	ell Screen		55	ft
					Bottom of Silt	t Trap		55	ft
55					Bottom of Bo	orehole		55	ft
55	55	_							
Bottom of	Exploration om Ground Surface	•)							
Bottom of	om Ground Surface	;)			(This diagram is	not to scale.)		_	

								WELL NO	<u>). </u>
SLF	3	WE	LL INS	TALLA	TION REF	PORT		SLR-1	
OJECT	Dronos	sed Sand & Grave	! D :+			PROJECT#	Page	1 0 144.16535	of 5,00023
CATION		n Pierce Highwa		an/Pavhury, N		PROJECT # PROJECT MGR	,	S. Landry	<u>کے ۱۰۵۰</u>
ENT	TF Mor		y, Neene, same.	ally Noxbury,		FIELD REP.		E. Adler	
NTRACTOR		ngland Boring Co	ontractors			DATE INSTALL		3/15-16/2	n22
ILLER		mpson	Jiti deca. 2			WATER LEVEL		DRY @ 45	
ring Location		IIIpoc		42 970:	370°,-72.224130°	******	(1-,	<u> </u>	
		202 ft					*1/A		
ound Surface		<u>± 863</u> ft.	Datum	MSL	Protective Cover		N/A	-	
ell Riser Eleva	ition	<u>± 865.3</u> ft.			Type of Protective	Cover/Lock		N/A	
GEOLOGIC INTERPRETATION	BOREHOLE BACKFILL				Height of Guard Pipe above ground surface			N/A	ft.
					Depth Above				
	0.5			l I	Groundsurface to Rise			2.2	ft
		4	1		Groundsurface to hise	er.		2.3	ft.
	Bentonite		1						
MISC	Plug 4				Type of Protective casing			N/A	
	•	4	1					~ / A	f+
NATIVE			1		Casing Length			N/A	ft.
FILL					Casing Diame	ter		N/A	in
					Depth of Guard Pipe B	Sottom		N/A	ft.
14	_				Type of Seals	Top of Seal	l (ft)	<u></u>	hickness (
				-	Bentonite Plug	0.5		· <u> </u>	3.5
					Type of Riser Pipe Riser Diamete	er	edule 40	2	in.
					Diameter of B	orehole		4	in
				I :					
GLACIAL TILL	#2 Filter Sand				Top of Well So	creen Depth		5	ft
					Top of Well So	·	edule 40		ft
					Type of Well Screen	Sch	edule 40) PVC	
					·	Sch e or Slot Size	edule 40		in
					Type of Well Screen Screen Gauge Screen Diame	Sch e or Slot Size eter		0.PVC 0.01 2	in
					Type of Well Screen Screen Gauge	Sch e or Slot Size eter) PVC 0.01	in
					Type of Well Screen Screen Gauge Screen Diame	Sch e or Slot Size eter nd Screen		0.PVC 0.01 2	in in
GLACIAL TILL	Sand 45.2				Type of Well Screen Screen Gauge Screen Diame Backfill Aroun	Sch e or Slot Size eter nd Screen ell Screen		0 PVC 0.01 2 Filter Sand	ft.
TILL	45.2 3/4" STONE	-			Type of Well Screen Screen Gauge Screen Diame Backfill Aroun Bottom of We	Sch e or Slot Size eter nd Screen ell Screen t Trap		0.01 2 Filter Sand	in in ft
TILL 76	45.2 3/4" STONE	- -			Type of Well Screen Screen Gauge Screen Diame Backfill Aroun Bottom of We	Sch e or Slot Size eter nd Screen ell Screen t Trap		0 PVC 0.01 2 Filter Sand 45 45.2	ininininft
TILL 76 Bottom of	45.2 3/4" STONE 76 f Exploration				Type of Well Screen Screen Gauge Screen Diame Backfill Aroun Bottom of We	Sch e or Slot Size eter nd Screen ell Screen t Trap		0 PVC 0.01 2 Filter Sand 45 45.2	in in ft
TILL 76 Bottom of	45.2 3/4" STONE				Type of Well Screen Screen Gauge Screen Diame Backfill Aroun Bottom of We Bottom of Silt Bottom of Bot	Sch e or Slot Size eter nd Screen ell Screen t Trap		0 PVC 0.01 2 Filter Sand 45 45.2	ir ir ft
TILL 76 Bottom of	45.2 3/4" STONE 76 f Exploration om Ground Surface)				Type of Well Screen Screen Gauge Screen Diame Backfill Aroun Bottom of We	Sch e or Slot Size eter nd Screen ell Screen t Trap		0 PVC 0.01 2 Filter Sand 45 45.2	ir ir ft





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran		
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	NEBC		
PROJECT NO.:	144.16535.00023	5.00023 SOURCE: On-site		On-site			
SAMPLE NO.:	SLR-1 S-2	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:	12/9/2021		
TEST DATE:	ST DATE: 1/4/2022		DJS	CHECKED BY:	EAA		
SAMPLE DESCRI	PTION:	Brown fine to coarse	SAND, and Silt, little Gr	avel			
PROPOSED SAM	IPLE USE:						

	CIEVE CIZE	SIEVE SIZE SIEVE OPENINGS		WEIGHT RETAINED CUMULATIVE PE		PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2	
	SIEVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)	
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100			
	2"	2.000	50.80	0.0	0.0	100.0					
	1-1/2"	1.500	38.10	0.0	0.0	100.0					
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0					
	3/4"	0.750	19.00	9.6	9.6	96.8					
	1/2"	0.500	12.70	10.3	19.9	93.4	===				
	3/8"	0.375	9.50	5.4	25.3	91.7					
	#4	0.187	4.75	11.9	37.2	87.8	70-100	25-70	70-100	25-70	
	#10	0.079	2.00	18.7	55.9	81.6					
SAND	#40	0.017	0.43	39.6	95.5	68.6					
SAND	#100	0.006	0.15	60.4	155.9	48.7					
	#200	0.003	0.07	35.3	191.2	37.1					
	#200*				==	42.2*	0-12*	0-12*	0-12*	0-12*	
Silt or Clay	Pan	0.000	0.00	8.6	199.8	34.2					
			Total weig	ht of sample	303.8						

^{*} Based on the percent passing the #4 sieve.



PROJECT:	Proposed Gravel	Pit	CLIENT:	TF Moran		
LOCATION:	Route 9, Keene, I	NH	CONTRACTOR: NEBC			
PROJECT NO.:	144.16535.00023		SOURCE:	On-site		
SAMPLE NO.:	SLR-1 S-2	TEST METHOD:	ASTM D 422 / D 1140	DATE RETRIEVED:	12/9/2021	
DATE TESTED:	1/4/2022	TESTED BY:	DJS	CHECKED BY:	EAA	

SAMPLE DESCRIPTION:

Brown fine to coarse SAND, and Silt, little Gravel

PROPOSED SAMPLE USE:

40

30

20

10

1000.000

100.000

10.000

	COBBLES	GR.	AVEL		SAND		SILT OR CLAY
	CODDLES	COARSE	FINE	COARSE	MEDIUM	FINE	HYDROMETER
		3" 2" 1 1/2"	3/4" 1/2" 3/8" #4	#10	#16 #20 #30 #40	#50 #60 #100	
00 —		***					
90 —							
80				*			
70 —							
50							

Grain Size in Millimeters

1.000

0.100

0.010



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	144.16535.00023		_ _	SOURCE:	On-site	
SAMPLE NO.:	SLR-4 S-1	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:	12/9/2021	
TEST DATE:	1/4/2022	TESTED BY:	DJS	CHECKED BY:	EAA	
SAMPLE DESCRI	PTION:	Brown fine to coarse	SAND, some Gravel, litt	le Silt		
PROPOSED SAM	IPLE USE:					

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SIEVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0				
	3/4"	0.750	19.00	64.7	64.7	79.3				
	1/2"	0.500	12.70	8.5	73.2	76.6	===			
	3/8"	0.375	9.50	8.4	81.6	73.9				
	#4	0.187	4.75	24.0	105.6	66.2	70-100	25-70	70-100	25-70
	#10	0.079	2.00	22.7	128.3	59.0				
SAND	#40	0.017	0.43	49.5	177.8	43.1				
SAND	#100	0.006	0.15	62.5	240.3	23.1				
	#200	0.003	0.07	27.0	267.3	14.5				
	#200*				==	21.9*	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	12.1	279.4	10.6				
	•			ht of sample	312.6					

^{*} Based on the percent passing the #4 sieve.

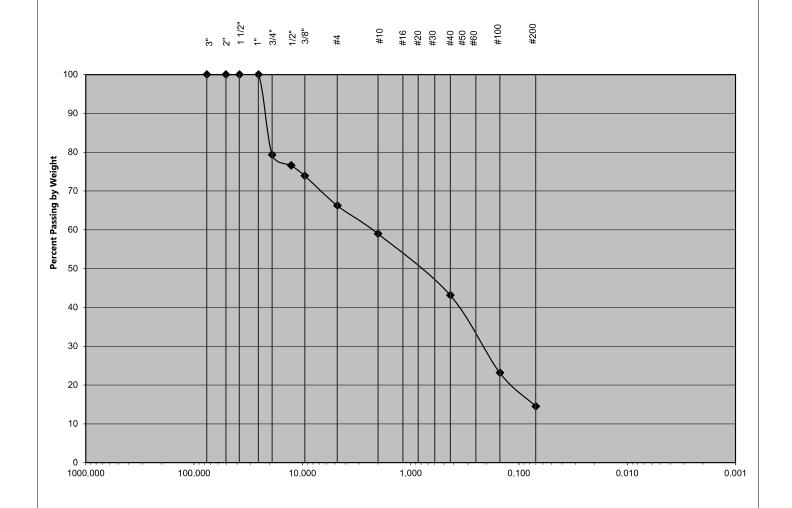


PROJECT: **Proposed Gravel Pit CLIENT:** TF Moran LOCATION: Route 9, Keene, NH **CONTRACTOR: Gordon Services** On-site PROJECT NO.: 144.16535.00023 **SOURCE: SAMPLE NO.:** SLR-4 S-1 **TEST METHOD:** ASTM D 422 / D 1140 **DATE RETRIEVED:** 12/9/2021 1/4/2022 TESTED BY: DJS **CHECKED BY:** EAA **DATE TESTED:**

SAMPLE DESCRIPTION: Brown fine to coarse SAND, some Gravel, little Silt

PROPOSED SAMPLE USE:





Grain Size in Millimeters



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	144.16535.00023		-	SOURCE:	On-site	
SAMPLE NO.:	SLR-5 S-1	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:	12/9/2021	
TEST DATE:	1/3/2022	TESTED BY:	DJS	CHECKED BY:	EAA	
SAMPLE DESCRI		Gray fine to coarse S.	AND and fine Gravel, tra	ace Si l t		
PROPOSED SAMPLE USE:		Gray fille to coarse 3.	AND and fine Graver, tra	ice one		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SIEVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0				
	3/4"	0.750	19.00	66.4	66.4	81.7				
	1/2"	0.500	12.70	29.3	95.7	73.6				
	3/8"	0.375	9.50	17.0	112.7	68.9				
	#4	0.187	4.75	44.3	157.0	56.7	70-100	25-70	70-100	25-70
	#10	0.079	2.00	50.9	207.9	42.6				
SAND	#40	0.017	0.43	71.5	279.4	22.9				
SAND	#100	0.006	0.15	41.3	320.7	11.5				
	#200	0.003	0.07	16.0	336.7	7.1				
	#200*					12.5*	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	4.2	340.9	5.9				
			Total weig	ght of sample	362.4					

^{*} Based on the percent passing the #4 sieve.



PROJECT:	Proposed Gravel	Pit	CLIENT:	TF Moran	TF Moran		
LOCATION:	Route 9, Keene, N	NH	CONTRACTOR:	Gordon Services			
PROJECT NO.:	144.16535.00023		SOURCE:	On-site			
CARADI E NO			ACTNA D 400 / D 1140	DATE DETDIEVED	12/0/2021		
SAMPLE NO.:	SLR-5 S-1	TEST METHOD:	ASTM D 422 / D 1140	DATE RETRIEVED:	12/9/2021		
DATE TESTED:	1/3/2022	TESTED BY:	DJS	CHECKED BY:	EAA		

SAMPLE DESCRIPTION:

1000.000

100.000

10.000

Gray fine to coarse SAND and fine Gravel, trace Silt

PROPOSED SAMPLE USE:

	COBBLES	GRA	AVEL		SAND		SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	HYDROMETER
		3" 2" 1 1/2"	3/4". 1/2" 3/8" #4	#10	#16 #20 #30	#50 #60 #100 #200	
¹⁰⁰ T							
90							
80							
70							
60							
50							
40							
30							
20 -							

Grain Size in Millimeters

1 000

0.100

0.010



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	144.16535.00023		_	SOURCE:	On-site	
SAMPLE NO.: TEST DATE:	SLR-5 S-2 1/3/2022	TEST METHOD: TESTED BY:	ASTM D422/D1140 DJS	DATE RETRIEVED: CHECKED BY:	12/9/2021 EAA	
SAMPLE DESCRI		Brown fine to coarse	SAND and fine Gravel, t	race Silt		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	43.3	43.3	87.5				
	3/4"	0.750	19.00	27.1	70.4	79.7				
	1/2"	0.500	12.70	17.1	87.5	74.7	===			
-	3/8"	0.375	9.50	11.2	98.7	71.5			===	
	#4	0.187	4.75	29.6	128.3	63.0	70-100	25-70	70-100	25-70
	#10	0.079	2.00	42.5	170.8	50.7				
SAND	#40	0.017	0.43	59.5	230.3	33.5				
SAIND	#100	0.006	0.15	67.1	297.4	14.1				
	#200	0.003	0.07	18.9	316.3	8.7				
	#200*					13.8*	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	3.9	320.2	7.5				
			Total weig	ht of sample	346.3					

ваsed on percent passing the #4 sieve.



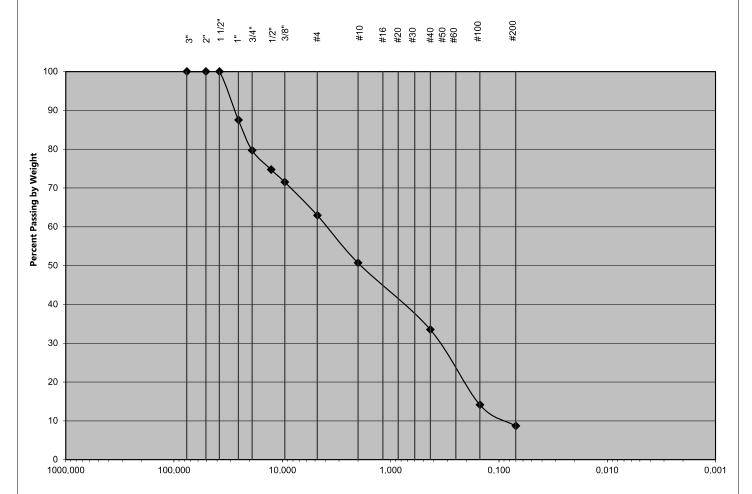
PROJECT:	Proposed Gravel	Pit	CLIENT:	TF Moran			
LOCATION:	Route 9, Keene, I	NH	CONTRACTOR:	Gordon Services			
PROJECT NO.:	144.16535.00023		SOURCE:	On-site			
SAMPLE NO.:	SLR-5 S-2	TEST METHOD:	ASTM D 422 / D 1140	DATE RETRIEVED:	12/9/2021		
DATE TESTED:	1/3/2022	TESTED BY:	DJS	CHECKED BY:	EAA		

SAMPLE DESCRIPTION:

Brown fine to coarse SAND and fine Gravel, trace Silt

PROPOSED SAMPLE USE:

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	HYDROMETER
				'		



Grain Size in Millimeters



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	144.16535.00023		-	SOURCE:	On-site	
SAMPLE NO.:	SLR-5 S-3	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:	12/9/2021	
TEST DATE:	1/3/2022	TESTED BY:	DJS	CHECKED BY:	EAA	
SAMPLE DESCRI		Brown SILT, and fine	to coarse Sand, trace G	ravel		_
PROPOSED SAN	IPLE USE:					

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SIEVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				===
	1-1/2"	1.500	38.10	0.0	0.0	100.0	===			
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0				
	3/4"	0.750	19.00	0.0	0.0	100.0				
	1/2"	0.500	12.70	0.0	0.0	100.0	===			
	3/8"	0.375	9.50	0.0	0.0	100.0				
	#4	0.187	4.75	4.1	4.1	98.3	70-100	25-70	70-100	25-70
	#10	0.079	2.00	2.9	7.0	97.1				
SAND	#40	0.017	0.43	17.4	24.4	89.7				
SAND	#100	0.006	0.15	41.7	66.1	72.1				
	#200	0.003	0.07	22.8	88.9	62.5				
	#200*			==-	==	63.6*	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	1.4	90.3	61.9				
	•			ht of sample	237.3					

" Based on percent passing the #4 sieve.



PROJECT:	Proposed Gravel	Pit	CLIENT: TF Moran					
LOCATION:	Route 9, Keene, I	NH	CONTRACTOR:	Gordon Services				
PROJECT NO.:	144.16535.00023		SOURCE:	On-site				
SAMPLE NO.:	SLR-5 S-3	TEST METHOD:	ASTM D 422 / D 1140	DATE RETRIEVED:	12/9/2021			
DATE TESTED:	1/3/2022	TESTED BY:	DJS	CHECKED BY:	EAA			

SAMPLE DESCRIPTION:

Brown SILT, and fine to coarse Sand, trace Gravel

PROPOSED SAMPLE USE:

30

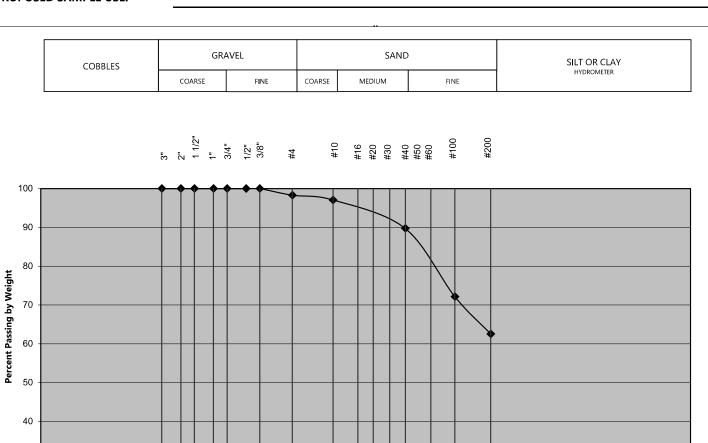
20

10

1000.000

100.000

10.000



Grain Size in Millimeters

1.000

0.100

0.010



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	144.16535.00023		-	SOURCE:	On-site	
SAMPLE NO.:	SLR-6 S-1	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:	12/9/2021	
TEST DATE:	1/4/2022	TESTED BY:	DJS	CHECKED BY:	EAA	
SAMPLE DESCRI	PTION:	Brown fine to coarse	SAND, some Gravel, litt	le Silt		
PROPOSED SAM	IPLE USE:					

	SIEVE SIZE	SIEVE SIZE SIEVE OP		WEIGHT RETAINED	WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0	===			
GRAVEL	1"	1.000	25.40	48.5	48.5	84.7				
	3/4"	0.750	19.00	0.0	48.5	84.7				
	1/2"	0.500	12.70	23.4	71.9	77.4				
	3/8"	0.375	9.50	12.4	84.3	73.5				
	#4	0.187	4.75	24.8	109.1	65.7	70-100	25-70	70-100	25-70
	#10	0.079	2.00	34.6	143.7	54.8				
SAND	#40	0.017	0.43	49.7	193.4	39.2				
SAND	#100	0.006	0.15	37.9	231.3	27.3				
	#200	0.003	0.07	24.0	255.3	19.7				
	#200*					30.0*	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	19.1	274.4	13.7				
			Total weig	ht of sample	318.0					

" based on percent passing the #4 sieve.



PROJECT: **Proposed Gravel Pit CLIENT:** TF Moran LOCATION: Route 9, Keene, NH **CONTRACTOR: Gordon Services** On-site PROJECT NO.: 144.16535.00023 **SOURCE: SAMPLE NO.:** SLR-6 S-1 **TEST METHOD:** ASTM D 422 / D 1140 **DATE RETRIEVED:** 12/9/2021 1/4/2022 TESTED BY: DJS **CHECKED BY:** EAA **DATE TESTED:**

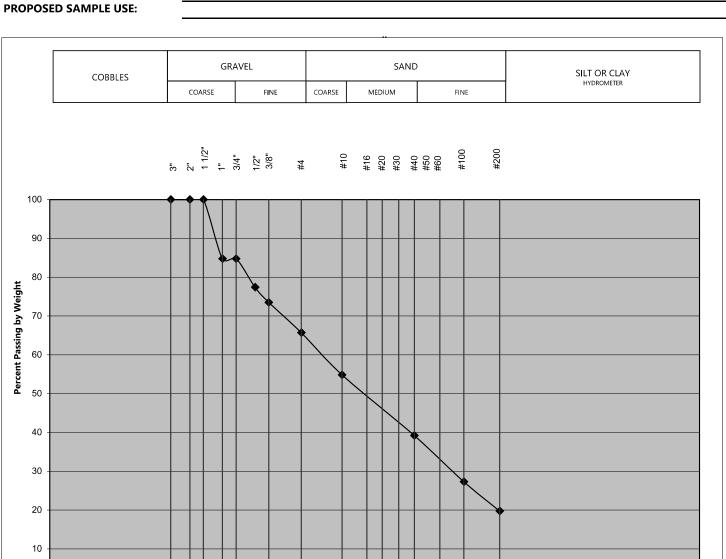
SAMPLE DESCRIPTION:

100.000

1000.000

10.000

Brown fine to coarse SAND, some Gravel, little Silt



Grain Size in Millimeters

1.000

0.010

0.001



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	144.16535.00023		_	SOURCE:	On-site	
SAMPLE NO.:	Stockpile	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:	12/9/2021	
TEST DATE:	12/21/2021	TESTED BY:	JAW	CHECKED BY:	EAA	
SAMPLE DESCRIPTION:		Light brown fine to c	oarse SAND, some Grav	el, trace Silt		

	SIEVE SIZE	SIEVE OPENING		WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0				
	3/4"	0.750	19.00	156.1	156.1	94.5				
	1/2"	0.500	12.70	499.3	655.4	77.0				
	3/8"	0.375	9.50	223.8	879.2	69.1				
	#4	0.187	4.75	363.4	1242.6	56.3	70-100	25-70	70-100	25-70
	#10	0.079	2.00	302.8	1545.4	45.7	===			
SAND	#40	0.017	0.43	742.3	2287.7	19.6				
SAND	#100	0.006	0.15	303.7	2591.4	8.9				
	#200	0.003	0.07	84.8	2676.2	5.9				
	#200*		==			10.5*	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	167.5	2843.7	0.0				
_			Total weig	ht of sample	2843.7					

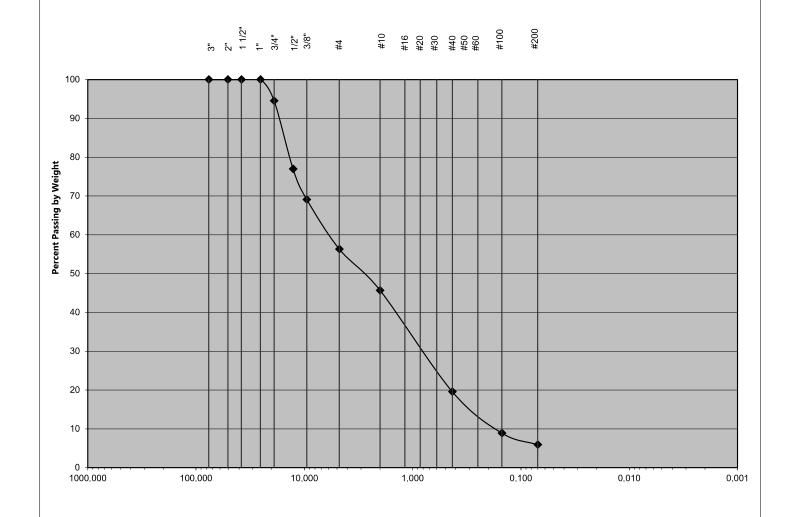
" based on percent passing the #4 sieve.



PROJECT: **Proposed Gravel Pit CLIENT:** TF Moran LOCATION: Route 9, Keene, NH **CONTRACTOR: Gordon Services** On-site PROJECT NO.: 144.16535.00023 **SOURCE: SAMPLE NO.:** Stockpile **TEST METHOD:** ASTM D 422 / D 1140 **DATE RETRIEVED:** 12/9/2021 12/21/2021 TESTED BY: JAW **CHECKED BY:** EAA **DATE TESTED:**

SAMPLE DESCRIPTION: Light brown fine to coarse SAND, some Gravel, trace Silt PROPOSED SAMPLE USE:

	COBBLES	GRA	AVEL		SAND	,	SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	HYDROMETER



Grain Size in Millimeters



PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services	
PROJECT NO.:	6535-23		_	SOURCE:	On-Site	
SAMPLE NO.: TEST DATE:	TP-1, 6-8' 9/16/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 DJS	DATE RETRIEVED: CHECKED BY:	9/10/2020 EAA	
SAMPLE DESCRIPTION: PROPOSED SAMPLE USE:		Brown fine to coarse	SAND, and CLAY/SILT, t	race Gravel		

	SIEVE SIZE	SIEVE SIZE SIEVE OP		WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0				
	3/4"	0.750	19.00	36.7	36.7	98.9				
	1/2"	0.500	12.70	91.8	128.5	96.3				
	3/8"	0.375	9.50	52.4	180.9	94.8				
	#4	0.187	4.75	117.7	298.6	91.4	70-100	25-70	70-100	25-70
	#10	0.079	2.00	158.2	456.8	86.9				
SAND	#40	0.017	0.43	446.3	903.1	74.1				
SAIND	#100	0.006	0.15	887.3	1790.4	48.6				
	#200	0.003	0.07	243.4	2033.8	41.6				
	#200*					45.5 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	1447.7	3481.5	0.0				
			Total weig	ht of sample	3481.5					

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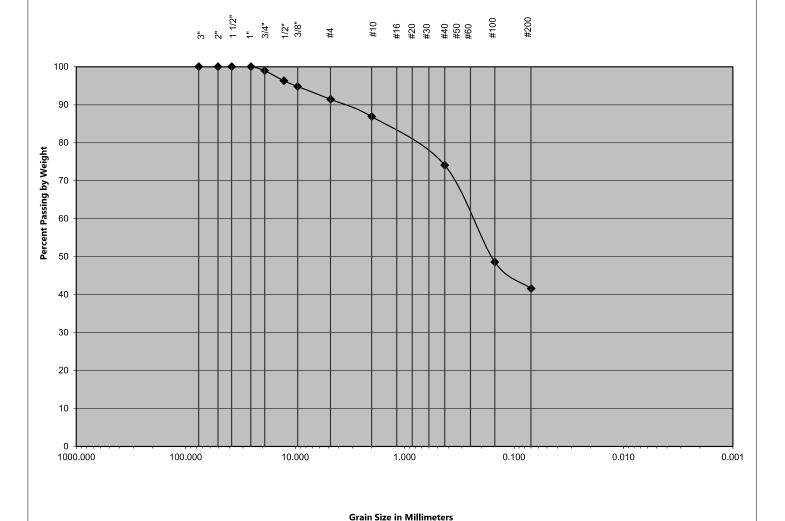
PROJECT:Proposed Gravel PitCLIENT:TF MoranLOCATION:Keene, NHCONTRACTOR:Gordon ServicesPROJECT NO.:6535-23SOURCE:On-Site

 SAMPLE NO.:
 TP-1, 6-8'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

 DATE TESTED:
 9/16/2020
 TESTED BY:
 DJS
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION: Brown fine to coarse SAND, and CLAY/SILT, trace Gravel PROPOSED SAMPLE USE:







PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Keene, NH		_	CONTRACTOR:		
PROJECT NO.:	6535-23		_	SOURCE:	On-Site	
SAMPLE NO.: TEST DATE:	TP-2, 10-12' 9/16/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 DJS	DATE RETRIEVED: CHECKED BY:		
SAMPLE DESCRIPTION: PROPOSED SAMPLE USE:		Brown fine to coarse	SAND, some Gravel, littl	le Si l t		

	SIEVE SIZE	SIEVE OPENINGS V		WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	250.1	250.1	94.6				
	1-1/2"	1.500	38.10	84.8	334.9	92.8				
GRAVEL	1"	1.000	25.40	272.5	607.4	86.9				
	3/4"	0.750	19.00	178.3	785.7	83.0				
	1/2"	0.500	12.70	287.2	1072.9	76.8	===			
	3/8"	0.375	9.50	196.3	1269.2	72.6				
	#4	0.187	4.75	387.4	1656.6	64.2	70-100	25-70	70-100	25-70
	#10	0.079	2.00	442.2	2098.8	54.6				
SAND	#40	0.017	0.43	1087.7	3186.5	31.1				
SAIND	#100	0.006	0.15	692.3	3878.8	16.2				
	#200	0.003	0.07	198.0	4076.8	11.9				
	#200*					18.5 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	550.3	4627.1	0.0				
		•	Total waig	ht of sample	4627.1					



 PROJECT:
 Proposed Gravel Pit
 CLIENT:
 TF Moran

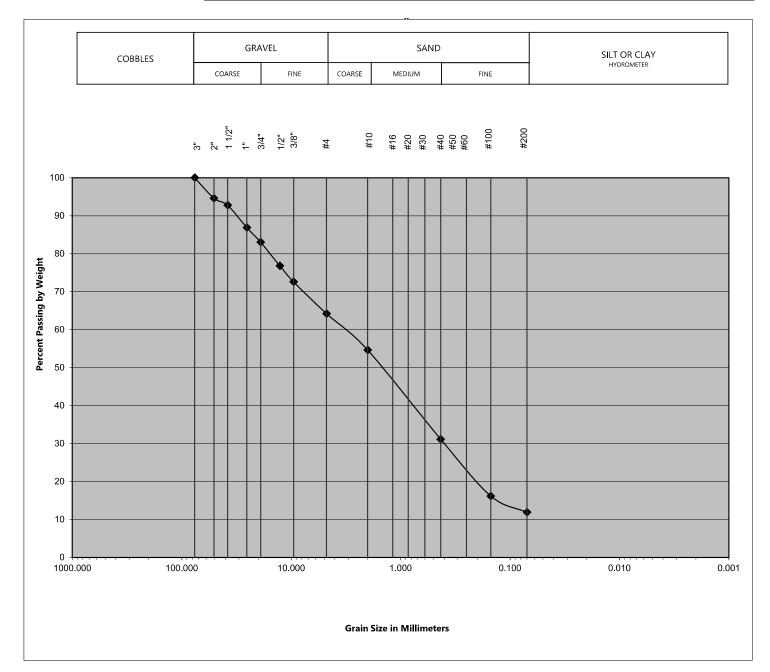
 LOCATION:
 Keene, NH
 CONTRACTOR:
 Gordon Services

 PROJECT NO.:
 6535-23
 SOURCE:
 On-Site

 SAMPLE NO.:
 TP-2, 10-12'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

 DATE TESTED:
 9/16/2020
 TESTED BY:
 DJS
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION: Brown fine to coarse SAND, some Gravel, little Silt





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services On-Site 9/10/2020 EAA	
PROJECT NO.:	6535-23			SOURCE:		
SAMPLE NO.: TEST DATE:	TP-3, 7-9' 9/15/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	DATE RETRIEVED: CHECKED BY:		
SAMPLE DESCRI	-	Light Brown SILT/CLA	AY, some Sand, trace Gra	vel		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	0.0	0.0	100.0				
	3/4"	0.750	19.00	48.1	48.1	98.5				
	1/2"	0.500	12.70	61.2	109.3	96.6				
-	3/8"	0.375	9.50	25.9	135.2	95.8				
	#4	0.187	4.75	82.2	217.4	93.3	70-100	25-70	70-100	25-70
	#10	0.079	2.00	88.1	305.5	90.6				
SAND	#40	0.017	0.43	307.6	613.1	81.1				
SAIND	#100	0.006	0.15	498.8	1111.9	65.8			===	
	#200	0.003	0.07	196.2	1308.1	59.7				
	#200*					64.0 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	1941.1	3249.2	0.0				
			Total weig	ht of sample	3249.2					

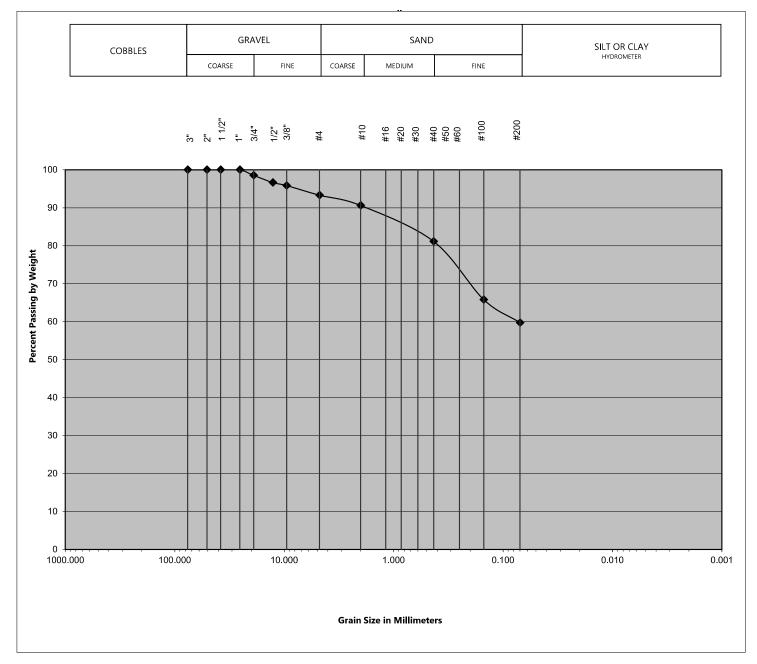


PROJECT:Proposed Gravel PitCLIENT:TF MoranLOCATION:Keene, NHCONTRACTOR:Gordon ServicesPROJECT NO.:6535-23SOURCE:On-Site

 SAMPLE NO.:
 TP-3, 7-9'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

 DATE TESTED:
 9/15/2020
 TESTED BY:
 JAW
 CHECKED BY:
 EAA

 SAMPLE DESCRIPTION:
 Light Brown SILT/CLAY, some Sand, trace Gravel





PROJECT:	Keene		_	CLIENT:	TF Moran	
LOCATION:	Keene, NH			CONTRACTOR:	Gordon Services On-Site 9/10/2020 EAA	
PROJECT NO.:	6535-23		_	SOURCE:		
SAMPLE NO.: TEST DATE:	TP-4, 2-4' 9/15/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	DATE RETRIEVED: CHECKED BY:		
SAMPLE DESCRI	-	Brown fine to coarse	SAND, little Gravel, little	e Silt		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				===
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	77.6	77.6	97.5				
	3/4"	0.750	19.00	112.5	190.1	93.9				
	1/2"	0.500	12.70	141.4	331.5	89.4				
	3/8"	0.375	9.50	65.5	397.0	87.4				
	#4	0.187	4.75	200.1	597.1	81.0	70-100	25-70	70-100	25-70
	#10	0.079	2.00	238.7	835.8	73.4				
SAND	#40	0.017	0.43	1120.8	1956.6	37.7				
SAND	#100	0.006	0.15	491.8	2448.4	22.1				
	#200	0.003	0.07	233.8	2682.2	14.6				
	#200*					18.0 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	459.0	3141.2	0.0				
			Total waig	ht of sample	31/1 2	,				

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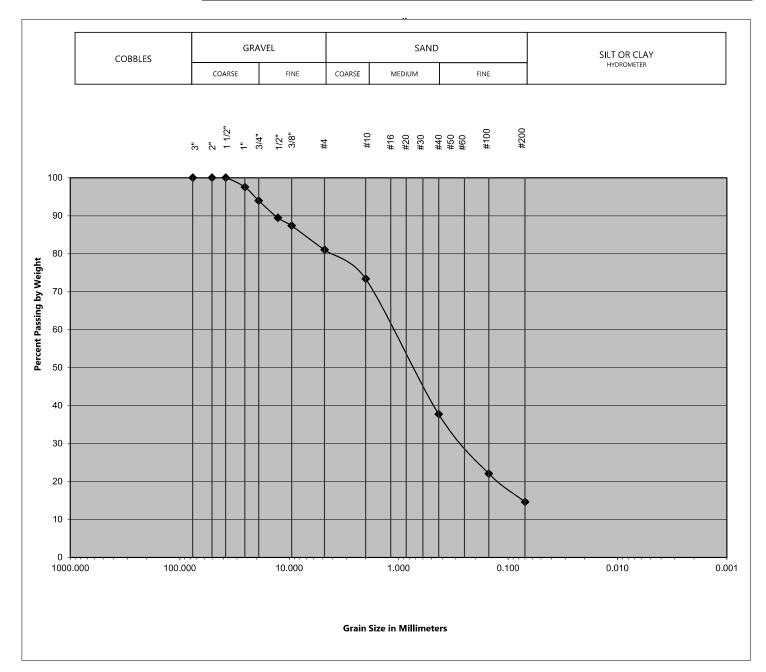
PROJECT: **CLIENT:** Keene TF Moran LOCATION: Keene, NH **CONTRACTOR: Gordon Services PROJECT NO.:** 6535-23 **SOURCE:** On-Site DATE RETRIEVED: **SAMPLE NO.:** TP-4, 2-4' TEST METHOD: ASTM D 422 / D 1140 9/10/2020

 DATE TESTED:
 9/15/2020
 TEST METHOD:
 ASIM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

CHECKED BY:

EAA

SAMPLE DESCRIPTION:Brown fine to coarse SAND, little Gravel, little Silt





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services On-Site 9/10/2020 EAA	
PROJECT NO.:	6535-23		<u> </u>	SOURCE:		
SAMPLE NO.: TEST DATE:	TP-5, 8-10' 9/17/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	DATE RETRIEVED: CHECKED BY:		
SAMPLE DESCRIPTION: PROPOSED SAMPLE USE:		Brown fine to coarse	SAND, some Clay/Silt, t	race Gravel		

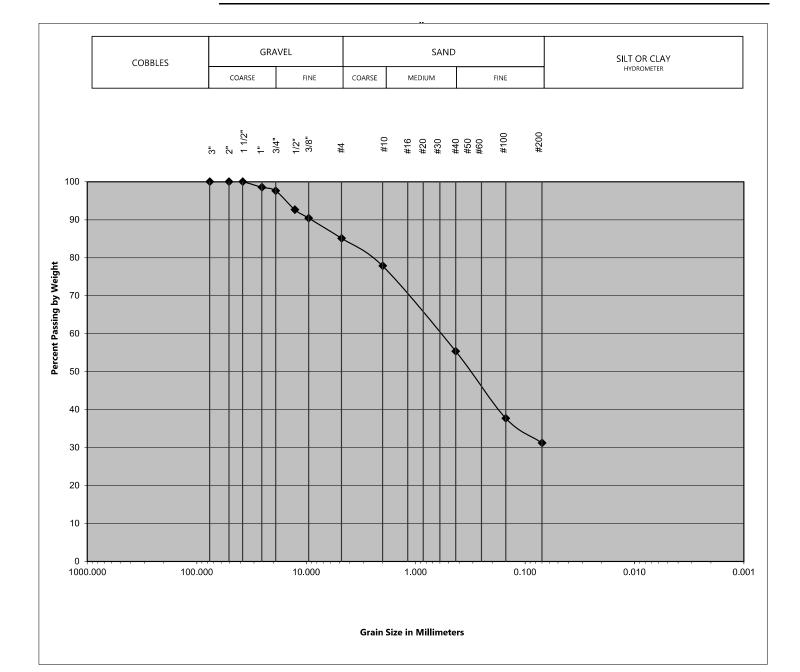
Ī	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	51.5	51.5	98.5				
	3/4"	0.750	19.00	32.6	84.1	97.6				
-	1/2"	0.500	12.70	174.6	258.7	92.6				
	3/8"	0.375	9.50	77.8	336.5	90.4				
	#4	0.187	4.75	186.1	522.6	85.1	70-100	25-70	70-100	25-70
	#10	0.079	2.00	254.7	777.3	77.8				
SAND	#40	0.017	0.43	789.5	1566.8	55.3				
SAIND	#100	0.006	0.15	619.4	2186.2	37.7				
	#200	0.003	0.07	227.2	2413.4	31.2				
	#200*					36.7 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	1095.2	3508.6	0.0				
			Total weig	ht of sample	3508.6					



PROJECT: **Proposed Gravel Pit CLIENT:** TF Moran CONTRACTOR: Keene, NH LOCATION: **Gordon Services PROJECT NO.:** 6535-23 **SOURCE:** On-Site DATE RETRIEVED: **SAMPLE NO.:** TP-5, 8-10' TEST METHOD: ASTM D 422 / D 1140 9/10/2020

 DATE TESTED:
 9/17/2020
 TESTED BY:
 JAW
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION: Brown fine to coarse SAND, some Clay/Silt, trace Gravel PROPOSED SAMPLE USE:





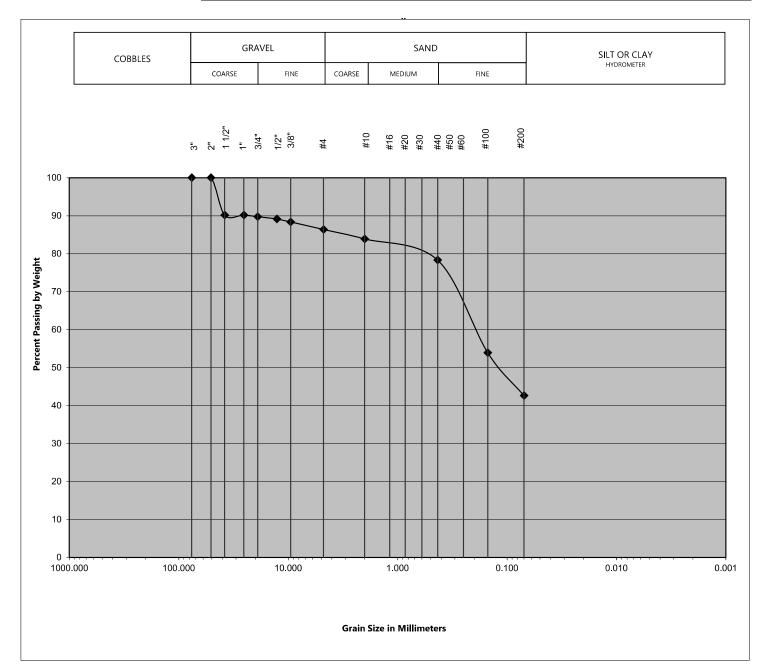
PROJECT:	Proposed Gravel Pit		_	CLIENT:	TF Moran	
LOCATION:	Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services On-Site 9/10/2020 EAA	
PROJECT NO.:	6535-23			SOURCE:		
SAMPLE NO.: TEST DATE:	TP-6, 4-7' 9/17/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	_ DATE RETRIEVED: _ CHECKED BY:		
SAMPLE DESCRI	· · · ·	Brown fine to coarse	SAND, and CLAY/SILT, I	ittle Gravel		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	314.5	314.5	90.2				
GRAVEL	1"	1.000	25.40	0.0	314.5	90.2				
	3/4"	0.750	19.00	13.3	327.8	89.8				
	1/2"	0.500	12.70	20.1	347.9	89.1				
	3/8"	0.375	9.50	24.8	372.7	88.3				
	#4	0.187	4.75	63.1	435.8	86.4	70-100	25-70	70-100	25-70
	#10	0.079	2.00	79.8	515.6	83.9				
SAND	#40	0.017	0.43	178.3	693.9	78.3				
SAIND	#100	0.006	0.15	780.7	1474.6	53.9				
	#200	0.003	0.07	361.2	1835.8	42.6				
-	#200*					49.3 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	1362.9	3198.7	0.0				
			Total weig	ht of sample	3198.7	,		,		



PROJECT:	Proposed Gravel	Pit	CLIENT:	TF Moran		
LOCATION:	Keene, NH		CONTRACTOR:	Gordon Services On-Site		
PROJECT NO.:	6535-23		SOURCE:			
SAMPLE NO.:	TP-6, 4-7	TEST METHOD:	ASTM D 422 / D 1140	DATE RETRIEVED:	9/10/2020	
DATE TESTED:	9/17/2020	TESTED BY:	JAW	CHECKED BY:	EAA	

SAMPLE DESCRIPTION: Brown fine to coarse SAND, and CLAY/SILT, little Gravel





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Keene, NH			CONTRACTOR:	Gordon Services On-Site	
PROJECT NO.:	6535-23		_	SOURCE:		
SAMPLE NO.: TEST DATE:	TP-7, 4-6' 9/21/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 DJS	DATE RETRIEVED: CHECKED BY:	9/10/2020 EAA	
SAMPLE DESCRI	· · · ·	Brown fine to coarse	SAND and Gravel, little	silt		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SIEVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	171.7	171.7	95.0				
	1-1/2"	1.500	38.10	89.2	260.9	92.3	===			
GRAVEL	1"	1.000	25.40	421.9	682.8	80.0				
	3/4"	0.750	19.00	143.3	826.1	75.8				
	1/2"	0.500	12.70	184.2	1010.3	70.4				
	3/8"	0.375	9.50	160.8	1171.1	65.7				
	#4	0.187	4.75	276.9	1448.0	57.5	70-100	25-70	70-100	25-70
	#10	0.079	2.00	246.8	1694.8	50.3				
SAND	#40	0.017	0.43	501.1	2195.9	35.6				
SAND	#100	0.006	0.15	485.6	2681.5	21.4				
	#200	0.003	0.07	214.4	2895.9	15.1				
-	#200*					26.2 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	66.7	2962.6	13.1				
			Total woig	ht of sample	3/10.2					

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 PROJECT:
 Proposed Gravel Pit
 CLIENT:
 TF Moran

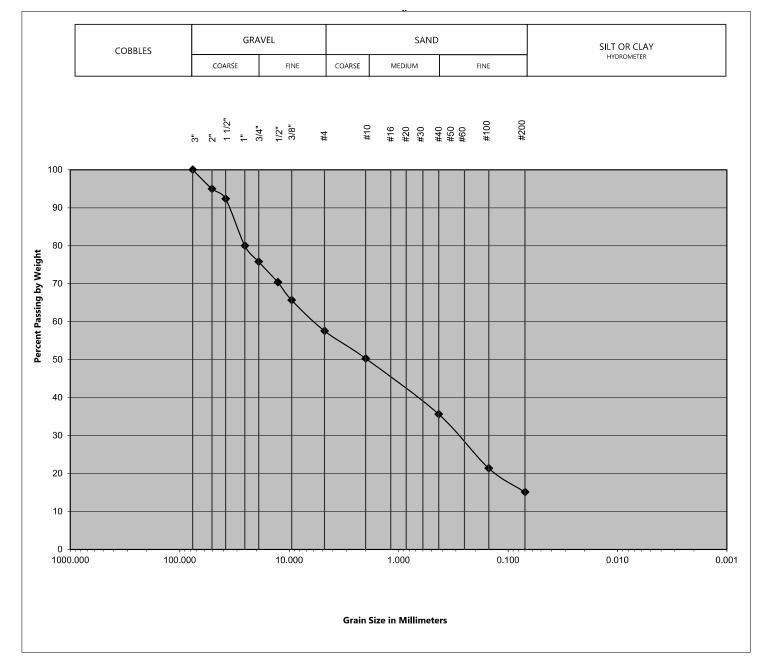
 LOCATION:
 Keene, NH
 CONTRACTOR:
 Gordon Services

 PROJECT NO.:
 6535-23
 SOURCE:
 On-Site

 SAMPLE NO.:
 TP-7, 4-6'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

 DATE TESTED:
 9/21/2020
 TESTED BY:
 DJS
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION:Brown fine to coarse SAND and Gravel, little silt





PROJECT:	Proposed Gravel Pit		<u></u>	CLIENT:	TF Moran	
LOCATION:	Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services On-Site 9/10/2020	
PROJECT NO.:	6535-23		_	SOURCE:		
SAMPLE NO.:	TP-9, 4-6'	TEST METHOD:	ASTM D422/D1140	DATE RETRIEVED:		
TEST DATE:	9/21/2020	TESTED BY:	DJS	CHECKED BY:	EAA	
SAMPLE DESCRI	-	Brown fine to coarse	SAND and Gravel, little	Silt		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	182.0	182.0	94.5				
GRAVEL	1"	1.000	25.40	351.2	533.2	83.8				
	3/4"	0.750	19.00	163.8	697.0	78.8				
	1/2"	0.500	12.70	273.6	970.6	70.5				
	3/8"	0.375	9.50	142.9	1113.5	66.1				
	#4	#4 0.187		355.1	1468.6	55.4	70-100	25-70	70-100	25-70
	#10	0.079	2.00	364.3	1832.9	44.3				
SAND	#40	0.017	0.43	482.6	2315.5	29.6				
SAND	#100	0.006	0.15	410.9	2726.4	17.1				
	#200	0.003	0.07	195.7	2922.1	11.2				
	#200*					20.2 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	60.8	2982.9	9.3				
			Total weig	ht of sample	3289.2					

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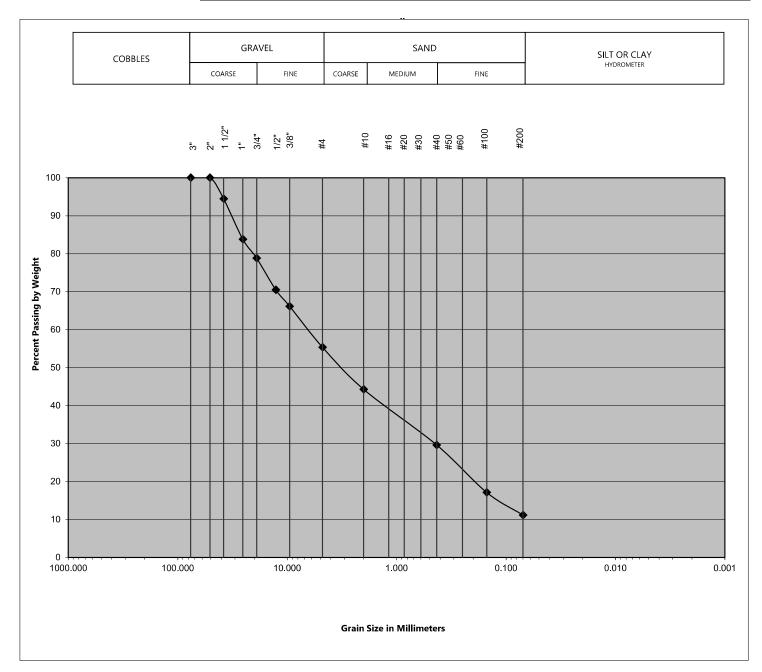


PROJECT:Proposed Gravel PitCLIENT:TF MoranLOCATION:Keene, NHCONTRACTOR:Gordon ServicesPROJECT NO.:6535-23SOURCE:On-Site

 SAMPLE NO.:
 TP-9, 4-6'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

 DATE TESTED:
 9/21/2020
 TESTED BY:
 DJS
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION:Brown fine to coarse SAND and Gravel, little Silt





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		_	CONTRACTOR:	Gordon Services	
PROJECT NO.:	6535-23		_	SOURCE:	On-site	,
SAMPLE NO.: TEST DATE:	TP-10, 1-3 9/21/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 DJS	DATE RETRIEVED: CHECKED BY:	9/10/2020 EAA	
SAMPLE DESCRI	-	Brown fine to coarse	SAND, some Gravel, son	ne Silt		

Ī	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	210.0	210.0	93.6				
	1-1/2"	1.500	38.10	0.0	210.0	93.6				
GRAVEL	1"	1.000	25.40	176.5	386.5	88.3				
	3/4"	0.750	19.00	224.0	610.5	81.5				
	1/2"	0.500	12.70	262.1	872.6	73.5				
	3/8"	0.375	9.50	124.8	997.4	69.7				
	#4	0.187	4.75	254.9	1252.3	62.0	70-100	25-70	70-100	25-70
	#10	0.079	2.00	233.7	1486.0	54.9				
SAND	#40	0.017	0.43	659.3	2145.3	34.9	===			
SAIND	#100	0.006	0.15	502.5	2647.8	19.7				
	#200	0.003	0.07	197.3	2845.1	13.7				
	#200*				==	22.1 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	63.3	2908.4	11.8				
			Total weig	ht of sample	3296.0					

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 PROJECT:
 Proposed Gravel Pit
 CLIENT:
 TF Moran

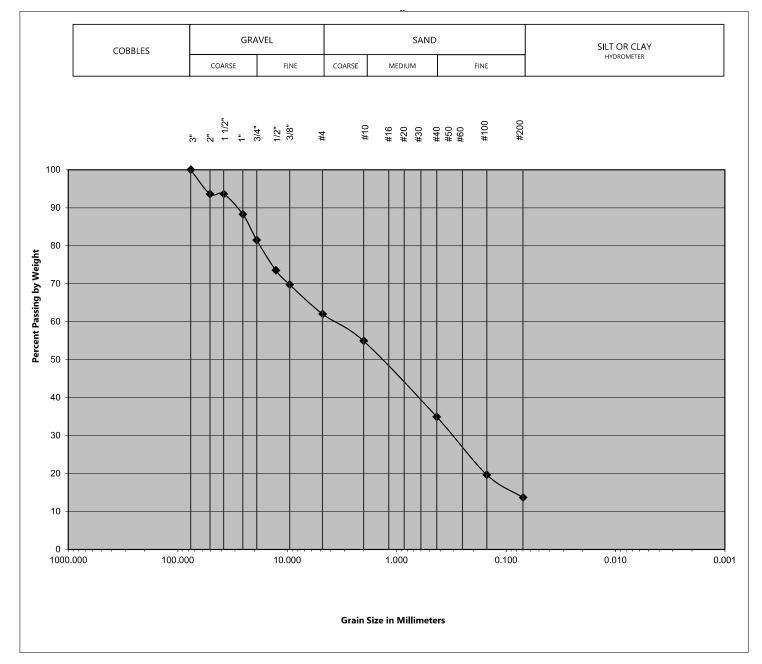
 LOCATION:
 Route 9, Keene, NH
 CONTRACTOR:
 Gordon Services

 PROJECT NO.:
 6535-23
 SOURCE:
 On-site

 SAMPLE NO.:
 TP-10, 1-3'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 9/10/2020

 DATE TESTED:
 9/21/2020
 TESTED BY:
 DJS
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION: Brown fine to coarse SAND, some Gravel, some Silt





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran		
LOCATION:	Route 9, Keene, NH			CONTRACTOR:	Gordon Services		
PROJECT NO.:	6535-23		_	SOURCE:	On-site		
SAMPLE NO.: TEST DATE:	TP-12, 3-4' 10/27/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	_ DATE RETRIEVED: _ CHECKED BY:	10/22/2020 EAA		
SAMPLE DESCRI	· · · ·	Brown fine to coarse	SAND, and fine to coars	se Gravel, trace Silt			

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	6"	6.000	152.4		0.0	100.0			100.0	100.0
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	227.8	227.8	90.1				
CDAVE	1-1/2"	1.500	38.10	0.0	227.8	90.1				
GRAVEL	1"	1.000	25.40	238.2	466.0	79.8				
	3/4"	0.750	19.00	138.0	604.0	73.8				
	1/2"	0.500	12.70	172.7	776.7	66.3				
	3/8"	0.375	9.50	91.8	868.5	62.3				
	#4	0.187	4.75	278.2	1146.7	50.2	70-100	25-70	70-100	25-70
	#10	0.079	2.00	274.2	1420.9	38.3				
SAND	#40	0.017	0.43	505.9	1926.8	16.3				
SAND	#100	0.006	0.15	220.0	2146.8	6.8				
	#200	0.003	0.07	68.6	2215.4	3.8				
	#200*				==	7.5 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	87.2	2302.6	0.0				
<u> </u>		·	Total weig	ht of sample	2302.6	-	·			·

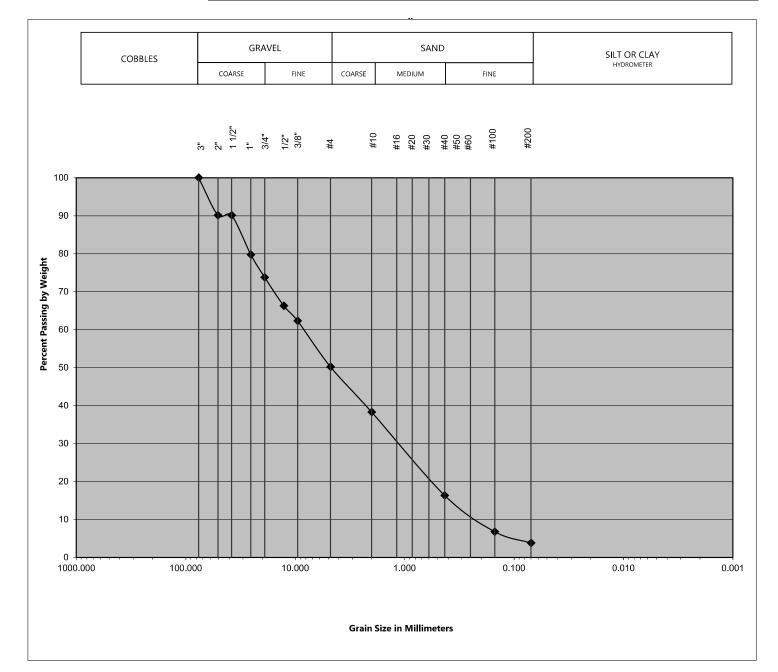


PROJECT:Proposed Gravel PitCLIENT:TF MoranLOCATION:Route 9, Keene, NHCONTRACTOR:Gordon ServicesPROJECT NO.:6535-23SOURCE:On-site

 SAMPLE NO.:
 TP-12, 3-4'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 10/22/2020

 DATE TESTED:
 10/27/2020
 TESTED BY:
 JAW
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION: Brown fine to coarse SAND, and fine to coarse Gravel, trace Silt





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran		
LOCATION:	Route 9, Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services		
PROJECT NO.:	6535-23		_	SOURCE:	On-site		
SAMPLE NO.: TEST DATE:	TP-13, 4-5' 10/28/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	DATE RETRIEVED: CHECKED BY:	10/22/2020 EAA		
SAMPLE DESCRI	-	Brown fine to coarse	SAND, some Silt, trace 0	Gravel			

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	6"	6.000	152.4	0.0	0.0	100.0			100.0	100.0
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
CDAVEL	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	24.4	24.4	98.6				
	3/4"	0.750	19.00	26.2	50.6	97.1				
	1/2"	0.500	12.70	53.5	104.1	94.0	===			
	3/8"	0.375	9.50	27.0	131.1	92.4				
	#4	0.187	4.75	90.7	221.8	87.2	70-100	25-70	70-100	25-70
	#10	0.079	2.00	108.0	329.8	81.0				
SAND	#40	0.017	0.43	566.7	896.5	48.2				
SAIND	#100	0.006	0.15	365.4	1261.9	27.1				
	#200	0.003	0.07	110.8	1372.7	20.7				
	#200*			==		23.8 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	359.0	1731.7	0.0				
			Total weig	ht of sample	1731.7					

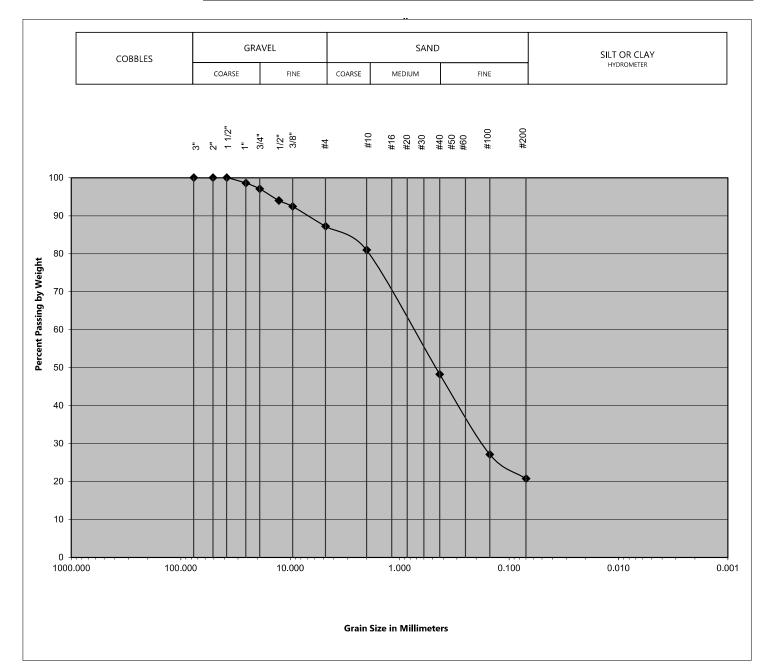


PROJECT:Proposed Gravel PitCLIENT:TF MoranLOCATION:Route 9, Keene, NHCONTRACTOR:Gordon ServicesPROJECT NO.:6535-23SOURCE:On-site

 SAMPLE NO.:
 TP-13, 4-5'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 10/22/2020

 DATE TESTED:
 10/28/2020
 TESTED BY:
 JAW
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION:Brown fine to coarse SAND, some Silt, trace Gravel





PROJECT:	Proposed Gravel Pit			CLIENT:	TF Moran	
LOCATION:	Route 9, Keene, NH		<u> </u>	CONTRACTOR:	Gordon Services	
PROJECT NO.:	6535-23		<u> </u>	SOURCE:	On-site	
SAMPLE NO.: TEST DATE:	TP-14, 1-3' 10/28/2020	TEST METHOD: TESTED BY:	ASTM D422/D1140 JAW	DATE RETRIEVED: CHECKED BY:	10/22/2020 EAA	
SAMPLE DESCRI	-	Brown fine to coarse	SAND, some Silt, some	Gravel		

	SIEVE SIZE	SIEVE O	PENINGS	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED	PERCENT FINER OF	NHDOT 209.2.1.1	NHDOT 209.2.1.2	NHDOT 304.1	NHDOT 304.2
	SILVE SIZE	inches	millimeters	(grams)	(grams)	TOTAL	(Granular Backfill - sand)	(Granular Backfill - gravel)	(Sand)	(Gravel)
	3"	3.000	76.20	0.0	0.0	100.0	100.0	95-100		
	2"	2.000	50.80	0.0	0.0	100.0				
	1-1/2"	1.500	38.10	0.0	0.0	100.0				
GRAVEL	1"	1.000	25.40	51.9	51.9	96.9				
	3/4"	0.750	19.00	180.9	232.8	86.0				
	1/2"	0.500	12.70	86.1	318.9	80.8				
	3/8"	0.375	9.50	50.0	368.9	77.8				
	#4	0.187	4.75	102.9	471.8	71.6	70-100	25-70	70-100	25-70
	#10	0.079	2.00	92.3	564.1	66.1				
SAND	#40	0.017	0.43	230.5	794.6	52.2				
SAND	#100	0.006	0.15	277.9	1072.5	35.5				
	#200	0.003	0.07	124.2	1196.7	28.1				
	#200*					39.2 *	0-12*	0-12*	0-12*	0-12*
Silt or Clay	Pan	0.000	0.00	466.7	1663.4	0.0				
			Total weig	ht of sample	1663.4					



 PROJECT:
 Proposed Gravel Pit
 CLIENT:
 TF Moran

 LOCATION:
 Route 9, Keene, NH
 CONTRACTOR:
 Gordon Services

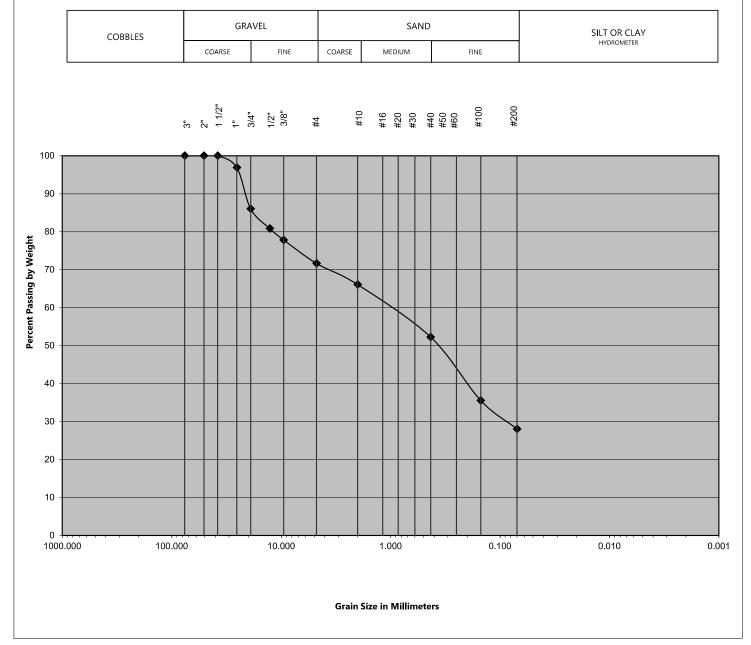
 PROJECT NO.:
 6535-23
 SOURCE:
 On-site

 SAMPLE NO.:
 TP-14, 1-3'
 TEST METHOD:
 ASTM D 422 / D 1140
 DATE RETRIEVED:
 10/22/2020

 DATE TESTED:
 10/28/2020
 TESTED BY:
 JAW
 CHECKED BY:
 EAA

SAMPLE DESCRIPTION: Brown fine to coarse SAND, some Silt, some Gravel PROPOSED SAMPLE USE:

·



Appendix C Overburden Monitoring Well Construction Logs



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-1

 SHEET
 1 of 1

 FILE NO.
 2024012

		GE	OSERVICES									CHKD. BY		JFB
Bori	ng Co.			Nortl	hern Test Boring, I	nc.	Boring	Loc	ation		Se	ee Boring Locatio	n Plan	
Drill		_			Michael Nadeau				rface El.	950 FT AM		Datum		AD83
	ged By	-			JFB		Date S		•	7/22/202		Date End		/22/2024
									•			_		_
	oler Type				Split Sp					Groundw	ater Readi	ngs (from	ground su	ırface)
-	oler Size:				2 - inch s				Date	Time	Depth	Elev.	5	Stabilization Time
	Drill Rig				Deidrich D-50 - T				7/22/2024	10:45:00 AM	DRY	DRY		~2.5 hours
)rilli D	ng Metho	od:			140 lb - Auto D	rop Hamme	er		8/5/2024	8:35:00 AM	DRY	DRY		~2 weeks
E			SAN	IPLE INFO	RMATION				SAMPL	E DESCRIPT	ION			WELL CONSTRUCTION
P	Casing Blows	m	PEN/REC	DEPTH	BLOWS PER	PID	4							DETAILS
T H	(ft)	Type & No.	(inches)	(feet)	6 INCHES	ppmv								(NOT TO SCALE)
			20/24	0.5-2	8	0.0	0 - 0.5' Ground cover,	silty	sand, brown,	dry				
1					13	0.0	0.5' - 3.0' Sandy grave	l, bro	own, dry					
					20									
2					24	0.0								
			14/16	2-3.3	26	0.1								
3					22	0.1								
					28	0.1								
4					27	0.1	3.0 - 3.3' - Fragmente	d bed	drock, granite,	, whitish-gray,	, dry			
							Boring refusal at 3.3' I	3GS						
5														
						_								
6					<u> </u>		4							
_						_								
7					+	+	-							
0					+	4								
8					 	+	-							
9						-								
9					-	+	†							
10						1								
						1								
11						1								
12														
						_								
13														
						4								
14						+	_							
1 -					+	4								
15					+	+	-							
16						1								
10					1	+	┪							
17						1								
						1								
18						1								
							7							
9						<u> </u>								
						4								
:0	NIII	B COL	LS (N-Va	lues)	COHESIVE S	OILS (N	[-Values]				SYMBO	I KEV		
31/1	0 to 4 -		·	ilucaj	0 to 2 - Very S			split-l	parrel sampler.		3 I WIBU	7. PID denotes Pho	otoionization	Detector
) - Loose 3 to 4 - Soft					2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts pe							
		30 - Medium Dense 5 to 8 - Medium Stiff							nch Osterberg und			9. PP denotes Pock		
		50 - Dense 9 to 15 - Stiff 50 - Very Dense 16 to 30 - Very Stiff				4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation.								
	3,51,50	Over 30 - Hard							andard Penetration			12. R denotes core		
				ely 2-feet of 2	2-inch diameter scree	n and 1-fo	oot of solid riser. Filter san	d em	placed in the sci	reened portion	of the borel	nole annulus and na	tive mater	ials were used to bakfill
rou	nd the s	olider ri	iser.											



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-2

 SHEET
 1 of 1

 FILE NO.
 2024012

		FI	RONTIER								CHKD. BY		JFB
Drill	ing Co. ler ged By				thern Test Boring, I Michael Nadeau JFB	inc.	Boring Loc Ground Su Date Start	rface El.	944 FT AM 7/22/202	ISL	ee Boring Locat Datum Date End	N	NAD83 7/22/2024
amj	pler Type	e:			Split Sp	poon			Groundwa	ater Readi	ings (froi	m ground s	urface)
	pler Size:				2 - inch s Deidrich D-50 - 7		3	Date 7/22/2024	Time 11:45:00 AM	Depth DRY	Elev. DRY	1	Stabilization Time
	e Drill Rig ing Meth	-			140 lb - Auto D			8/5/2024	9:00:00 AM	DRY	DRY	 	~2.5 hours ~2 weeks
D E			SAIV	IPLE INFO	ORMATION			SAMPI	LE DESCRIPTI	ION			WELL CONSTRUCTION
P T H	Casing Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID							DETAILS (NOT TO SCALE)
			18/24	0-2	6	0.0	0 - 0.5' Ground cover, silty		, dry				
1	igsqcup				11		0.5' - 12.0' Sandy gravel, b	rown, dry					
2					22	0.0							
2	\vdash	├──	20/24	2-4	23 31	+	4						<u> </u>
3			20/24	4-4	20	0.1							
_				ĺ	20	1 0.1	†						
4				Ĺ	22	0.1							
			22/24	4-6	26	0.0]						
5		Ь—	\vdash		22		_						
c			-		20	0.0							
6	\vdash		22/24	6-8	26 22	+	-						
7			22/21	<u></u>	18	0.1							
_				Í	22		1						
8					24	0.1							
		<u> </u>	24/24	8-10	24	_							
9	igwdown	├			22	0.0	4						
• •			\vdash		20	-							
10	\vdash	-	20/24	10-12	22	0.1	-						
11			20/24	10-12	28	0.1							
				ĺ	24	+	-						
12				<u> </u>	50+	0.0	Some fragmented rock in	shoe of split s	poon. Whitish	gray, gran	nite, dry.		
							Boring Refusal at 12' BGS.						
13		<u> </u>	<u> </u>		 	\bot	_						
• 4			\vdash		 	4							
14	$\vdash \vdash$		\vdash		+	+	-						
15					+	-							
				i	<u></u>	†	1						
16						1							
					<u> </u>	_							
17	 	 	\vdash		 	+	4						
1 Q		-	\vdash		+	4							
18	\vdash				+	+	†						
9				í	†	1							
					1		1						
0		2.60	- C /N W		COLLEGINE	COTT C (N				SYMBO	- Thanks		<u> </u>
iΚ	0 to 4 -		ILS (N-Va	lues)	O to 2 - Very S		1. S denotes split-	barrel sampler.		SYMBO	7. PID denotes P	hotoionization	n Detector
	5 to 10	- Loose	e		3 to 4 - Soft		2. U denotes 3-inc	ch O.D. undisturbe			8. PPM denotes	parts per millio	on.
	11 to 30		lium Dense se		5 to 8 - Mediu 9 to 15 - Stiff		3. UO denotes 3-ii 4. PEN denotes pe				 PP denotes Po FVST denote 		
			Dense		16 to 30 - Ver	ry Stiff	5. REC denotes re	ecovered length of	f sample.		11. RQD denotes	s Rock Quality	y Designation.
_					Over 30 - Han	d	6. SPT denotes St	andard Penetratio	on Test.		12. R denotes co	re run number	r.



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-3

 SHEET
 1 of 1

 FILE NO.
 2024012

		FF	RONTIER		<u></u>		21 Route 9, Keene & Sulliva	n, new namp	snire		FILE NO.		2024012	_
		GE	OSERVICES								CHKD. BY		JFB	
ori	ing Co.			Nor	thern Test Boring,	Inc.	Boring Loc	cation		Se	ee Boring Locati	ion Plan		
ril	ler				Michael Nadeau		Ground Su	rface El.	1052 FT Al		Datum		NAD83	_
.og	ged By	_			JFB		Date Start		7/22/202	24	Date End	7	7/22/2024	_
amj	oler Type	e:			Split S	Spoon			Groundw	vater Readi	ngs (fron	n ground s	urface)	
amj	oler Size:				2 - inch	sampler		Date	Time	Depth	Elev.		Stabilization Time	
	Drill Rig	-			Deidrich D-50 -			7/22/2024	1:30:00 PM	DRY	DRY		~2.5 hours	
rilli D	ng Metho	od:			140 lb - Auto I	Orop Hamme	er	8/5/2024	9:20:00 AM	DRY	DRY		~2 weeks	
E P	Casing		SAM	IPLE INFO	ORMATION			SAMPL	LE DESCRIPT	ION			WELL CONSTRUCT	TION
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv							(NOT TO SCAL	E)
			18/24	0-2	11	0.1	0 - 0.5' Ground cover, silty		, dry					
1		<u> </u>			17	0.1	0.5' - 14.0' Sandy gravel, b	rown, dry						
					21	0.2								
2		<u> </u>	22 (24		18	+	4							4
3			20/24	2-4	22	0.0								
3					28	+	-							
4					29	0.0								
_			22/24	4-6	42	+	Cobble encountered at 4-f	feet bgs.						
5					26	0.1		000 2801						
					26	0.0	1							
6					24	0.0								
			22/24	6-8	23		1							
7		<u> </u>			27	0.1								
			L		26	_								
8		<u> </u>			29	0.0	_							
			24/24	8-10	25	4								
9		├	\longmapsto		27	0.1	4							
					29									
10		 	20/24	10.12	29	0.0	4							
11		_	20/24	10-12	27 28	0.0								
11					24	+	-							
12					50+	0.1								
					1		1							
13					1	0.1								
						0.1	1							
14						0.1	14.0-14.2' Fragement bedi	rock, granite, ر	whitish-gray, c	dry				
						_	14.2' Bedrock refusal enco	ountered.						
15		<u> </u>				+								
					<u> </u>	_								
16		├				+	4							
1 77		<u> </u>			 	-								
17		 	\vdash		+	+-	-							
1 2					+	-								
18					+	+	1							
9						7								
							1							
0														
3R/			ILS (N-Va	lues)	COHESIVE			hamal assessan		SYMBO		h atai ani anti	- Detector	
		1 - Very Loose 0 to 2 - Very Soft 0 - Loose 3 to 4 - Soft					1. S denotes split-barrel sampler. 7. PID denotes Photoionization Detector 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million.							
		o 30 - Medium Dense 5 to 8 - Medium Stiff					f 3. UO denotes 3-inch Osterberg undisturbed sample. 9. PP denotes Pocket Penetrometer.					meter.		
		to 50 - Dense 9 to 15 - Stiff er 50 - Very Dense 9 to 30 - Very Stiff					4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test. 5. REC denotes recovered length of sample. 11. RQD denotes Rock Quality Designation.							
		Over 30 - Hard						andard Penetratio			12. R denotes con			
	_			-		_	inch diameter PCV screen and	2-feet of solid r	riser. Clean silica	a sand was ı	used to fill the bor	ehole annul	lus to approximately	,
-foo	ot above	the scr	een/riser ir	nterface. Th	e remainder of the ar	nnulus was i	filled with native materials.							



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-4

 SHEET
 1 of 1

 FILE NO.
 2024012

		GE	COSERVICES									CHKD. BY		JFB
ori	ng Co.			Nort	thern Test Boring, I	22		Boring Loc	otion		Se	e Boring Locati	on Dlan	
) Drill	7/3	-			Michael Nadeau	ic.		Ground Su		1103 FT AN		e Bornig Locati Datum		AD83
	ged By	-			JFB			Date Start	race El.	7/22/202		Date End		/22/2024
.06	500 2)				012			- Bato Start						<u> </u>
	oler Type		-		Split Sp				_	Г Т	ater Readir	Ť	n ground si	
	oler Size: Drill Rig				2 - inch sa Deidrich D-50 - T				Date 7/22/2024	Time 3:30:00 PM	Depth DRY	Elev. DRY		Stabilization Time ~2.5 hours
	ng Meth				140 lb - Auto D				8/5/2024	9:40:00 AM	DRY	DRY		~2 weeks
D E			SAR	IDI E INEC	ORMATION				CAMDI	E DESCRIPT	ION			WELL CONSTRUCTION
P	Casing		SAN	IF LE INFC	KMATION				SAMITL	E DESCRIP I	ION			DETAILS
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv								(NOT TO SCALE)
п	()		22/24	0-2	16		0 - 0.5' Gro	und cover, silty	sand, brown,	dry				1
1					25	0.0		andy gravel, bro		·				
					29	0.1	1							
2					28	0.1								
			12/12	2-4	33	0.0	2.5-3.0' Fra	gement bedroc	k, granite, wh	itish-gray, dry				
3					50+		3.0' Bedroo	k refusal encou	ntered.					
						4								
4						4	-							
_					+	-								
5					+	+	1							
6					+	1								
_					+	1	1							
7						1								
8														
					<u> </u>	_								
9						-	4							
					+	4								
10					+	+	1							
11					+	-								
						†	1							
12					1	1								
							1							
13														
						_								
14					<u> </u>	 	_							
						4								
15					+	+	1							
16					+	-								
10					+	+	1							
17						1								
					1	1	1							
18					-	1								
9														
						_								
:0	MIII	D SO	LS (N-Va	aluec)	COHESIVE S	OILS (N	-Values)				SYMBO	LEV		
IK	0 to 4 -		•	iiues)	0 to 2 - Very S	_	-vaiues)	1. S denotes split-l	arrel sampler.		3 I IVIDUI	7. PID denotes P	notoionization	Detector
	5 to 10	- Loose			3 to 4 - Soft			2. U denotes 3-inc	h O.D. undisturbe			8. PPM denotes p	arts per millio	on.
	11 to 30 31 to 50		ium Dense		5 to 8 - Mediu 9 to 15 - Stiff	n Stiff		UO denotes 3-in PEN denotes per				PP denotes PoFVST denotes		
	Over 50				16 to 30 - Very	Stiff		REC denotes re				11. RQD denotes		
<i>f</i> .				11	Over 30 - Hard		1. 41	6. SPT denotes Sta			4	12. R denotes con		
					GS. Constructed using e remainder of the an				oot of solid rise:	r. Cleari Silica Sa	mu was used	a to iiii tile boren	oie aiinuius	ю арргохипаtery



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-5

 SHEET
 1 of 1

 FILE NO.
 2024012

		GE	OSERVICES									CHKD. BY		JFB
lori	ng Co.			Nort	hern Test Boring, I	nc		Boring Loc	ation		Se	ee Boring Locat	ion Plan	
Drill	- 2/2	_		Nort	Michael Nadeau	iic.		Ground Su		1112 FT Al		Datum		AD83
	ged By	-			JFB			Date Start	nace Li.	7/23/202		Date End		/23/2024
.05	gou Dy	_			01.5			- Bate Start		17 207 201		Date Bild		, 10, 1021
amı	oler Type	e:			Split Sp	ooon				Groundw	ater Readi	ngs (fro	m ground si	urface)
amı	oler Size:				2 - inch s	ampler			Date	Time	Depth	Elev.	5	Stabilization Time
	Drill Rig				Deidrich D-50 - 7				7/23/2024	10:45:00 AM	DRY	DRY		~2.5 hours
rilli D	ng Meth	od:			140 lb - Auto D	rop Hamm	er		8/5/2024	10:10:00 AM	DRY	DRY		~2 weeks
E			SAIV	IPLE INFO	DRMATION				SAMPL	E DESCRIPT	'ION			WELL CONSTRUCTION
P	Casing													DETAILS
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv								(NOT TO SCALE)
			22/24	0-2	20		0 - 0.5' Gro	und cover, silty	sand, brown,	dry				1 1
1					21	0.1	0.5' - 4.5' S	andy gravel, bro	own, dry	•				
_					20		-							
2					19	0.0								
_			24/24	2-4	27									
3			21/21	2 1	24	0.1								
					25									
4					27	0.1								
			10/12		29	1								
5			107.12		50+	0.1	4.5-5.0' Fra	gement bedroo	k, granite, wh	itish-gray, dry				
							5.0' Bedroo	k refusal encou	ntered.					
6														
7														
8														
9														
10							_							
11														
					-	4								
12														
10					+	-								
13					+	+								
14						1								
1-1							1							
15					1	1								
						1	1							
16						1								
17														
18														
9														
					1	4								
:0 :R/	NIII.A	R SO	LS (N-Va	ilues)	COHESIVE S	OILS (N	-Values)				SYMBO	I. KEY		
	0 to 4 -		•		0 to 2 - Very S		·uiucoj	1. S denotes split-	parrel sampler.		JIMEO	7. PID denotes F	hotoionization	Detector
	5 to 10	- Loose			3 to 4 - Soft			2. U denotes 3-inc	h O.D. undisturbe			8. PPM denotes	parts per millio	on.
	11 to 30		ium Dense		5 to 8 - Mediu 9 to 15 - Stiff	m Stiff		3. UO denotes 3-is				9. PP denotes Po		
	Over 50				16 to 30 - Ver	y Stiff		PEN denotes pe REC denotes re				 FVST denote RQD denote 		
					Over 30 - Har	d		6. SPT denotes Sta	ındard Penetratio	n Test.		12. R denotes co	re run number	
					GS. Constructed using the remainder of the a				nd 1-foot of solid	d riser. Clean sil	lica sand wa	s used to fill the	borehole ann	ulus to approximately



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-6

 SHEET
 1 of 1

 FILE NO.
 2024012

		GE	OSERVICES								CHKD. BY		JFB
Bor	ing Co.			Nort	hern Test Boring, I	nc.	Boring Loc	ation		Sec	e Boring Location	on Plan	
	ler				Michael Nadeau	,	Ground Su		1192 FT Al		Datum		AD83
og	ged By				JFB		Date Start		7/23/20:	24 I	Date End	7	/23/2024
am	oler Type	e:			Split Sp	oon			Groundw	ater Readin	igs (from	ground su	ırface)
	oler Size:				2 - inch s			Date	Time	Depth	Elev.	9	Stabilization Time
	e Drill Rig ng Meth				Deidrich D-50 - T 140 lb - Auto D			7/23/2024 8/5/2024	11:45:00 AM 10:40:00 AM	DRY DRY	DRY DRY		~2.5 hours ~2 weeks
D	ing meur	ou.	CAR	IDI E INEC		ортиания					Bitt		
E P	Casing				RMATION			SAMPL	E DESCRIPT	ION			WELL CONSTRUCTION DETAILS
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv							(NOT TO SCALE)
			22/24	0-2	20	0.1	0 - 0.5' Ground cover, silty		-				Open Borehole
1					21	ļ	0.5' - 0.9' Fragemented be		nd and gravel,	, whitish-gra	ay and brown, d	lry	
•					20	0.0	0.9' BGS Bedrock Refusal	Encountered.					
2			24/24	2-4	19 27	+							
3			21/21		24	0.1							
					25	0.1							
4					27	ļ							
_			10/12		29	0.1							
5					50+	+	_						
6						1							
7						+							
8						4							
0						†							
9						<u> </u>							
						_							
10						+							
11						-							
12													
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13						1							
14						-							
15]							
						4							
16						+	+						
17						1							
18						<u> </u>							
^						-							
9						+							
0:						1							
ìR			LS (N-Va	lues)	COHESIVE S	_	<u> </u>			SYMBOI			2
	0 to 4 - 5 to 10				0 to 2 - Very S 3 to 4 - Soft	π	 S denotes split- U denotes 3-inc 		d sample.		 PID denotes Ph PPM denotes p 		
	11 to 3	0 - Med	ium Dense		5 to 8 - Mediu	m Stiff	3. UO denotes 3-i	nch Osterberg und	listurbed sample.		9. PP denotes Poo	ket Penetron	neter.
	31 to 50 Over 50		se Dense		9 to 15 - Stiff 16 to 30 - Ver			covered length of	sample.		 FVST denotes RQD denotes 		
Ic -				this location	Over 30 - Har		6. SPT denotes St				12. R denotes core		
ı U I	HOIIIOIT	ng well	motaneu at	ano iocatioi									



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-7

 SHEET
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 FILE NO.
 2024012

		GE	OSERVICES								CHKD. BY		JFB
Bor	ing Co.			Nort	hern Test Boring, I	nc.	Boring Loc	ation		Sec	e Boring Locat	ion Plan	
Dril	ler				Michael Nadeau		Ground Sur	rface El.	1178 FT Al	MSL I	Datum	N	AD83
Log	ged By				JFB		Date Start		7/23/202	24 I	Date End	7	/23/2024
Sam	oler Type	e:			Split Sp	oon			Groundw	ater Readin	gs (fror	n ground sı	ırface)
Sam	oler Size:				2 - inch sa	mpler		Date	Time	Depth	Elev.	5	Stabilization Time
Туре	Drill Rig	g:			Deidrich D-50 - T	rack Moun	ted	7/23/2024	12:20:00 PM	DRY	DRY		~2.5 hours
Drill	ng Meth	od:			140 lb - Auto Di	op Hamme	er	8/5/2024	11:05:00 AM	DRY	DRY		~2 weeks
D E P	Casing		SAIV	PLE INFO	PRMATION			SAMPL	E DESCRIPT	ION			WELL CONSTRUCTION DETAILS
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv							(NOT TO SCALE)
			20/24	0-2	17	0.1	0 - 0.5' Ground cover, silty	sand, brown,	dry				
1					27	0.1	0.5' - 1.2' Sandy gravel, bro	own, dry					
					33								Open Borehole
2					50+	0.0	1.2'-1.9' Fragmented bedro	ock, granite, v	vhitish-gray, di	ry			
3							1.9' BGS Bedrock Refusal I	Encountered.					
I		-	1			-1	1.5 255 254 OCK REIGHAN						

1		27		0.5' - 1.2' Sandy gravel, brown, dry	Open Borehole
		33	0.0		Open Dorenoic
2		50+	0.0	1.2'-1.9' Fragmented bedrock, granite, whitish-gray, dry	
				1.9' BGS Bedrock Refusal Encountered.	
3			1		
4			1		
5			1		
			1		
6			1		
7					
8					
9					
10					
11			1		
12]		
13					
14					
15					
16]		
17			1		
18			1		
19			1		

20			
GRANULAR SOILS (N-Values)	COHESIVE SOILS (N-Values)	SYMBO	L KEY
0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.	7. PID denotes Photoionization Detector
5 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	4. PEN denotes penetration length of sampler.	FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff	5. REC denotes recovered length of sample.	RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

No monitoring well installed at this location.



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 MW-8

 SHEET
 1 of 1

 FILE NO.
 2024012

		F	RONTIER									CHKD. BY		JFB
Dril	ng Co. er ged By				hern Test Borir Michael Nadea JFB			Boring Loc Ground Su Date Start		1180 FT AM 7/23/202	/ISL_	ee Boring Locati Datum Date End	N	AD83 //23/2024
amı	oler Type	e:			Sp	lit Spoon				Groundwa	ater Readi	ings (fron	n ground s	urface)
-	oler Size:					ich sampler			Date	Time	Depth	Elev.		Stabilization Time
	Drill Rig	-				0 - Track Moun			7/23/2024	1:45:00 PM	DRY	DRY		~2.5 hours
)rilli D	ng Meth	od:			140 lb - Au	to Drop Hamme	er		8/5/2024	11:35:00 AM	DRY	DRY		~2 weeks
E P	Casing		SAIV	IPLE INFO	RMATION				SAMPL	E DESCRIPT	ION			WELL CONSTRUCTION DETAILS
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID								(NOT TO SCALE)
	, ,		10/12	0-2	26		0 - 0.5' Grou	ınd cover, silty	sand, brown,	dry				Onen Berehele
1					50+	0.1	-	_		d, granite, whit	ish-gray a	and brown, dry		Open Borehole
							1.0' BGS Be	drock Refusl E	ncountered					
2				<u> </u>										
3														
J														
4														
5														
6														
7														
8														
9														
10														
10														
11														
12														
13														
14														
15														
16														
17														
18														
۵														
9														
0														
R	NULA 0 to 4 -		LS (N-Va	llues)		/E SOILS (N	Values)	1 C do	normal committee		SYMBC		notoic=i'	Detector
	5 to 10				0 to 2 - Ve 3 to 4 - So			 S denotes split-l U denotes 3-inc 		d sample.		7. PID denotes P 8. PPM denotes p		
			ium Dense		5 to 8 - M 9 to 15 - S	edium Stiff		3. UO denotes 3-ir				9. PP denotes Po		
	31 to 50 Over 50				9 to 15 - S 16 to 30 -			 PEN denotes pe REC denotes re 				10. FVST denotes 11. RQD denotes		
Ic.				this leasting	Over 30 -	Hard		6. SPT denotes Sta				12. R denotes con	e run numbe	r.
ıu r	ioiiitorii	ng well	mstanea at	this location										

Appendix D Bedrock Monitoring Well Construction Logs



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 BRW-1

 SHEET
 1
 of 1

 FILE NO.
 2024012

	FI	RONTIER								CHKD. BY	JFB	
ring Co iller gged B				Rock Drilling & Bla Steven James JFB	sting	Boring Loc Ground Su Date Start		950 FT AN 10/17/20	/ISL	e Boring Loca Datum Date End	tion Plan NAD83 10/17/2024	 _
npler Ty	ne.			Grab samples fr	om cutting	78		Groundw	ater Readi	ngs (fro	m ground surface)	
npler Siz				N/A		9	Date	Time	Depth	Elev.	Stabilization Time	.e
oe Drill I				Epiroc -			10/17/2024	10:45:00 AM	DRY	DRY	~2.5 hours	
lling Me	hod:			3-inch Air I	lammer		11/1/2024	8:35:00 AM	DRY	DRY	~2 weeks	
		SAIV	IPLE INFOR	RMATION			SAMPI	E DESCRIPT	'ION		WELL CONST	PHOTION
Casin		PEN/REC	DEPTH	BLOWS PER	PID	-	0211-11 2	L DESCRIT I	1011		DETAI (NOT TO S	ILS
(ft)	& No.	(inches)	(feet)	6 INCHES	ppmv	0 - 3' Overburden materia	s, sand and g	ravel. drv				_
						3.0' - 54.0' Granite, whitish	ı-gray, dry, rel	latively hard d	rilling, whi	te sand cutting	gs,	
					1	no fractures or water bear	ing zones enc	ountered				
						-						
5						1						
)						_					ole	
5											3oreh	
]					Open Bedrock Borehole	
0						1					Bedı	
5						-					Open	
)												
5					1							
						1						
)						1						
5						Boring terminated at 54.0'	BCS.					
)						Borning terminated at 04.0	DG 5.					
5					1							
+						1						
)						-						
5												
)]							
						1						
5						-						
)						-						
5]						
0												
	AR SOI	LS (N-Va	lues)	COHESIVE S	OILS (N	-Values)			SYMBO	L KEY		
0 to 4 5 to 1 11 to 31 to	- Very L 0 - Loose	oose ium Dense se		0 to 2 - Very S 3 to 4 - Soft 5 to 8 - Mediun 9 to 15 - Stiff 16 to 30 - Very Over 30 - Harc	n Stiff Stiff	1. S denotes split- 2. U denotes 3-inc 3. UO denotes 3-i 4. PEN denotes pr 5. REC denotes re 6. SPT denotes St	th O.D. undisturbe nch Osterberg und enetration length of covered length of	disturbed sample. of sampler. sample.		8. PPM denotes 9. PP denotes P 10. FVST denot	Photoionization Detector parts per million. ocket Penetrometer. es field vane shear test. es Rock Quality Designation. ore run number.	



Gordon Services - Keene Pit

BORING NO. BRW-2 SHEET 1 of 1

		ED	ONTIED				21 Route 9, Ke	eene & Sunivai	i, New Hamp	snire		FILE NO.		2024012
		GE	DSERVICES									CHKD. BY		JFB
rir	g Co.			Capitol F	Rock Drilling & Bl	asting		Boring Loc	ation		See	Boring Locatio	n Plan	
ille	r				Steven James			Ground Sur		944 FT AM	ISL I	Datum	Na	AD83
gg	ed By				JFB			Date Start		10/17/20	24 I	Date End	10	/17/2024
np	er Type	:			Grab samples f	rom cutting	gs			Groundw	ater Readin	gs (from	ground su	rface)
	er Size:	-			N/.				Date	Time	Depth	Elev.	S	tabilization Time
	Drill Rig g Metho	-			Epiroc 3-inch Air				10/17/2024 11/1/2024	12:30:00 PM 9:05:00 AM	DRY DRY	DRY DRY		~2.5 hours ~2 weeks
'			SAIV	IPLE INFOI	RMATION				SAMPI.	E DESCRIPT	ION			WELL CONSTRUCTION
	Casing Blows	Type	PEN/REC	DEPTH	BLOWS PER	PID	_							DETAILS (NOT TO SCALE)
4	(ft)	& No.	(inches)	(feet)	6 INCHES	ppmv	0 - 12' Over	burden materia	als sand and	gravel dry				—
,						_	0 12 0 (61)	buruen materi	ais, saira aira į	graver, ary				
7														
0						1	4							
5	ŀ					-	12.0' - 62.0'	Granite, whitis	h-gray, dry, re	elatively hard	drilling, whi	te sand cuttings	,	
7							 	or water beari			5	5		
0							4							
5	ŀ					-								
5							1							ole
0							4							Open Borehole
5	ŀ					_								n Bc
1							1							Ope
0														
						_								
5							+							
0														
5							Boring term	inated at 62.0'	BGS					
0	•					-	Borning termi	matea at 02.0	DG 0.					
Ī														
5							4							
0						-								
Ť							1							
5							4							
0						-								
+							1							
5														
	ŀ					-								
0						+	1							
5]							
						4								
0 RA	NULA	R SOI	LS (N-Va	lues)	COHESIVE S	SOILS (N	(-Values)				SYMBOL	. KEY		
) to 4 -	Very Lo	•		0 to 2 - Very S			1. S denotes split-b		4 1		7. PID denotes Pho		
	1 to 30		um Dense		3 to 4 - Soft 5 to 8 - Mediu	m Stiff		 U denotes 3-incl UO denotes 3-incl 	nch Osterberg und	disturbed sample.		PPM denotes pa PP denotes Pock	tet Penetrom	eter.
		- Dens - Very			9 to 15 - Stiff 16 to 30 - Ver	v Stiff		 PEN denotes pe REC denotes rec 				10. FVST denotes f 11. RQD denotes R		
				- 6	Over 30 - Har	d		6. SPT denotes Sta				12. R denotes core		
	boreho	le to 62	u' BGS. N	o fractures or	water bearing zone:		ered during drill	ling.						
P	le of cu	ttings si	ubmitted to	SGS Canada	a, Inc. of Lakefield. (Intario for	acid base acco	unting, trace me	tal scan, and sh	ake flask extrac	tion analysis			
	le of cu	ttings sı	ubmitted to	o SGS Canada	a, Inc. of Lakefield, C	Ontario for	acid base acco	unting, trace me	tal scan, and sh	ake flask extrac	tion analysis.			



Boring Co.

PROJECT

Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

BORING NO. BRW-3 SHEET of 1 FILE NO. 2024012

CHKD. BY JFB Capitol Rock Drilling & Blasting Boring Location See Boring Location Plan

Driller	Steven James	Ground Surface El.	1052 FT AMSL	Datum	NAD83
logged By	JFB	Date Start	10/17/2024	Date End	10/17/2024
ampler Type:	Grab samples from cuttings		Groundwater Rea	idings	(from ground surface)

Sampler Size: Date Time 2:00:00 PM 8/17/2024 Type Drill Rig: Epiroc - T40 DRY DRY ~2.5 hours Drilling Method: 3-inch Air Hammer 11/1/2024 9:20:00 AM DRY DRY ~2 weeks

D	ing Metri	Ju.			5-ilicii Ali 1.	addinier	117 17 2024 5.20.00 AWI DR1 DR1	2 weeks
E P	Casing			IPLE INFO			SAMPLE DESCRIPTION	WELL CONSTRUCTION DETAILS
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv		(NOT TO SCALE)
	. ,		, ,	, ,			0 - 14.0' Overburden materials, sand and gravel, dry	
5								
10								
15							14.0' - 51.0' Granite, whitish-gray, dry, relatively hard drilling, white sand cuttings,	
							no fractures or water bearing zones encountered	
20						1		d)
								Open Borehole
25								ore
								n B
30)pe
35								
40								
						4		
45								
						4		
50							Project and the first of the PCC	
						4	Boring terminated at 51.0' BGS.	
55								
						4		
60								
65								
65								
70						1		
70						1		
75						1		
70								
80						1		
-								
85						1		
Ť								
90						1		
95						1		
100			Ĺ.,			L		
GR/			ILS (N-Va	alues)	COHESIVE S	_	,	
	0 to 4 -				0 to 2 - Very So	oft	1. S denotes split-barrel sampler. 7. PID denotes Photoionizatio	
	5 to 10 11 to 30		e lium Dense		3 to 4 - Soft 5 to 8 - Mediur	n Stiff	U denotes 3-inch O.D. undisturbed sample. B. PPM denotes parts per mill UO denotes 3-inch Osterberg undisturbed sample. PP denotes Pocket Penetro	
								**

11 to 30 - Medium Dense 5 to 8 - Medium Stiff 9. PP denotes Pocket Penetrometer. 31 to 50 - Dense 9 to 15 - Stiff 4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test. Over 50 - Very Dense 16 to 30 - Very Stiff 5. REC denotes recovered length of sample. 11. RQD denotes Rock Quality Designation. Over 30 - Hard 6. SPT denotes Standard Penetration Test. 12. R denotes core run number.

Open borehole to 51.0' BGS. No fractures or water bearing zones encountered during drilling.

Sample of cuttings submitted to SGS Canada, Inc. of Lakefield, Ontario for acid base accounting, trace metal scan, and shake flask extraction analysis.



Gordon Services - Keene Pit

BORING NO. BRW-4 SHEET 1 of 1

	FF	RONTIER		-		11 Route 9, K	Geene & Sullivan,	New Hamps	Silite		FILE NO. CHKD. BY		2024012 JFB
													31.0
g Co. r				Rock Drilling & Bla	asting		Boring Locat Ground Surfa		1103 FT A		e Boring Locatio		AD83
d By				Steven James JFB			Date Start	ice El.	103 F1 A		Datum Date End		/17/2024
и Бу	-			31-15			_ Date Start		10/1//20	724	Date End _	107	7177 2024
r Type	e: .			Grab samples f	om cutting	ζS				vater Readi	ngs (from	ground su	rface)
r Size:				N/A				Date	Time	Depth	Elev.	St	abilization Time
rill Rig				Epiroc -				10/17/2024	3:30:00 PM	DRY	DRY		~2.5 hours
Meth	od:			3-inch Air I	lammer			11/1/2024	9:35:00 AM	DRY	DRY		~2 weeks
Casing Blows	Туре	SAM PEN/REC	DEPTH DEPTH	BLOWS PER	PID	_		SAMPL	E DESCRIPT	TION			WELL CONSTRUCTI DETAILS (NOT TO SCALE)
(ft)	& No.	(inches)	(feet)	6 INCHES	ppmv	0 - 3' Overh	ourden materials,	sand and or	avel dry				_
					-		Granite, whitish-g	_		lrilling, whi	te sand cuttings,		
						_	s or water bearing		-	<u>o</u> .			
						1							
						_							
					4								
						_							
						1							ole
													Open Borehole
						1							Bor
													nəc
						1							o
						1							·
						1							
						_							
					4								
					1	-							
					1	Boring term	ninated at 81.0' B	GS					
			+		+	Dorning term	mateu at 01.0 D	JJ.					
					1								
			+			1							
					1								
						1							
					1								
						1							
					<u></u>								
		LS (N-Va	lues)	COHESIVE S		-Values)				SYMBO			
	Very Lo - Loose			0 to 2 - Very S 3 to 4 - Soft	TIO		 S denotes split-bar U denotes 3-inch (d sample.		 PID denotes Pho PPM denotes par 		
to 30	- Medi	ium Dense		5 to 8 - Mediu	m Stiff		3. UO denotes 3-inch				9. PP denotes Pock		
) - Dens			9 to 15 - Stiff	, C+ier		4. PEN denotes pene				10. FVST denotes f		
ver 50) - Very	Dense		16 to 30 - Very Over 30 - Hard			 REC denotes record SPT denotes Stand 				 RQD denotes R R denotes core 		esignation.



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

BORING NO. BRW-5 SHEET of 2 FILE NO. 2024012

JFB

CHKD. BY

Boring Co.	Capitol Rock Drilling & Blasting	Boring Location		See Boring Location	on Plan
Oriller	Steven James	Ground Surface El.	1112 FT AMSL	Datum	NAD83
ogged By	JFB	Date Start	10/17/2024	Date End	10/17/2024

Sampler Type: **Groundwater Readings** (from ground surface) Grab samples from cuttings Sampler Size: Date Depth Stabilization Time Epiroc - T40 10/17/2024 4:30:00 PM Type Drill Rig: DRY DRY ~2.5 hours Drilling Method: 3-inch Air Hammer 11/1/2024 10:00:00 AM DRY DRY ~2 weeks

D	ling ivietii	lou.			3-inch Ali 11	annici	117 17 2024 10.00.00 AWI DK1 DK1		Z WEEKS	
E P	Casing			MPLE INFO			SAMPLE DESCRIPTION	W	VELL CONSTRUCTIO DETAILS	N
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv			(NOT TO SCALE)	
							0 - 5.0' Overburden materials, sand and gravel, dry		1 Г	_
5										
							5.0' - 141.0' Granite, whitish-gray, minor color changes noted to more gray at 86' BGS			
10							dry, relatively hard drilling, white sand cuttings,no fractures or water bearing zones			
							encountered			
15										
20										
25										
20										
30										
35										
40										
45									4)	
									hole	
50									Open Borehole	
									n B	
55									ope	
60										
65										
70										
70										
75		-								
- 3										
80										
Ť										
85						1				
90						1				
95										
100							Continues on Page 2	Ш_		_
GR	0 to 4 -		ILS (N-Va	alues)	0 to 2 - Very So			ion Deta	etor	
i		Very L			0 to 2 - Very Sc	иι	1. S denotes split-barrel sampler. 7. PID denotes Photoioniza 2. Lidenotes 3 inch O. D. undisturbed comple		CLOF	

5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample.

11 to 30 - Medium Dense 5 to 8 - Medium Stiff 3. UO denotes 3-inch Osterberg undisturbed sample. 31 to 50 - Dense 9 to 15 - Stiff 4. PEN denotes penetration length of sampler. Over 50 - Very Dense 16 to 30 - Very Stiff

5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.

8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test.

11. RQD denotes Rock Quality Designation. 12. R denotes core run number.

Open borehole to 141.0' BGS. No fractures or water bearing zones encountered during drilling.

Over 30 - Hard

Sample of cuttings submitted to SGS Canada, Inc. of Lakefield, Ontario for acid base accounting, trace metal scan, and shake flask extraction analysis.



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 BRW-5

 SHEET
 2
 of 2

 FILE NO.
 2024012

JFB

CHKD. BY

oring Co.	Capitol Rock Drilling & Blasting	Boring Location		See Boring Loca	ition Plan
riller	Steven James	Ground Surface El.	1112 FT AMSL	Datum	NAD83
ogged By	JFB	Date Start	10/17/2024	Date End	10/17/2024

Sampler Type: **Groundwater Readings** (from ground surface) Grab samples from cuttings Sampler Size: Date Time Depth Stabilization Time Epiroc - T40 Type Drill Rig: 10/17/2024 4:30:00 PM DRY DRY ~2.5 hours Drilling Method: 3-inch Air Hammer 11/1/2024 10:00:00 AM DRY ~2 weeks

	ng Meth	iod:			3-inch Air H	1ammer	11/1/2024 10:00:00 AM DRY DRY	~2 weeks
D E			SAI	MPLE INFO	RMATION		SAMPLE DESCRIPTION	WELL CONSTRUCTION
P T	Casing Blows	Туре	PEN/REC	DEPTH	BLOWS PER	PID		DETAILS (NOT TO SCALE)
H	(ft)	& No.	(inches)	(feet)	6 INCHES	ppmv	5.0' - 141.0' Granite, whitish-gray, minor color changes noted to more gray at 86' BGS	
105					 	4	dry, relatively hard drilling, white sand cuttings, no fractures or water bearing zones	
105						+	encountered	
110				 	 	4	Cheoditered	
110					 	+		
115					+	-		
110					_	1		ole
120					_	1		reh
				1		+		Open Borehole
125						1		per
						1		0
130						1		
						1		
135								
140							Boring terminated at 141.0' BGS.	
145								
						_		
150						<u> </u>		
						4		
155					<u> </u>			
						4		
160					 	_		
105					 	-		
165					 	+		
170					-	-		
170						+		
175						1		
110					-	+		
180						1		
						1		
185						1		
190						1		
						1		
195						<u>l</u>		
200								
			ILS (N-Va	alues)	COHESIVE S		,	
	0 to 4 - 5 to 10				0 to 2 - Very So 3 to 4 - Soft	ott	S denotes split-barrel sampler. A PID denotes Photoionization U denotes 3-inch O.D. undisturbed sample. PPM denotes parts per millic	
			: lium Dense		5 to 8 - Medium	m Stiff	U denotes 3-inch O.D. undisturbed sample. PPM denotes parts per millic UO denotes 3-inch Osterberg undisturbed sample.	
1						-	C	

31 to 50 - Dense 9 to 15 - Stiff 4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test.

Over 50 - Very Dense 16 to 30 - Very Stiff 5. REC denotes recovered length of sample. 11. RQD denotes Rock Quality Designation.

Over 30 - Hard 6. SPT denotes Standard Penetration Test. 12. R denotes core run number.

Open borehole to 141.0' BGS. No fractures or water bearing zones encountered during drilling.

Sample of cuttings submitted to SGS Canada, Inc. of Lakefield, Ontario for acid base accounting, trace metal scan, and shake flask extraction analysis.



Gordon Services - Keene Pit

21 Route 9. Keene & Sullivan, New Har

BORING NO. BRW-6 1 of 2 SHEET

		F	RONTIER				21 Route 9, K	eene & Sullivai	n, New Hamp	snire		CHKD. BY	-		FB	-
Drill	ng Co. ler ged By			Capitol	Rock Drilling & E Steven James JFB	lasting		Boring Loc Ground Sur Date Start		1192 FT Al 10/18/20	MSL 1	e Boring Locati Datum Date End	N	NAD83 0/17/		 - -
Samp	oler Type):			Grab samples	from cutting	ζS			Groundw	ater Readir	gs (fron	n ground s	urface)	
	oler Size:					/A			Date	Time	Depth	Elev.			ation Time	
	Drill Rig					2 - T40			10/18/2024	10:30:00 AM	DRY	DRY			hours	
D D	ng Meth	oa:				r Hammer			11/1/2024	10:25:00 AM	DRY	DRY		~2	weeks	
E P T	Casing Blows	Type	SAN PEN/REC	DEPTH	RMATION BLOWS PER	PID	_		SAMPL	E DESCRIPT	TION				ILL CONSTRUCT DETAILS (NOT TO SCALE	
н	(ft)	& No.	(inches)	(feet)	6 INCHES	ppmv	0 - 1 0' Ove	rburden materi	iale cand and	gravel dry				+		
5						-	0 - 1.0 0 vc.	iburacii illateri	iais, saira arra	graver, ary						
							1.0' - 142.0'	Granite, whitis	h-gray, minor	color change	s noted to r	nore gray at 73	3' BGS			
10							4	ely hard drilling	g, white sand o	cuttings,no fra	ctures or w	ater bearing zo	nes			
							encountere	d								
15							-									
20																
							1									
25							_									
20																
30							1									
35																
40							4									
45																
40															iole	
50															Open Borehole	
															n B	
55							-								Оре	
60						_										
							1									
65							_									
																
70							1									
75																
							1									
80							4									
o F																
85							1									
90																
]									
95							4									
100							Continues	on Page 2								
	ANULA	R SOI	LS (N-Va	alues)	COHESIVE	SOILS (N		on rage 2			SYMBO	. KEY				
	0 to 4 -				0 to 2 - Very	Soft		1. S denotes split-l		d		7. PID denotes P			or	
	5 to 10 11 to 30		: ium Dense	!	3 to 4 - Soft 5 to 8 - Medi	um Stiff		 U denotes 3-inc UO denotes 3-ir 				 PPM denotes p PP denotes Po 				

16 to 30 - Very Stiff Over 30 - Hard 6. SPT denotes Standard Penetration Test. Open borehole to 142.0' BGS. No fractures or water bearing zones encountered during drilling.

9 to 15 - Stiff

11 to 30 - Medium Dense

31 to 50 - Dense

Over 50 - Very Dense

Sample of cuttings submitted to SGS Canada, Inc. of Lakefield, Ontario for acid base accounting, trace metal scan, and shake flask extraction analysis.

3. UO denotes 3-inch Osterberg undisturbed sample.

4. PEN denotes penetration length of sampler.

5. REC denotes recovered length of sample.

12. R denotes core run number.

10. FVST denotes field vane shear test.

11. RQD denotes Rock Quality Designation.



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

 BORING NO.
 BRW-6

 SHEET
 2 of 2

 FILE NO.
 2024012

		FR	ONTIER									CHKD. BY		JFB
ring iller ogged					Rock Drilling & Blas Steven James JFB	sting		Boring Loc Ground Sur Date Start		1192 FT AM 10/18/20	/ISL	ee Boring Locat Datum Date End	N	JAD83 0/18/2024
	Type:				Grab samples fro		S		Date	Groundw Time	ater Readi	ngs (from	m ground s	
npler pe Dri	Sıze: ill Rig:				N/A Epiroc - '				10/18/2024	10:30:00 AM	Depth DRY	DRY		Stabilization Time ~2.5 hours
lling I	Metho	d:			3-inch Air H	ammer			11/1/2024	10:25:00 AM	DRY	DRY		~2 weeks
Ca	sing		SAN	IPLE INFO	RMATION				SAMPL	E DESCRIPT	ION			WELL CONSTRUCTION
Bl	ows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv								(NOT TO SCALE)
										_		more gray at 7		
)5							dry, relativel encountered	-	, white sand o	cuttings,no frac	ctures or w	ater bearing zo	ones	
10		ŀ												
15	\dashv						1							ole
20	-													oreh
							1							Open Borehole
25	\dashv						4							эdО
30	-													
							1							
5														
10	-													
							Boring termi	nated at 142'	BGS.					
:5														
	_													
0							-							
5	-													
60							_							
55	-													
┪							1							
0							_							
,,	-													
5							1							
0														
	-													
5							-							
0														
							1							
95														
ا	}													
	ULAI	R SOI	LS (N-Va	alues)	COHESIVE SO	OILS (N	-Values)				SYMBO	L KEY		
		Very Lo			0 to 2 - Very So 3 to 4 - Soft	oft		1. S denotes split-l		ed sample		7. PID denotes F		
11	to 30	- Medi	um Dense		5 to 8 - Medium	n Stiff	:	3. UO denotes 3-ir	nch Osterberg und	disturbed sample.		9. PP denotes Po	ocket Penetror	meter.
		- Dens - Very			9 to 15 - Stiff 16 to 30 - Very	Stiff		 PEN denotes pe REC denotes re 				 FVST denote RQD denote 		
				N - C	Over 30 - Hard		1	6. SPT denotes Sta				12. R denotes co		
0 to 5 to 11 31 Ov	o 4 - V o 10 - to 30 to 50 rer 50	Very Lo Loose - Medi - Dens - Very	oose um Dense e Dense 2.0' BGS. 1	No fractures o	0 to 2 - Very So 3 to 4 - Soft 5 to 8 - Medium 9 to 15 - Stiff 16 to 30 - Very	ft Stiff Stiff s encount	ered during dril	2. U denotes 3-inc 3. UO denotes 3-in 4. PEN denotes pe 5. REC denotes re 6. SPT denotes Sta lling.	h O.D. undisturben nch Osterberg und netration length of covered length of andard Penetratio	disturbed sample. of sampler. sample. n Test.		7. PID denotes F 8. PPM denotes 9. PP denotes Po 10. FVST denote 11. RQD denote 12. R denotes co	parts per milli ocket Penetror es field vane sl s Rock Quality	on. meter. hear test. y Designation.



Gordon Services - Keene Pit

BORING NO.	BRW-7
SHEET	1 of2
FILE NO.	2024012

						2	21 Route 9, Keer	ne & Sullivar	n, New Hamps	shire		FILE NO.		202	4012	_
		g c	RONTIER									CHKD. BY		J	FB	-
	ng Co.			Capitol 3	Rock Drilling & Bla	sting		Boring Loca				e Boring Locatio				-
Orill					Steven James JFB			Ground Sur Date Start	face El.	1178 FT AI		Datum Date End		AD83		-
Log	ged By				JFD			Date Start	,	10/18/20	24		10	/18/	2024	-
	oler Type				Grab samples fro		ţs .				ater Readi	1 	ground su			
	oler Size:				N/A				Date	Time	Depth	Elev.	S		ation Time	
	Drill Rig ng Meth				Epiroc - 3-inch Air H				10/18/2024 11/1/2024	11:30:00 AM 11:00:00 AM	0.96' BGS 1.04' BGS	1177.904 1176.96			hours weeks	
D			CAR	IPLE INFO						E DESCRIPT	TON					
E P	Casing		JAI	AF LE INFO	RMATION				SAMITL	E DESCRIF I	1014			WE	LL CONSTRUCT DETAILS	ON
T H	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv									(NOT TO SCALE	
**	()		, ,	, ,			0 - 1.9' Overbu	rden materi	als, sand and	gravel, dry				1		
5							1.9' - 141.0' Gra	anite, whitis	h-gray, minor	color change:	s noted to	more gray at 95'	BGS			
										uttings, water	bearing fr	acture encounter	ed at			
10							5' BGS. Yield is	s <0.5 gallon	n per minute.							
15																
15							_									
20																
25																
30							_									
35																
40																
45															ole	
50						_									reho	
															Open Borehole	
55															Ope	
															O	
60																
65																
-																
70																
-						_										
75							_									
80						1										
85																
90							4									
95																
-							1									
100							Continues on	Page 2								
	NULA 0 to 4 -		LS (N-V	alues)	0 to 2 - Very So			denotes split-b	arrel campler		SYMBO	7. PID denotes Pho	toionizatie-	Detect	or	
	5 to 10				3 to 4 - Soft	J16			h O.D. undisturbe	d sample.		8. PPM denotes par			01	
	11 to 30		ium Dense	!	5 to 8 - Mediun 9 to 15 - Stiff	n Stiff			ich Osterberg und	-		 PP denotes Pock FVST denotes f 				
	Over 50				16 to 30 - Very				netration length o covered length of			11. RQD denotes R				
					Over 30 - Hard		6.9	PT denotes Sta	indard Penetration	n Test		12. R denotes core	run number			

Open borehole to 141.0' BGS. Water bearing fracture encountered at 5' BGS. Yield is <0.5 gallon per minute.

Sample of cuttings submitted to SGS Canada, Inc. of Lakefield, Ontario for acid base accounting, trace metal scan, and shake flask extraction analysis.



Gordon Services - Keene Pit

BORING NO. BRW-7
SHEET 2 of 2

		-	OUNTIED			2	21 Route 9, K	Leene & Sullivar	n, New Hamp	shire		FILE NO.		202	4012	-
		GE	OSERVICES									CHKD. BY		J	FB	-
r	ing Co.			Capitol	Rock Drilling & Bla	asting		Boring Loca	ation		Sec	Boring Locati	on Plan			
	ler				Steven James			Ground Sur	face El.	1178 FT AN		Oatum		AD83		_
g	ged By				JFB			Date Start		10/18/20	24 I	Date End	10)/18/	2024	-
n	pler Type	e:			Grab samples fr	om cutting	ţs			Groundw	ater Readin	gs (from	ground su	ırface		
	pler Size:				N/A				Date	Time	Depth	Elev.	5		ation Time	
	e Drill Rig ing Meth				Epiroc - 3-inch Air F				10/18/2024 11/1/2024	11:30:00 AM 11:00:00 AM	0.96' BGS 1.04' BGS	1177.904 1176.96			hours weeks	
			SAN	IPLE INFO						E DESCRIPT		2710100			LL CONSTRUCTI	ON
	Casing Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv	_								DETAILS (NOT TO SCALE)	
							1.9' - 141.0'	Granite, whitis	h-gray, minor	color change:	s noted to r	nore gray at 95	' BGS			
5							-	ely hard drilling		uttings, water	bearing fra	cture encounte	red at			
^						-	5' BGS. Yiel	ld is <0.5 gallor	per minute.							
U							1									
5															o	
															ehol	
0							4								Bore	
5						1									Open Borehole	
							1								0	
0																
_						-										
5							1									
0							Boring term	ninated at 141' I	BGS.							
																-
5							_									
0						1										
5																
0						1										
_																
5							_									
^						-										
0							_									
5																
						4										
0							_									
5						1										
0							_									
5																
0	A BITTI A	D COI	7 C /N 17.	1	COLLEGIAL	OH C /N	X7-1\				CSZWIDOT	77737				
ú	0 to 4 -		LS (N-Va	iiues)	0 to 2 - Very S		-vaiues)	S denotes split-b	arrel sampler.		SYMBOI	7. PID denotes Ph	otoionization	Detect	or	
	5 to 10	- Loose	:		3 to 4 - Soft			2. U denotes 3-incl	n O.D. undisturbe			8. PPM denotes p	arts per millio	on.		
	11 to 30		ium Dense se	!	5 to 8 - Mediu 9 to 15 - Stiff	iii Stiff		 UO denotes 3-in PEN denotes per 				PP denotes PoolFVST denotes				
	Over 50) - Very	Dense		16 to 30 - Very Over 30 - Hard			5. REC denotes red 6. SPT denotes Sta				11. RQD denotes 12. R denotes cor			ation.	
e	n boreho	ole to 14	41.0' BGS.	Water bearing	g fracture encountere		S. Yield is <0.					12. It delibies col	a ran namber	-		
n	ple of cu	ıttings s	ubmitted t	o SGS Canad	a, Inc. of Lakefield, O	ntario for	acid base acco	ounting, trace me	tal scan, and sh	ake flask extrac	tion analysis					



Gordon Services - Keene Pit

BRW-8 BORING NO. SHEET 1 of 2

						2	1 Route 9, K	eene & Sullivar	n, New Hamps	shire		FILE NO.		2024	4012	_
		GE	COSERVICES									CHKD. BY		JI	₹B	-
3ori	ng Co.			Capitol	Rock Drilling & Bla	sting		Boring Loc	ation		Sec	e Boring Locati	ion Plan			
Orill	-				Steven James			Ground Sur		1182 FT AN		Datum		AD83		_
og	ged By				JFB			Date Start		10/18/20	24 I	Date End	10)/18/2	2024	-
Samp	oler Type	:			Grab samples fr	om cutting	S			Groundw	ater Readin	igs (fron	n ground su	ırface)		
	oler Size:				N/A				Date	Time	Depth	Elev.	5		tion Time	
	Drill Rig				Epiroc - 3-inch Air H				10/18/2024 11/1/2024	12:45:00 PM 11:15:00 AM	0.84' BGS 0.95' BGS	1179.16 1179.05			hours veeks	
D E			SAN	IPLE INFO	RMATION				SAMPL	E DESCRIPT	ION			WEI	L CONSTRUCT	ION
P	Casing Blows	Toma	PEN/REC	DEPTH	BLOWS PER	PID									DETAILS NOT TO SCALE	
T H	(ft)	Type & No.	(inches)	(feet)	6 INCHES	ppmv								,	NOT TO SCALE	
_								rburden materi Granita, whitis			e noted to r	nore gray at 10	ומי פכי			
5							<u> </u>			_		cture encounte				
10								d is <0.5 gallor		5 ,	J					
15																
20						-										
25																
30						_										
30							1									
35																
40							1									
45																
															Open Borehole	
50							-								Bore	
55						_									ben	
															O	
60							_									
65																
00							1									
70																
75						1										
, J							1									
80]									
0.5						4										
85																
90																
95							1									
100						1	Continues	on Page 2								
			LS (N-Va	alues)	COHESIVE S	_					SYMBOI					
_	0 to 4 -				0 to 2 - Very So 3 to 4 - Soft	oft		S denotes split-b U denotes 3 incl		d comple	T	7. PID denotes P			or	
	5 to 10 11 to 30		: ium Dense	:	5 to 8 - Mediur	n Stiff		 U denotes 3-incl UO denotes 3-incl 				 PPM denotes p PP denotes Po 	-			
	31 to 50				9 to 15 - Stiff			4. PEN denotes pe	_	-		10. FVST denotes				
	Over 50	- Very	Dense		16 to 30 - Very Over 30 - Hard			5. REC denotes red 6. SPT denotes Sta	_			11. RQD denotes 12. R denotes con		_	ition.	
_	a hausha	1	11 01 DCC	TAT . 1 .			C Viold in <0 F					14. IN GEHOLES COI	ic run number			

Sample of cuttings submitted to SGS Canada, Inc. of Lakefield, Ontario for acid base accounting, trace metal scan, and shake flask extraction analysis.



Gordon Services - Keene Pit

21 Route 9, Keene & Sullivan, New Hampshire

BORING NO. BRW-8 SHEET of 2 FILE NO. 2024012

		FF	ONTIER				,					CHKD. BY		JFB
rill	ng Co. er ged By	_		Capitol 1	Rock Drilling & Bla Steven James JFB	sting		Boring Loc Ground Sur Date Start		1182 FT A	MSL	e Boring Locati Datum Date End	N	AD83 0/18/2024
					0.1.1.5			•		C	D	· · · · · /f·····		
-	ler Type ler Size:				Grab samples fr		ţs		Date	Time	Depth	Elev.	n ground si	Stabilization Time
	Drill Rig				Epiroc -				10/18/2024	12:45:00 PM	0.84' BGS	1179.16		~2.5 hours
llin	ng Meth	od:			3-inch Air H	Iammer			11/1/2024	11:15:00 AM	0.95' BGS	1179.05		~2 weeks
	Casing			IPLE INFO					SAMPL	E DESCRIPT	ION			WELL CONSTRUCTION DETAILS
נ	Blows (ft)	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	PID ppmv								(NOT TO SCALE)
										_		more gray at 95		
)5							_	-		cuttings, water	r bearing fr	acture encounte	ered at	
							5' BGS. Yiel	d is <0.5 gallor	i per minute.					
10														
15														a)
٦														hole
0														3ore
														Open Borehole
25							_							ďO
30														
35														
10							Boring term	inated at 141' l	BGS.					
						-								
15							_							
50														
55														
50							_							
55														
							1							
70														
Ī														
'5							4							
إم														
30							1							
35						1								
90							1							
٦						-								
95							+							
00						1								
R.A			LS (N-Va	alues)	COHESIVE S		-Values)				SYMBO			
	31 to 50 Over 50	- Loose) - Medi) - Dens) - Very	um Dense e Dense		0 to 2 - Very So 3 to 4 - Soft 5 to 8 - Medium 9 to 15 - Stiff 16 to 30 - Very Over 30 - Hard	m Stiff Stiff		S denotes split-b U denotes 3-incl UO denotes 3-incl PEN denotes pe REC denotes pe SREC denotes Sta	h O.D. undisturbe ach Osterberg und netration length of covered length of andard Penetratio	disturbed sample. of sampler. sample.		7. PID denotes P 8. PPM denotes p 9. PP denotes Po 10. FVST denotes 11. RQD denotes 12. R denotes con	parts per millio ocket Penetron s field vane sh s Rock Quality	on. neter. lear test. Designation.
per	Over 50	e Very	Dense	_	16 to 30 - Very	d at 9' BG		5. REC denotes red 6. SPT denotes Sta 5 gallon per minu	covered length of indard Penetratio te.	sample. n Test.	ction analysis	11. RQD denotes 12. R denotes con	Rock Quality	Designation.