Technical Memorandum

To: Stephanie Labbe  
PAR Electrical Contractors

From: Balin Strickler 
Quanta Subsurface  
4308 N Barker Road  
Spokane Valley, WA  99027

Date: November 10, 2016

Re: Northern Pass – Underground Trench Geotechnical Study  
Trench Technical Memorandum, 16004-101

Introduction

In accordance with our proposal dated March 18, 2016 and your authorization, we have completed a geotechnical drilling and a laboratory testing program for the Northern Pass Transmission line project in New Hampshire. The work was authorized in phases and completed under Par Electrical Contractors (PAR) job number of 29-6-1683 and 29-6-1684. The Northern Pass Transmission line project consists of the construction both overhead and underground new transmission lines over much of New Hampshire. The underground portions of this alignment traverses approximately 60 miles of the proposed alignment. As part of the underground design, thermal resistivity properties of the subsurface materials must be evaluated at the anticipated bottom of trench elevation. Previous evaluations performed by others resulting in thermal resistivity data at approximately 1 mile intervals.

In order to complete the underground design, Quanta Subsurface (QS) was contracted to perform a geotechnical field exploration and laboratory testing program at approximately 1,000 foot intervals to compliment the work that has been previously completed. The purpose of QS’s geotechnical exploration and laboratory testing services for this phase of the project was to further characterize the subsurface materials at specific locations and to collect samples for thermal resistivity testing at specific depths.

Figure 1 provides a map of the proposed route through New Hampshire. The area investigated included the middle section of underground construction as shown. The area of underground construction at the northern end of the project was not included in this investigation.
Scope of Work
The scope of work for this project generally includes:

- Review of the readily available aerial photographs and published geologic literature, including maps and reports pertaining to the project vicinity.
- Mark out the boring locations and notification of the local utility locating service prior to drilling.
- Drilling, logging, and sampling 206 borings to depths of approximately 15 feet below the existing ground surface. The boring logs and core photos are presented in Appendix A.
- Perform laboratory tests on selected samples obtained from the borings to evaluate thermal resistivity. The results of the thermal resistivity testing are presented in Appendix B.
- Perform laboratory tests on selected bulk samples to evaluate dry density and moisture content when bulk samples were required in the upper five feet of the borehole. The results of the material property testing are presented in Appendix C.
- Preparation of this memorandum presenting our findings of geotechnical investigation for this phase of the project.

Geotechnical Exploration and Laboratory Testing
QS's geotechnical field exploration program was conducted to evaluate the existing subsurface conditions and to collect samples to evaluate the thermal resistivity properties of the subsurface materials at selected depths. Our evaluation included the drilling and logging of the subsurface materials as well as the collection of samples for laboratory testing. The exploration program was performed between May and September of 2016. SW Cole Exploration of Londonderry, New Hampshire advanced 206 borings using either hollow stem or solid flight augers along the proposed underground alignment to depths approximately 15 feet below the existing ground surface and performed Standard Penetration Tests (SPT), in accordance with ASTM D1586, at 5-foot intervals. An auto-hammer was used for the SPT sampling. 10 of the 206 borings were terminated above 15 feet (between 2 and 8 feet bgs) due to either utility conflicts or suspected hydrocarbon or solvent odors. When rock was encountered the boreholes were advanced using wet rotary wash methods with either a roller bit or double tube coring methods.

Permits were required from the New Hampshire Department of Transportation for all of the borings. Shoreland permits were required for select borings. One-call utility locates were utilized for the entire project and a private utility locator was employed by SW Cole Exploration in areas of heightened concern. Traffic control and police details were subcontracted by SW Cole Exploration to provide support during the drilling program.

The drilling program was conducted under the supervision of QS representatives. The subsurface materials encountered at each boring location were visually classified by QS personnel in the field in general accordance with the USCS soil classification system and the QS rock core logging procedure, generally in accordance with International Society of Rock Mechanics procedures. Soil samples were collected using 6 inch stainless steel sleeves, capped and then bagged for storage to protect from moisture loss and material disturbance.
Bulk samples were collected when the SPT sample did not recover sufficient material within the stainless steel sleeves. Rock core was logged, boxed, and photographed in the field.

The thermal resistivity samples were collected from our field activities typically at the 5-foot depth, although occasionally a sample near 10 feet bgs was selected. The samples were packaged and shipped to the GeoTherm USA (GeoTherm) laboratory located in Livermore, California. Stainless steel sleeves (when available) were prioritized for testing. When only bulk samples were available, sufficient material was sampled and submitted for dry density testing by SW Cole Engineering, Inc. Occasionally rock core samples were selected for testing. Samples where then delivered to GeoTherm for thermal resistivity testing. The samples were packaged and shipped in such a manner as to minimize any moisture loss or disturbance resulting from transport. Remaining samples are stored in a storage unit located in Lincoln, NH. Thermal resistivity samples were unable to be collected from BH-74, BH-125, and BH-128 due to the presence of hydrocarbon odors. Insufficient volume of sample was collected from BH-214 and BH-259 due to the presence of coarse gravels and poor sample recovery from the split spoon and bulk sampling activities. The results for BH-185 are pending.

Table 1 provides a summary of the boreholes, locations, depths (borehole, bedrock, and groundwater) and the thermal resistivity sample info and results. The table includes previous work completed by others at the request of PAR.

Geological Unit Descriptions

The following section describes the regional and local geology of the project area. The units described are included on the borehole logs as the likely genesis of the subsurface material.

Regional Geology

The surficial geology of the White Mountains in New Hampshire is derived from the erosional and depositional processes of the continental and mountain glaciers of the Wisconsin Glacial Episode during the late Pleistocene Epoch. The dominant glacial soils that are found in this region are glacial till, glaciofluvial and glacio-lacustrine deposits. Younger post glacial deposits formed from the numerous rivers, streams and lakes that dominate the landscape. These include alluvium and stream terrace deposits.

Bedrock in the White Mountains are comprised of folded and faulted Paleozoic sedimentary and volcanic rocks that have been regionally metamorphosed and intruded by large and small bodies of plutonic rocks. The grade of metamorphism ranges from the chlorite zone at one extreme to the sillimanite zone at the other (Billings, 1980). The majority of the rocks mapped in this region consist of granite, quartz diorite, schist, granofels/gneiss, and localized zones of felsic pegmatites.

Site Geology and Unit Descriptions

The following surficial soil units were encountered during the trench portion of the underground investigation.
Organic Soil/Wetland Deposits

An approximate 2 foot to 6 foot layer of organic soil was encountered in several borings that were drilled away from the edge of the roadway. This unit consists of very loose to loose, dark brown to brown, Silty Sand and Sandy Silt with varying amounts of organics. Organic soils were also found underlying the fill in areas within the vicinity of existing wetlands.

Artificial Fill

Artificial fill has been placed within the existing roadways and is present in the majority of the borings advanced for this investigation. The approximate thickness of the fill ranged from 2 feet to upwards of 10 feet. This unit consists of loose to medium dense, brown to reddish brown, fine to medium grained, Silty Sand, Poorly Graded Sand with Silt, and Sandy Silt with varying amounts of gravel.

Alluvium

Alluvium is present at numerous locations along the alignment. It is primarily found proximal to existing rivers and streams as flood plain deposits. The thickness of the alluvium is variable with transitions to underlying units being gradual. Typically, this unit consists of very loose to dense, pale brown to olive gray to light brown, fine grained or fine to medium grained, Poorly Graded Sand with Silt, Silty Sand or Poorly Graded Sand with varying amounts of gravel.

Stream Terrace Deposits

The stream terrace deposits are mapped in the vicinity of existing streams and rivers on terraces cut into glacial deposits in the valleys. The approximate thickness of these units ranged from 3 feet to 20 feet. Typically, this unit consists of medium dense to very dense, moderate brown to olive brown to yellowish brown, Silty Sand with Gravel, Poorly Graded Sand with Silt and Gravel, Silty Gravel with Sand, or Poorly Graded Gravel with Sand. Cobbles and boulders were also present in varying amounts.

Glaciolacustrine Deposits

The glaciolacustrine deposits are generally described as sand, gravel, silt and clay that were laid down during deglaciation of the region. Material from these sediments was derived mostly from within ice sheet and transported by meltwater and deposited as deltas into ponded water bodies (Koteff, 2009). The approximate thickness of these units was less than 50 feet. Typically, this unit consists of soft to stiff, loose to medium dense, gray to light olive gray, Sandy Silt and Silty Sand with varying amounts of clay and thin to varved bedding planes present.

Glaciofluvial Deposits

The glaciofluvial deposits are described as sands and gravels with minor amounts of silt and clay that were deposited within high energy meltwater channels draining into the valleys. The approximate thickness of these units was less than 50 feet. Typically, this unit consist of
medium dense to very dense, light brown to grayish brown, Poorly Graded Sand with Gravel and Silt, Poorly Graded Gravel with Sand, or Silty Gravel with Sand with varying amounts of cobbles and boulders.

**Till**

The glacial till is described as light to dark gray, nonsorted to poorly sorted mixture of clay, silt sand, gravel, cobbles and boulders. Varying proportions of silt and sand form the matrix along with a variety of irregular shapes rock fragments. Most of the till deposits are found in the upland portions of the region and thicknesses can range from 20 feet to more than 100 feet (Hildreth, 2014). Typically, this unit consists of medium dense to very dense, gray to dark gray, Silty Sand with Gravel, Sandy Silt with Gravel, Silty Gravel with Sand, or Clayey Sand with Gravel with varying amounts of boulders.

**Bedrock**

The majority of the rocks mapped in this region consist of granite, quartz diorite, schist, granofels/gneiss, and localized zones of felsic pegmatites. All of these rock types were encountered within the project alignment. The weathering profile was typically fresh to slightly weathered, with occasional zones of highly weathered material at the contact with overburden soils. The rock strength ranges from medium strong to very strong and is largely dependent on weathering profiles. Numerous felsic dikes and sills were observed within many of the metamorphic units along with localized pegmatite zones.

**References**


Closure

We appreciate the opportunity to assist PAR with this geotechnical investigation. If you have any questions, please contact Balin Strickler at 509.789.7747 or bstrickler@quantasubsurface.com.

Attachments
Figure 1 – Alignment Overview Map
Table 1 – Trench Thermal Resistivity Results

Appendices
Appendix A – Exploratory Test Boring Logs
Appendix B – Thermal Resistivity Test Results
Appendix C – Dry Density Test Results
- Delivery of 1,090 MW of clean, reliable hydropower to New Hampshire
- Increased underground route to 60 miles
- No view impacts in the White Mountain National Forest, Appalachian Trail and Franconia Notch areas
- Use of advanced cable technology with fewer, lower and streamlined structures

Reference: http://www.northernpass.us/route-info.htm

Figure 1
Site Location Map
<table>
<thead>
<tr>
<th>Alignment Name</th>
<th>Geotech Company</th>
<th>Borehole ID</th>
<th>Date Drilled</th>
<th>Borehole Coordinates</th>
<th>Rock (ft)</th>
<th>Depth to Rock (ft)</th>
<th>Depth to Groundwater (ft)</th>
<th>Core/Churn Report Date</th>
<th>Sample ID</th>
<th>Sample Type</th>
<th>Sample Depth (ft)</th>
<th>Material Type</th>
<th>Lab-Bulked Thermal Resistivity (C'cm/(W-C))</th>
<th>Moisture Content (%)</th>
<th>Dry Density (g/cm³)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0723</td>
<td>BHA</td>
<td>HA-1</td>
<td>8/23/2012</td>
<td>44.933751 -71.369558</td>
<td>21.5</td>
<td>11.2</td>
<td>0</td>
<td>12/19/2013</td>
<td>HA-1</td>
<td>Not Observed</td>
<td>12/9/2013</td>
<td>Y</td>
<td>Bulk 3-5</td>
<td>15</td>
<td>SHEB H&amp;A</td>
<td>Not Observed</td>
</tr>
<tr>
<td>R0723</td>
<td>BHA</td>
<td>HA-3</td>
<td>8/23/2012</td>
<td>44.933751 -71.369558</td>
<td>21.5</td>
<td>11.2</td>
<td>0</td>
<td>12/19/2013</td>
<td>HA-3</td>
<td>Not Observed</td>
<td>12/9/2013</td>
<td>Y</td>
<td>Bulk 3-5</td>
<td>15</td>
<td>SHEB H&amp;A</td>
<td>Not Observed</td>
</tr>
</tbody>
</table>
Norther Pass Transmission Line Project
Trench Thermal Resitivity Study
Nov-16
BOREHOLE DATA
Alignment
Name

Geotech
Company

Borehole ID

Date Drilled

SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
SHEB
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF
WMNF

H&A
H&A
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
H&A
H&A
H&A
H&A
H&A
H&A
H&A
H&A
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Terracon
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface
Quanta Subsurface

B-22
B-22A
B-2A
B-4A
B-5
B-5A
B-6
B-6A
B-7
B-7A
BH-69
BH-70
BH-71
BH-72
BH-73
BH-74
BH-75
BH-76
BH-77
BH-78
BH-81
BH-82
BH-83
BH-84
BH-85
BH-86
BH-87
BH-88
BH-89
BH-90
BH-91
BH-92
BH-94
BH-95
BH-96
BH-98
BH-99
BH-100
BH-101
BH-102
BH-103
BH-104
BH-105
BH-106
BH-107
BH-108
BH-109
B-23
B-23A
B-24
B-24A
B-25
B-25A
B-26
B-26A
B-8
B-8A
B-9
B-9A
B-10
B-10A
B-11
B-11A
B-12
B-12A
B-12A
B-13A
B-14
BH-110
BH-112
BH-113
BH-114
BH-115
BH-117
BH-118
BH-119
BH-120
BH-120
BH-121
BH-122
BH-123
BH-124

12/10/2015
12/10/2015
1/15/2016
1/15/2016
1/15/2016
1/15/2016
1/15/2016
1/15/2016
1/12/2016
1/12/2016
8/24/2016
8/24/2016
8/24/2016
8/26/2016
8/24/2016
8/24/2016
8/26/2016
8/26/2016
8/4/2016
8/25/2016
8/31/2016
8/23/2016
8/23/2016
8/23/2016
8/23/2016
8/23/2016
8/23/2016
8/23/2016
8/23/2016
8/23/2016
8/17/2016
8/17/2016
8/4/2016
8/17/2016
8/17/2016
8/4/2016
8/4/2016
8/17/2016
8/31/2016
8/4/2016
8/16/2016
8/4/2016
8/31/2016
8/17/2016
8/16/2016
8/16/2016
8/16/2016
12/11/2015
12/14/2015
12/11/2015
12/15/2015
12/15/2015
12/14/2015
12/14/2015
12/14/2015
1/12/2016
1/12/2016
1/8/2016
1/8/2016
1/8/2016
1/8/2016
1/7/2016
1/7/2016
1/6/2016
1/7/2016
1/8/2016
1/6/2016
1/6/2016
8/16/2016
8/16/2016
8/5/2016
8/5/2016
8/5/2016
8/5/2016
8/5/2016
8/5/2016
8/3/2016
8/3/2016
8/3/2016
8/3/2016
8/3/2016
8/3/2016

THERMAL RESISTIVITY DATA

Borehole Coordinates
Latitude
43.827541
43.813744
44.245206
44.193542
44.181974
44.168781
44.158589
44.1475
44.134031
44.123974
44.256305
44.25363
44.251005
44.248483
44.243616
44.24086657
44.238341
44.235737
44.233334
44.231328
44.224299
44.221527
44.218713
44.215882
44.213173
44.210674
44.207983
44.20621
44.203278
44.200968
44.198192
44.195533
44.190538
44.186398
44.184516
44.179542
44.173201
44.165963
44.156819
44.154624
44.152381
44.149929
44.144151
44.141967
44.139454
44.13716
44.12858
43.801101
43.788569
43.778912
43.765116
43.751006
43.73839
43.725875
43.71697
44.113134
44.103156
44.093082
44.08395
44.076164
44.062669
44.047567
44.037327
44.032376
44.024317
44.024317
44.028594
44.031538
44.126831
44.123109
44.119297
44.117818
44.116062
44.113671
44.112152
44.109253
44.107177
44.107177
44.104394
44.10232
44.100259
44.098299

Longitude
-71.662212
-71.664682
-71.762253
-71.751657
-71.756322
-71.764208
-71.777301
-71.789025
71.785166
-71.799756
-71.761142
-71.761728
-71.762614
-71.762799
-71.761687
-71.760459
-71.758831
-71.757865
-71.756589
-71.755665
-71.749053
-71.750035
-71.750149
-71.750239
-71.7503
-71.750434
-71.751475
-71.75265
-71.754078
-71.754343
-71.753585
-71.752372
-71.750294
-71.751817
-71.754086
-71.75778
-71.761464
-71.766066
-71.78101
-71.783513
-71.785341
-71.787051
-71.789799
-71.788444
-71.786657
-71.784667
-71.792834
-71.673994
-71.668006
-71.679923
-71.687067
-71.686953
-71.676438
-71.676485
-71.661321
-71.813851
-71.821477
-71.827365
-71.81225
-71.795459
-71.792333
-71.79316
-71.785886
-71.768103
-71.752317
-71.752317
-71.719139
-71.701313
-71.795591
-71.800882
-71.805637
-71.808605
-71.81201
-71.816327
-71.818869
-71.819989
-71.819752
-71.819752
-71.820177
-71.82255
-71.824592
-71.827671

Borehole
Depth (ft)
15
15
17
17
17
17
17
17
15.8
15
15.7
15.5
15.5
15.2
15.5
2
15.5
15.5
15
14.6
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
15.5
16.5
15.5
15
15.5
16.5
15
15
15
15
15
15
15
15
15
15
15
15
15.8
17
17
17
16.7
17
15
15.1
15.3
17
17
14
17
15
15
15
15.5
14.2
14.5
14.3
15.5
15
15
14.6
10.5
15
15

Depth to
Rock (ft)

Depth to
Groudwater (ft)
11.1
10.1

4

14.5

8

12
15.8

9
4
16
5
8
9
9
Not Observed
Not Observed
Not Observed
Not Observed
Not Observed
Not Observed
14
Not Observed
8.2
9
Not Observed
14
Not Observed
8.5
7.5
Not Observed
Not Observed
Not Observed
Not Observed
Not Observed
9
Not Observed
Not Observed
Not Observed
Not Observed
13.5
8.5
Not Observed
11
4
Not Observed
14
3.5
Not Observed
Not Observed
Not Observed
Not Observed
3.8
Not Observed
7.8
12
5.5
7.4
7.5
13
6
12
8
12
10
9

13.5
7
7
8

10
6.5
13

12.5
8.5
8.5

8
7.5

4
Not Observed
Not Observed
Not Observed
Not Observed
8
Not Observed
3
3
Not Observed
Not Observed
Not Observed
Not Observed
Not Observed
Not Observed

Sample
Type

Sample
Depth
(ft)

Material
Type

B-22
B-22A
B-2A
B-4A
B-5
B-5A
B-6
B-6A
B-7
B-7A
S1
S1
S1
S1
S1

S3
S3
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve

4’-6’
4’-6’
6' - 9'
8' - 10'
8' - 10'
8' - 10'
8' - 10'
8' - 10'
8' - 10'
8' - 10'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'

SOIL (SW)
SOIL (SP)
ROCK
SOIL (SP)
SOIL (SM)
SOIL (ML)
SOIL (SM)
SOIL (SM)
SOIL (SM)
SOIL (SP/SM)
SOIL (SM)
SOIL (SP/SM)
SOIL (SP)
SOIL (SP/SM)
SOIL (SP)

S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
S1
B-23
B-23A
B-24
B-24A
B-25
B-25A
B-26
B-26A
B-8
B-8A
B-9
B-9A
B-10
B-10A
B-11
B-11A
B-12
B-12A
B-12A
B-13A
B-14
S1
RC1
S1
S1
S1
S1
S1
S1
RCS1
RC1
S1
S1
S1
S1

Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
sleeve
Sleeve
Sleeve
Sleeve
Sleeve
S3
S3
S3
S3
S3
S3
S3
S3
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Bulk
Core
Core
Bulk
Sleeve
Core
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Sleeve
Core
Core
Sleeve
Sleeve
Sleeve
Sleeve

4'-5.5'
4'-5.5'
4' - 5.5'
5'-6.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4'-5.5'
4' - 5.5'
4'-5.5'
4'-5.5'
4' - 5.5'
4' - 5.5'
4'-5.5'
5.5'-7'
4' - 5.5'
4'-5.5'
4' - 5.5'
5.5'-7'
4'-5.5'
4'-5.2'
9.5'-11'
4'-5.5'
4’-6’
4’-6’
4’-6’
4’-6’
4’-6’
4’-6’
4’-6’
4’-6’
8' - 10'
8' - 10'
10' - 14'
10' - 14'
8' - 11'
8' - 10'
8' - 10'
9' - 12'
6'- 10'
10'-14'
12' - 12.5'
11' - 12'
8' - 10'
4'-5.5'
9.6'-10.5'
4' - 5.5'
4' - 5.5'
4' - 5.5'
4' - 5.5'
9.5'-11'
4' - 5.5'
9'-12'
12.4'-12.95'
4' - 5.5'
4' - 5.5'
4' - 5.5'
4' - 5.5'

SOIL (SM/GM)
SOIL (SM)
SOIL (GM)
SOIL (SM/GM)
SOIL (OL)
SOIL (SM/GM)
SOIL (SP)
SOIL (SP)
SOIL (CL)
SOIL (SM)
SOIL (SP)
SOIL (SM/GM)
SOIL (SP/SM)
SOIL (SP)
SOIL (SP)
SOIL (SP)
SOIL (SW/SM)
SOIL (SP)
SOIL (SP)
SOIL (GM)
SOIL (SP/SM)
SOIL (SW)
SOIL (SM)
SOIL (ML)
SOIL (SP)
SOIL (SW/SM)
SOIL (SP)
SOIL (SP/SM)
SOIL (GM)
SOIL (GW/SP)
SOIL (SW)
SOIL (SP/SM)
SOIL (SM)
SOIL (SP)
SOIL (SW)
SOIL (ML)
SOIL (SM)
SOIL (ML)
SOIL (SP)
SOIL (GM)
SOIL (SP)
SOIL (GW/GM)
SOIL (SP/SM)
SOIL (SM)
SOIL (GP/GM)
SOIL (SM)
SOIL (SM)
SOIL (SP/SM)
SOIL
ROCK
ROCK
SOIL
SOIL (SP)
ROCK
SOIL (SM)
SOIL (SM)
SOIL (SM)
SOIL (GM)
SOIL (GM)
SOIL (PT)
ROCK
ROCK
SOIL (SW/SM)
SOIL (SW/SM)
SOIL (SP)
SOIL (SW/SM)

GeoTherm
Report
Date

Sample
ID

12/22/2015
12/22/2015
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
10/7/2016
9/30/2016
10/7/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
8/25/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
9/30/2016
8/25/2016
9/30/2016
9/30/2016
8/25/2016
8/25/2016
9/30/2016
10/7/2016
8/25/2016
9/30/2016
8/25/2016
10/7/2016
9/30/2016
9/30/2016
10/7/2016
9/30/2016
1/4/2016
1/4/2016
1/4/2016
1/4/2016
1/4/2016
1/4/2016
1/4/2016
1/4/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
2/17/2016
9/30/2016
10/20/2016
8/25/2016
8/25/2016
8/25/2016
8/25/2016
10/7/2016
8/25/2016
10/20/2016
10/26/2016
8/25/2016
8/25/2016
8/25/2016
8/25/2016

Lab Determined
Thermal Resistivity
(°C-cm/W)
Wet
Dry
207
50
60
280
64
210
48
163
35
106
39
147
34
127
36
137
44
227
40
131
78
168
59
223
77
322
57
166
68
190

Moisture
Dry Density
Content
(pcf)
(%)
12
15
11
7
9
12
13
14
21
10
3
17
10
5
7

120
110
110
119
131
118
124
120
104
128
123
110
98
129
98

5
15
1.8
3
8
12
5
27
25
17
3
13
9
15
8
7
7
7
6
3.8
19
3
10
24
16
7
15
17
8
14
6
14
15
12
8
29
26
27
5
23
4
12
12
22
16
6
14
23
10
<1
<1
11
9
<1
27
41
26
7
12
38
<1
<1
25
4.3
12
42

127
105
105
112
90
101
105
84
99
108
102
115
130
119
104
109
110
117
116
99
96
112
96
89
105
108
123
111
135
117
120
115
118
110
120
108
118
108
110
101
115
122
118
112
114
116
116
104
120
171
169
131
112
164
87
53
80
103
131
56
160
175
75
116
118
50

Notes

NO SAMPLE TAKEN, HYDROCARBON ODORS AT 2'
73
57
105
79
127
66
77
68
82
58
70
55
50
58
75
64
56
60
56
94
65
62
79
54
59
66
65
66
60
64
63
46
51
60
60
62
56
63
78
58
68
40
52
51
51
68
45
48
45
49
53
45
66
36
48
65
56
78
62
44
49
41
53
70
49
77

168
185
194
180
397
186
222
290
285
180
185
162
140
170
223
170
177
155
165
218
198
181
287
233
263
167
158
228
218
174
142
188
226
258
179
257
190
267
267
253
196
141
176
209
191
174
168
215
191
68
71
126
205
73
214
289
228
175
144
298
69
76
244
148
162
318


<table>
<thead>
<tr>
<th>Alignment Name</th>
<th>Geotechnical Subsurface</th>
<th>Borehole ID</th>
<th>Date Drilled</th>
<th>Borehole Coordinates</th>
<th>Borehole Depth (ft)</th>
<th>Depth to Rock (ft)</th>
<th>Depth to Conductance (ft)</th>
<th>Geotechnical Report Date</th>
<th>Sample ID</th>
<th>Sample Type</th>
<th>Material Type</th>
<th>Lab Determined Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (pcf)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-115</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-116</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-117</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-118</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-119</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-120</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-121</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
<tr>
<td>WMNF</td>
<td>Quanta Subsurface</td>
<td>BH-122</td>
<td>6/30/2016</td>
<td>43.015921 -71.661653</td>
<td>44.118601</td>
<td>3.5</td>
<td>15.5</td>
<td>6/25/2016</td>
<td>S1</td>
<td>Sleeve 4'-5.5' SOIL (SM/ML)</td>
<td>87</td>
<td>145</td>
<td>22</td>
<td>92</td>
<td>223</td>
</tr>
</tbody>
</table>

**Notes:**
- NO SAMPLE TAKEN, HYDROCARBON ODORS AT 4'-5.5' SOIL (SM/ML)
- NO SAMPLE RECOVERED, HYDROCARBON ODORS AT 4'-5.5' SOIL (SM/ML)
- INSUFFICIENT MATERIAL FOR TESTING
<table>
<thead>
<tr>
<th>Alignment Name</th>
<th>Geotech Company</th>
<th>Borehole ID</th>
<th>Date Drilled</th>
<th>Borehole Coordinates</th>
<th>Borehole Depth (ft)</th>
<th>Depth to Rock (ft)</th>
<th>Depth to Casewell (ft)</th>
<th>Core/Therm Report Date</th>
<th>Sample ID</th>
<th>Sample Type</th>
<th>Sample Depth (ft)</th>
<th>Material Type</th>
<th>Lab-Betterized Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (pfd)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-220</td>
<td>5/26/2016</td>
<td>43.882302 -71.669309</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>6/8/2016</td>
<td>S1</td>
<td>Mercer</td>
<td>4.5</td>
<td>SOIL (ML)</td>
<td>8</td>
<td>570</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-231</td>
<td>5/26/2016</td>
<td>43.882302 -71.669309</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>6/8/2016</td>
<td>S1</td>
<td>Mercer</td>
<td>4.5</td>
<td>SOIL (ML)</td>
<td>8</td>
<td>570</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-224</td>
<td>43.877882 -71.656852</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>6/8/2016</td>
<td>S1</td>
<td>Mercer</td>
<td>4.5</td>
<td>SOIL (ML)</td>
<td>8</td>
<td>570</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-228</td>
<td>43.871792 -71.656852</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>6/8/2016</td>
<td>S1</td>
<td>Mercer</td>
<td>4.5</td>
<td>SOIL (ML)</td>
<td>8</td>
<td>570</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-230</td>
<td>43.800585 -71.638318</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>6/8/2016</td>
<td>S1</td>
<td>Mercer</td>
<td>4.5</td>
<td>SOIL (ML)</td>
<td>8</td>
<td>570</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-235</td>
<td>5/25/2016</td>
<td>43.844242 -71.664397</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>7/10/2016</td>
<td>S1</td>
<td>Sleeve</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>65</td>
<td>186</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-271</td>
<td>5/21/2016</td>
<td>43.780394 -71.676954</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>9/16/2016</td>
<td>S1</td>
<td>Bulk</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>54</td>
<td>132</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-276</td>
<td>5/18/2016</td>
<td>43.784504 -71.667824</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>10/26/2016</td>
<td>RC1</td>
<td>Core</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>33</td>
<td>101</td>
<td>13.9</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-279</td>
<td>5/20/2016</td>
<td>43.751546 -71.687288</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>9/16/2016</td>
<td>S1</td>
<td>Bulk</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>22</td>
<td>65</td>
<td>13.9</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-284</td>
<td>5/17/2016</td>
<td>43.720253 -71.666812</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>9/16/2016</td>
<td>S1</td>
<td>Bulk</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>27</td>
<td>71</td>
<td>13.9</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-282</td>
<td>5/17/2016</td>
<td>43.720253 -71.666812</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>9/16/2016</td>
<td>S1</td>
<td>Bulk</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>27</td>
<td>71</td>
<td>13.9</td>
<td></td>
</tr>
<tr>
<td>WBR3</td>
<td>Quanta Subsurface</td>
<td>BH-285</td>
<td>5/17/2016</td>
<td>43.720253 -71.666812</td>
<td>11.5</td>
<td>11.5</td>
<td>Not Observed</td>
<td>9/16/2016</td>
<td>S1</td>
<td>Bulk</td>
<td>4'-5.5</td>
<td>SOIL (SM)</td>
<td>27</td>
<td>71</td>
<td>13.9</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- **INSUFFICIENT MATERIAL FOR TESTING**
ATTACHMENT A

Exploratory Test Boring Logs
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery (%)</th>
<th>B.C. (N Value)</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), moderate brown, moist, loose, fine to medium grained, coarse grained gravel, subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>100</td>
<td>16-66-50/1*</td>
<td>SM</td>
<td>ALLUVIUM: SILTY SAND WITH GRAVEL (SM), yellowish gray, dry, very dense, fine to medium grained, coarse grained gravel, subangular</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>94</td>
<td>8-15-23 (38)</td>
<td>SM</td>
<td>-becomes moderate gray, with fine gravel, moist, dense</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>7-26-37 (63)</td>
<td>GM</td>
<td>TILL: SILTY GRAVEL WITH SAND (GM), moderate brown to grayish black, moist, very dense, coarse grained gravel, fine to medium grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
FILL: SILTY SAND (SM), trace gravel, light olive brown, fine to medium grained, fine grained gravel, rounded

ALLUVIUM: SILTY SAND (SM), trace gravel, light olive brown, moist, medium dense, fine to medium grained, fine grained gravel, subrounded

TILL: SANDY CLAY WITH GRAVEL (SC), light olive gray, moist, hard, low plasticity, fine to medium grained, fine grained gravel, subrounded

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
# Boring Number BH-55

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Bethlehem, NH  
**Date Started:** 8/31/16  
**Completed:** 8/31/16  
**Ground Elevation:** NA  
**Hole Size:** 4.25 in  
**Drilling Contractor:** Geosearch  
**Drilling Method:** Solid Stem Auger  
**Logged By:** T. Vernon  
**Checked By:** S. Kearney  
**Notes:**

## Material Description

**Fill:** Silty Sand with Gravel (SM), dusky brown, fine to medium grained, coarse grained gravel, subrounded

**Till:** Silty Sand with Gravel (SM), dusky brown, moist, medium dense, fine to medium grained, coarse grained gravel, subrounded

- **Without gravel**

**Till:** Claysey Sand (SC), moderate brown, moist, very stiff, medium plasticity, fine to medium grained

## Sample Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>1</td>
<td>50</td>
<td>3-8-15 (23)</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>2</td>
<td>67</td>
<td>5-13-11 (24)</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>3</td>
<td>56</td>
<td>6-10-12 (22)</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.5 ft.**  
Backfilled with auger cuttings
Organic Deposits: Sandy Organics (OH), with roots, light olive brown, moist, fine to coarse grained

Alluvium: Poorly Graded Sand (SP), trace silt, light olive brown, moist, medium dense, fine to coarse grained sand

Till: Silty Sand with Gravel (SM), light brownish gray, moist, very dense, fine to coarse grained, fine grained gravel, subangular

Bedrock: Gneiss

Switched to mud rotary, roller bit 11 to 16 ft

Bottom of borehole at 16.0 ft.
Backfilled with auger cuttings
### BORING NUMBER BH-57

**CLIENT**  PAR Electrical Contractors

**PROJECT NUMBER**  16004

**DATE STARTED**  8/30/16  **COMPLETED**  8/30/16

**GROUND ELEVATION**  NA  **HOLE SIZE**  4.25 in

**DRILLING CONTRACTOR**  Geosearch

**DRILLING METHOD**  Solid Stem Auger

**LOGGED BY**  T. Vernon  **CHECKED BY**  S. Kearney

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND (SM), light gray, fine to medium grained</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>100</td>
<td>24-31-62 (93)</td>
<td></td>
<td>TILL: SILTY SAND WITH GRAVEL (SM), moderate brown to medium light gray, dry, very dense, fine to medium grained, subangular, weathered gravel</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>28</td>
<td>5-2-9 (11)</td>
<td>SM</td>
<td>-boulders present</td>
</tr>
<tr>
<td>15.5</td>
<td>SPT 3</td>
<td>67</td>
<td>14-21-24 (45)</td>
<td>SC</td>
<td>-becomes moderate brown, medium dense, with trace, subangular, fine grained, gravel</td>
</tr>
</tbody>
</table>

**TILL: CLAYEY SAND (SC), trace gravel, brownish black, moist, hard, low plasticity, fine to medium grained, fine grained gravel, rounded**

**Bottom of borehole at 15.5 ft.**

**Backfilled with auger cuttings**

---

**QUANTASUBSURFACE**

4708 N Barker RD

Spokane Valley, WA 99027

Telephone: 509-892-9409
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), light gray to moderate brown, fine to medium grained, coarse grained gravel</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>13-21-18 (39)</td>
<td></td>
<td>SM</td>
<td>TILL: SILTY SAND WITH GRAVEL (SM), with cobbles, light gray, dry, dense, fine to medium grained, angular</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>50/3&quot;</td>
<td></td>
<td>SM</td>
<td>-with granitic cobbles and boulders</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>56</td>
<td>9-17-13 (30)</td>
<td></td>
<td>SM</td>
<td>-with trace gravel, grayish black, moist, fine grained gravel, with granitic cobbles and boulders</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. 
Backfilled with auger cuttings
FILL: SILTY SAND WITH GRAVEL (SM), moderate brown, fine to medium grained, coarse grained gravel, angular

TILL: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moderate brown, moist, medium dense, fine to coarse grained, fine grained gravel, angular

-becomes moderate brown to dusky purple

-becomes moderate brown

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Notes
- Backfilled with auger cuttings
- Bottom of borehole at 15.5 ft.
- Deep fill mapped nearby

### Material Description
- **FILL: Silty Sand (SM)**, medium brown to light gray, fine to medium grained
- **FILL: Poorly Graded Sand with Silt (SP-SM)**, medium gray to grayish red, dry, very dense, fine to medium grained, highly weathered
- **TILL: Silty Sand (SM)**, trace gravel, medium brown, moist, medium dense, fine to medium grained, fine grained gravel, angular
### Material Description

- **Fill**: Silty sand (SM), trace gravel, light gray, fine-grained, coarse-grained gravel, rounded.
- **Alluvium**: Poorly graded sand with silt (SP-SM), trace gravel, light brownish gray, moist, dense, fine to medium-grained, coarse-grained gravel, rounded.
- **Alluvium**: Well graded sand with silt (SW-SM), moderate brown, moist to wet, medium dense, fine to medium-grained.
- **Till**: Clayey sand (SC), grayish brown, moist, very dense, low plasticity, fine to medium grained.

**Bottom of borehole at 15.5 ft.**
Backfilled with auger cuttings.
**Boring Number BH-62**

**Client:** PAR Electrical Contractors  
**Project Number:** 16004  
**Project Name:** Northern Pass  
**Project Location:** Bethlehem, NH  
**Date Started:** 8/29/16  
**Completed:** 8/29/16  
**Ground Elevation:** NA  
**Hole Size:** 4.25 in  
**Drilling Contractor:** Geosearch  
**Drilling Method:** Solid Stem Auger  
**Logging By:** T. Vernon  
**Checked By:** S. Keamey

**Ground Water Level:**

**Latitude:** 44.271611  
**Longitude:** -71.742879

**Drilling Equipment:**

**Drilling Equipment:** CME 55  
**SPT Hammer:** 140 lb Auto

**Drilling Method:** Solid Stem Auger  
**Hole Size:** 4.25 in

---

**Sample Type:**

- **GB**
- **SP-SM**
- **SC**
- **SW-SC**

**Material Description:**

- **Fill:** Silty Sand with Gravel (SM), moderate brown, fine grained, coarse grained gravel, subrounded
- **Till:** Poorly Graded Sand with Gravel and Silt (SP-SM), very light gray to moderate brown, moist, dense, fine grained, coarse grained gravel, subrounded, iron oxide staining
- **Till:** Clayey Sand (SC), moderate brown, moist, medium dense, low plasticity, fine grained
- **Till:** Well Graded Sand with Clay (SW-SC), moderate brown, moist, very dense, low plasticity, fine grained

**Blow Counts (N Value):**

- **Sample GB 1:** 2.0
- **Sample SP-SM:** 7.0
- **Sample SC:** 11.5

**Notes:**

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS/ 10 (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), fine grained, coarse grained gravel, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>1</td>
<td>22</td>
<td>10-13-15 (28)</td>
<td>SP-SM</td>
<td>TILL: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), moderate brown, moist, medium dense, fine grained, coarse grained gravel, rounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>2</td>
<td>100</td>
<td>5-8-8 (16)</td>
<td>SW-SM</td>
<td>TILL: WELL GRADED SAND WITH SILT (SW-SM), trace gravel, moderate brown, moist, medium dense, fine grained, coarse grained gravel -becomes very dense</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>3</td>
<td>100</td>
<td>25-26-38 (64)</td>
<td>SW-SM</td>
<td>-backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
**MATERIAL DESCRIPTION**

- **FILL: SILTY GRAVEL (GM)**, coarse grained gravel, subrounded
- **TILL: POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM)**, dry, medium dense, fine grained, coarse grained gravel, subrounded
- **TILL: SILTY SAND (SM)**, medium gray, moist, medium dense, fine grained
- - boulders and cobbles present
- - becomes very dense, with trace, rounded, coarse grained, gravel

Bottom of borehole at 14.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery %</th>
<th>Blows Count (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>39</td>
<td>6-3-5 (8)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>50</td>
<td>3-9-11 (20)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>56</td>
<td>6-8-11 (19)</td>
<td>SW-SM</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL**: SILTY SAND WITH GRAVEL (SM), moderate brown to dark gray, fine grained, coarse grained gravel, rounded
- becomes moderate brown, moist, loose

- **TILL**: SILTY SAND WITH GRAVEL (SM), moderate brown to light olive gray, moist to wet, medium dense, fine grained, coarse grained gravel, subrounded

- **TILL**: WELL GRADED SAND WITH SILT (SW-SM), trace gravel, moderate brown, moist, medium dense, fine grained, coarse grained gravel

*Bottom of borehole at 15.5 ft. Backfilled with auger cuttings*
FILL: SILTY SAND (SM), trace gravel, moderate brown, fine grained, coarse grained gravel, subrounded

TILL: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, dusky brown, moist, medium dense, fine grained, coarse grained gravel, rounded

-becomes moist to wet, decrease in gravel content

TILL: WELL GRADED SAND WITH SILT (SW-SM), moderate brown, moist, very dense, fine to coarse grained

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**FILL:** SILTY SAND (SM), trace gravel, moderate brown, fine grained, fine grained gravel, rounded

- boulder from 6 to 8 ft

**TILL:** SILTY SAND WITH GRAVEL (SM), moderate brown, moist, very dense, fine grained, coarse grained gravel, rounded

- becomes moderate brown to light olive brown, medium dense

- becomes very dense, with trace gravel

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
FILL: SILTY SAND WITH GRAVEL (SM), trace organics, moderate yellowish brown, damp, very fine to fine grained, medium to coarse grained gravel, subangular

ALLUVIUM: SILTY SAND WITH GRAVEL (SM), moderate yellowish brown to yellowish gray, moist, medium dense, medium grained gravel

TILL: CLAYEY SAND WITH GRAVEL (SC), light olive gray, wet, dense, low plasticity, very fine to fine grained, fine grained gravel, subangular

TILL: GRAVELLY CLAY (CL), yellowish gray, moist, hard, low plasticity, very fine grained, fine grained gravel, angular

Bottom of borehole at 16.5 ft.
Backfilled with auger cuttings
### General Information
- **Client**: PAR Electrical Contractors
- **Project Name**: Northern Pass
- **Project Location**: Franconia, NH
- **Ground Elevation**: NA
- **Hole Size**: 4 in ID/8 in OD
- **Drilling Contractor**: Geosearch
- **Drilling Method**: Hollow Stem Auger
- **Drilling Equipment**: CME 75 SPT Hammer 140 lb Auto
- **Logging by**: S. Laing
- **Checked by**: S. Kearney
- **Date Started**: 8/24/16
- **Completed**: 8/24/16
- **Ground Water Level**:
  - **Latitude**: 44.256305
  - **Longitude**: -71.761142
- **Drilling Equipment**: CME 75
- **Hole Size**: 4 in ID/8 in OD
- **Sample Type**: NA

### Log Details

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP-SM</td>
<td></td>
<td></td>
<td>3.0</td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), dark olive gray (5Y 3/2), fine to coarse grained gravel, fine to medium grained sand, subrounded to rounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>14-14-17 (31)</td>
<td></td>
<td>TILL: SILTY SAND WITH GRAVEL (SM), yellowish brown (10YR 5/4), moist, dense, fine to medium grained sand, subangular</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>61</td>
<td>8-8-13 (21)</td>
<td></td>
<td>-becomes medium dense</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>25</td>
<td>50-50/2&quot;</td>
<td>15.7</td>
<td>-boulder from 14 to 15 ft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-becomes dark yellowish brown, very dense</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.7 ft.**
Backfilled with auger cuttings
### Boring Number BH-70

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>CL</td>
<td></td>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS: LEAN CLAY WITH SAND AND GRAVEL (CL), trace organics, dark olive gray (5Y 3/2), moist, soft, high plasticity, fine to medium grained sand, subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>72</td>
<td>7-10-15</td>
<td>3.0</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), reddish brown (5YR 5/4), moist, medium dense, fine grained gravel, fine to medium grained sand, subangular to subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>83</td>
<td>10-14-18</td>
<td></td>
<td>-becomes dense, with fine grained sand, fine to coarse grained gravel</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>83</td>
<td>16-23-32</td>
<td></td>
<td>-becomes very dense</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Notes

- **SPT**
  - **1**
  - **2**
  - **3**

- **40-50/4"**
  - **8-17-39**
  - **(56)**

- **25-50-50**
  - **(100)**

- **ML**
  - **SP-SM**

- **FILL: SANDY SILT WITH GRAVEL (ML), and clay, dark grayish brown (10YR 4/2), moist, soft, low plasticity, fine grained sand, subangular to subrounded**

- **TILL: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), dark grayish brown (10YR 4/2), moist, very dense, fine to medium grained sand, subrounded**

- **-cobbles from 7 to 9 ft**

- **-becomes dark yellowish orange, fine grained sand, fine to coarse grained, subangular gravel**

- **-becomes yellowish brown (10YR 5/4), subangular to subrounded gravel**

- **Bottom of borehole at 15.5 ft.**
- **Backfilled with auger cuttings**
**NOTES**

**LOGGED BY** T. Vernon  **CHECKED BY**  S. Keamey

**DATE STARTED** 8/26/16  **COMPLETED** 8/26/16

**GROUND ELEVATION** NA  **HOLE SIZE** 4.25 in ID/8 in OD

**DRILLING CONTRACTOR** Geosearch  **LATITUDE** 44.248483  **LONGITUDE** -71.762799

**DRILLING METHOD** Solid Stem Auger  **DRILLING EQUIPMENT** CME 55  **SPT HAMMER** 140 lb Auto

**PROJECT NAME** Northern Pass  **PROJECT LOCATION** Franconia, NH

**CLIENT** PAR Electrical Contractors  **PROJECT NUMBER** 16004  **GROUND WATER LEVEL:**

**GROUND ELEVATION**

**DEPTH (ft)**  **SAMPLE TYPE**  **RECOVERY %**  **BLOWS (N VALUE)**  **U.S.C.S. MATERIAL DESCRIPTION**  **GRAPHIC LOG**

0  GB 1  SM  FILL: SILTY SAND WITH GRAVEL (SM), moderate brown, fine grained, coarse grained gravel, subangular

5  SPT 1  94  24-33-35 (68)  SM  TILL: SILTY SAND WITH GRAVEL (SM), light brownish gray, dry, very dense, fine grained, coarse grained gravel, subangular

10  SPT 2  67  8-12-20 (32)  SW-SM  TILL: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), light brown, moist, dense, fine grained, fine to coarse grained gravel

15  SPT 3  71  34-61-52/2"  SW-SM  -becomes very dense, with coarse grained gravel

Bottom of borehole at 15.2 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>8-23-25 (48)</td>
<td>SP</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>61</td>
<td>8-11-15 (26)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>50</td>
<td>35-35-50 (85)</td>
<td>GP</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL**: POORLY GRADED SAND (SP), trace gravel, dark reddish brown (5YR 3/4), moist, fine to medium grained sand, subangular

- Becomes moderate brown to dusky red, dense, with subrounded gravel

- **STREAM TERRACE DEPOSITS**: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), dark grayish brown (10YR 4/2), moist, medium dense, fine to coarse grained gravel, fine grained sand, subangular to subrounded

- **STREAM TERRACE DEPOSITS**: POORLY GRADED GRAVEL WITH SAND (GP), pale olive (5Y 6/4) to pale yellow (5Y 8/4), very dense, fine to coarse grained gravel, fine to medium grained sand, subrounded to subangular

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>LOGIC</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td>2.0</td>
<td>FILL: SAND (SP), moderate brown, moist, poorly graded, hydrocarbon odor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bottom of Borehole at 2.0 feet</td>
</tr>
</tbody>
</table>
**Sample Type:**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S. Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: SILTY GRAVEL WITH SAND (GM), light gray, moist, coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>SPT</td>
<td>1</td>
<td>67</td>
<td>12-26-24 (50)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: SILTY GRAVEL WITH SAND (GM), pale blue to light gray, dry, dense, coarse grained gravel, subrounded</td>
</tr>
<tr>
<td>SPT</td>
<td>2</td>
<td>39</td>
<td>3-9-11 (20)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM), moderate brown to light gray, moist, medium dense, coarse grained gravel, subrounded</td>
</tr>
<tr>
<td>SPT</td>
<td>3</td>
<td>56</td>
<td>4-5-11 (16)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), moderate brown, wet, medium dense, coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.5 ft.**

**Backfilled with auger cuttings**
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>2-2-4 (6)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>67</td>
<td>5-22-36 (58)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>50-41-32 (73)</td>
<td>SP-SM</td>
<td></td>
</tr>
</tbody>
</table>

**ORGANIC DEPOSITS:** SILTY SAND (SM), trace gravel, trace organics, moderate brown, moist, fine grained, fine grained gravel, subrounded

**STREAM TERRACE DEPOSITS:** SILTY SAND (SM), trace gravel, moderate brown, moist, medium dense, fine grained, fine grained gravel, subrounded

**STREAM TERRACE DEPOSITS:** POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), moderate brown, moist, very dense, fine to medium grained, fine to coarse grained gravel, subrounded, trace manganese oxide staining

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS/CM (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: GRAVEL WITH SILT AND SAND (GM), trace organics, dark brown, moist, medium to coarse grained gravel, subangular, very fine to fine grained matrix</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>1</td>
<td>83</td>
<td>8-18-26 (44)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>2</td>
<td>17</td>
<td>8-6-16 (22)</td>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: GRAVEL WITH SILT AND SAND (GM), dark yellowish orange, dry, dense, medium to coarse grained gravel, fine grained sand, angular to subangular, extensive oxidation</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>3</td>
<td>100</td>
<td>9-10-50/0&quot;</td>
<td></td>
<td></td>
<td>-becomes wet, medium dense</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.0 ft. Backfilled with auger cuttings
### Boring Number BH-78

**General BH/TP/WELL - GINT STD US LAB.GPJ - 10/3/16 22:06 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\PLYMOUTH, NH\NPPLYM.GPJ**

**General BH/TP/WELL - GINT STD US LAB.GPJ - 10/3/16 22:06 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\PLYMOUTH, NH\NPPLYM.GPJ**

**General BH/TP/WELL - GINT STD US LAB.GPJ - 10/3/16 22:06 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\PLYMOUTH, NH\NPPLYM.GPJ**

---

**Notes**

- **Sample Type**: Number
- **Depth (ft)**: 0
- **Blows (N-value)**: SPT 1, 67; 6-13-24 (37)
- **U.S.C.S.**: SM
- **Material Description**: FILL: SILTY SAND WITH GRAVEL (SM), trace organics, dark yellowish brown, damp, very fine to fine grained, medium to coarse grained gravel, subangular
- **Phase**:
  - becomes yellowish gray, dense, without organics
  - STREAM TERRACE DEPOSITS: COBBLES, and gravel, very dense, medium to very coarse grained gravel, subangular to rounded, angular cobble fragments
  - becomes wet, with silty sand
  - with subangular gravel

**Bottom of borehole at 14.6 ft.**

Backfilled with auger cuttings

**Diagram**

- **Ground Water Level**: 9.0 ft.
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS: ORGANIC SOIL WITH SAND (OL), grayish black, fine to medium grained, roots and wood present</td>
</tr>
<tr>
<td></td>
<td>SPT</td>
<td>22</td>
<td>5-4-4 (8)</td>
<td>-becomes moist, loose</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>67</td>
<td>21-33-20 (53)</td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND (SM), trace gravel, moderate brown to grayish orange, moist, very dense, fine to medium grained, fine grained gravel, subangular</td>
</tr>
<tr>
<td></td>
<td>SPT</td>
<td>44</td>
<td>1-1-1 (2)</td>
<td>-becomes moderate brown to dusky yellow, moist to wet, very loose</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>ORGANIC DEPOSITS: SILTY SAND (SM), trace gravel, moderate brown, fine to medium grained, medium grained gravel</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>56</td>
<td>3-3-4 (7)</td>
<td>SW-SM</td>
<td></td>
<td>ALLUVIUM: WELL GRADED SAND WITH SILT (SW-SM), trace gravel, moderate gray with dark reddish brown, moist, loose, fine grained, rounded, iron oxide staining</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>44</td>
<td>9-7-7 (14)</td>
<td>SP-SM</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), moderate brown to pale reddish brown, medium dense, fine to medium grained, coarse grained gravel, rounded, minor oxidation</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>22</td>
<td>1-1-3 (4)</td>
<td>SM</td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), moderate brown, wet, very loose, fine grained</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
FILL: POORLY GRADED SAND WITH GRAVEL (SP), dark grayish brown (10YR 4/2), moist, fine to coarse grained gravel, fine to medium grained sand, subangular to subrounded

ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, dark yellowish orange to dusky yellow, moist, loose, fine to coarse grained gravel, fine grained sand

ALLUVIUM: POORLY GRADED SAND (SP), trace silt, moderate yellowish brown, wet, dense, fine to medium grained sand

-becomes medium dense, with trace fine grained gravel

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), yellowish brown (10YR 5/4), moist, fine grained gravel, fine to medium grained sand, angular to subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>100</td>
<td>1-1-1 (2)</td>
<td>-becomes moderate yellowish brown to orange, fine grained sand with silt, very loose, trace asphalt</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>39</td>
<td>8-8-6 (14)</td>
<td>ALLUVIUM: POORLY GRADED SAND (SP), dark grayish brown (10YR 4/2), wet, medium dense, fine to medium grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>22</td>
<td>30-34-34 (68)</td>
<td>ALLUVIUM: SILT WITH SAND (ML), trace clay, yellowish brown (10YR 5/4), moist, stiff, low plasticity, fine grained sand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), yellowish brown (10YR 5/4), wet, very dense, medium grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
FILL: POORLY GRADED SAND WITH GRAVEL (SP), dark grayish brown (10YR 4/2) to dark reddish brown (5YR 3/4), moist, fine to coarse grained gravel, fine to medium grained sand, subangular to subrounded

ALLUVIUM: LEAN CLAY (CL), yellowish brown (10YR 5/4), moist, stiff, medium plasticity

ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, yellowish brown (10YR 5/4) to dark grayish brown (10YR 4/2), wet, medium dense, fine to medium grained sand -becomes very dense, light olive gray, with medium to coarse grained sand, subangular to subrounded gravel

TILL: POORLY GRADED SAND WITH GRAVEL (SP), olive gray (5Y 5/2), moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular to subangular

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### MATERIAL DESCRIPTION

- **ORGANIC DEPOSITS: SILTY SAND (SM),** trace gravel, trace roots, grayish black to moderate brown, moist, loose, fine grained, subrounded
- **ALLUVIUM: SILTY SAND (SM),** dusky brown, moist, loose, fine grained, micaceous
- **ALLUVIUM: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM),** moderate brown to grayish green, moist, loose, fine to medium grained, medium to coarse grained sand, subrounded
- **ALLUVIUM: CLAYEY SAND (SC),** moderate brown, moist, loose, low plasticity, fine grained, weakly bedded

**Bottom of borehole at 15.5 ft.**

**Backfilled with auger cuttings**
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td>2.0</td>
<td>28-49-50</td>
<td>SP</td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), yellowish brown (10YR 5/4) to dark grayish brown (10YR 4/2), moist, fine to coarse grained gravel, fine grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>28-49-50 (99)</td>
<td>SP</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), trace cobbles, yellowish brown, moist, very dense, fine to coarse grained gravel, fine grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>50/3&quot;</td>
<td>SP</td>
<td></td>
<td>-gneissic boulder from 8.5 to 12 ft</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>59</td>
<td>14-40-50/5&quot;</td>
<td>SP-SM</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL, yellowish brown (10YR 5/4), moist to wet, very dense, fine to coarse grained sand, angular to subrounded</td>
</tr>
<tr>
<td></td>
<td>SP-SM</td>
<td>15.0</td>
<td>14-40-50/5&quot;</td>
<td>SP-SM</td>
<td></td>
<td>TILL: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), pale olive (5Y 6/4), moist to wet, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular to subangular</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>GM</td>
<td>Stream Terrace Deposits: Silty Gravel with Sand (GM), moderate brown, moist, fine to coarse grained, fine to coarse grained gravel, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>8-12-17 (29)</td>
<td>GM</td>
<td>-becomes damp, medium dense, minor oxidation</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>44</td>
<td>3-5-3 (8)</td>
<td>SW-SM</td>
<td>TILL: Well Graded Sand with Silt (SW-SM), moderate gray, moist, loose, fine grained</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>1-1-1 (2)</td>
<td>SC</td>
<td>TILL: Clayey Sand (SC), moderate gray with grayish brown, moist, very loose, fine grained</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
# BORING NUMBER BH-89

**DATE STARTED** 8/23/16  
**COMPLETED** 8/23/16  
**CLIENT** PAR Electrical Contractors  
**PROJECT NUMBER** 16004  
**PROJECT NAME** Northern Pass  
**PROJECT LOCATION** Franconia, NH  
**GROUND ELEVATION** NA  
**HOLE SIZE** 4 in ID/8 in OD  
**LATITUDE** 44.203278  
**LONGITUDE** -71.754078  
**DRILLING CONTRACTOR** Geosearch  
**DRILLING METHOD** Solid Stem Auger  
**LOGGED BY** T. Vernon  
**CHECKED BY** S. Keamey  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS: ORGANIC SOIL WITH GRAVEL (OL), dark brown, fine grained, coarse grained gravel, subangular, roots present</td>
</tr>
<tr>
<td>5</td>
<td>SP-SM SPT 1</td>
<td>56</td>
<td>11-15-15 (30)</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), light brown to grayish red, dry, dense, fine grained, coarse grained gravel, subangular, minor oxidation</td>
</tr>
<tr>
<td>10</td>
<td>SP-SM SPT 2</td>
<td>67</td>
<td>2-3-4 (7)</td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), trace gravel, moderate gray to moderate brown, moist, loose, fine grained, fine grained gravel, subrounded, micaceous</td>
</tr>
<tr>
<td>15</td>
<td>SP-SM SPT 3</td>
<td>67</td>
<td>1-1-1 (2)</td>
<td></td>
<td>-becomes moderate gray, wet, very loose, fine grained, minor clay lenses with low plasticity</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), reddish brown (5YR 4/4), moist, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td></td>
<td>6-8-10 (18)</td>
<td>SP</td>
<td>4.8</td>
<td>-becomes medium dense</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>2-6-9 (15)</td>
<td>SP-SM</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), brownish yellow (10YR 6/6) to yellowish brown (10YR 5/4), wet, medium dense, fine to medium grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>39</td>
<td>1-1-2 (3)</td>
<td>SP-SM</td>
<td></td>
<td>-becomes moderate yellowish brown</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
FILL: SILTY SAND WITH GRAVEL (SM), dark grayish brown, moist, fine grained gravel, fine to medium grained sand, subangular

ALLUVIUM: POORLY GRADED SAND (SP), trace gravel, olive (5Y 5/6) to yellowish brown (10YR 5/8), moist, medium dense, fine to coarse grained gravel, fine to medium grained sand, subangular to subrounded

- becomes light olive gray, very loose, moist to wet, with fine grained sand, trace silt

- becomes dark yellowish orange, moist, loose

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
FILL: POORLY GRADED SAND WITH GRAVEL (SP), dark grayish brown (10YR 4/2), moist, medium dense, fine to medium grained sand, subrounded

ALLUVIUM: POORLY GRADED SAND (SP), trace silt, brownish yellow (10YR 6/6), moist, medium dense, fine to medium grained sand, poorly to well graded, minor amounts of coarse grained sand

-becomes dark yellowish orange to moderate yellowish brown

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>OL</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>100</td>
<td>11-19-19 (38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>100</td>
<td>16-20-25 (45)</td>
<td>SW-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>10-21-25 (46)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MATERIAL DESCRIPTION

- **FILL**: GRAVELLY ORGANIC SOIL WITH SAND (OL), dark brown, moist, very fine to fine grained, fine to coarse grained gravel, angular, organics present

- **ALLUVIUM**: WELL GRADED SAND WITH GRAVEL AND SILT (SW-SM), brown to pale brown, moist, dense, fine to coarse grained gravel, subangular, trace fines, zones of oxidation throughout

-Becomes pale brown, no oxidation

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**BOREHOLE NUMBER BH-95**

**DATE STARTED** 8/17/16  |  **COMPLETED** 8/17/16  |  **GROUND ELEVATION** NA  |  **HOLE SIZE** 4 in ID/8 in OD

**DRILLING CONTRACTOR** Geosearch  |  **LATITUDE** 44.186398  |  **LONGITUDE** -71.751817

**DRILLING METHOD** Hollow Stem Auger  |  **GROUND ELEVATION:**

**LOGGED BY** S. Laing  |  **CHECKED BY** S. Keamey

---

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), yellowish brown, moist, fine to medium grained, fine grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>94</td>
<td>15-17-19</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), yellowish brown (10YR 5/4), moist, dense, fine to medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>72</td>
<td>4-5-6</td>
<td>-with subangular to subrounded gravel, minor amounts of coarse grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>39</td>
<td>20-20-20</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

---

**PROJECT NAME** Northern Pass  |  **PROJECT LOCATION** Franconia, NH

**CLIENT** PAR Electrical Contractors  |  **PROJECT NUMBER** 16004

**GROUND WATER LEVEL:**

**LATITUDE** 44.186398  |  **LONGITUDE** -71.751817

**SAMPLE TYPE NUMBER**

---

**DRILLING EQUIPMENT** CME 75  |  **SPT HAMMER** 140 lb Auto

---

**NOTES**

---

**GENERAL BH / TP / WELL - GINT STD US LAB.GPJ - 10/3/16 11:36 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\FRANCONIA, NH\FRACT.GPJ**

---

**QS**

4708 N Barker RD

Spokane Valley, WA 99027

Telephone: 509-892-9409
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>2.0</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), grayish brown, moist, fine to medium grained, fine grained gravel, subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>78</td>
<td>9-19-33 (52)</td>
<td>SP-SM</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, yellowish brown (10YR 5/4), moist, very dense, fine grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>15-16-23 (39)</td>
<td>SP-SM</td>
<td></td>
<td>-becomes dark yellowish orange, with fine to medium grained sand, dense, trace coarse sand, micaceous</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>6-8-10 (18)</td>
<td>SP-SM</td>
<td></td>
<td>-becomes medium dense, fine grained</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
FILL: GRAVEL WITH SILT AND SAND (GM), trace organics, dark brown to dark yellowish brown, dry, loose, fine to coarse grained gravel, angular, fine grained matrix

- without organics, medium dense

ALLUVIUM: GRAVEL WITH SILT AND SAND (GM), brown, moist, very dense, coarse grained gravel, angular to subangular, weak cementation, fine grained matrix

ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), pale brown, wet, medium dense, fine grained sand

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), trace organics, dark brown, moist, fine to coarse grained gravel, fine grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>2-2-3 (5)</td>
<td>SP-SM</td>
<td>4.5</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), brown to light brown, moist to wet, loose, fine to medium grained sand, oxidation throughout</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>72</td>
<td>4-7-8 (15)</td>
<td>SP-SM</td>
<td></td>
<td>-becomes wet, medium dense, silt content decreases</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>7-5-5 (10)</td>
<td>SP-SM</td>
<td>15.5</td>
<td>-becomes brown to dark yellowish orange, trace fines, extensive oxidation throughout</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Boring Number BH-100

#### Notes
- Logged by: S. Laing
- Checked by: S. Kearney
- Date started: 8/17/16
- Completed: 8/17/16
- Drilling contractor: Geosearch
- Drilling method: Hollow Stem Auger
- Drilling equipment: CME 75 SPT hammer 140 lb Auto
- Sample type: number
- Ground elevation: NA
- Hole size: 4 in ID/8 in OD
- Ground water level:
  - Latitude: 44.165963
  - Longitude: -71.766066
- Ground water level:
  - Latitude: 44.165963
  - Longitude: -71.766066

#### Material Description
- **SM**
  - Fill: Silty sand with gravel (SM), grayish brown, moist, fine to medium grained, fine grained gravel, angular

- **SW-SM**
  - Alluvium: Well graded sand with silt and gravel (SW-SM), yellowish brown / moderate yellowish brown (10YR 5/4), moist, dense, fine to coarse grained sand, angular to subrounded

- **SP-SM**
  - Till: Poorly graded sand with silt and gravel (SP-SM), very pale brown (10YR 7/4) to brownish yellow (10YR 6/6), moist, very dense, fine to medium grained sand, subangular to subrounded, with trace amounts of coarse grained sand
    - Becomes dense, moderate yellowish brown, trace subrounded gravel

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery %</th>
<th>Blow Count (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0-0</td>
<td></td>
<td>2.0</td>
<td></td>
<td>Fill: Silty sand with gravel (SM), grayish brown, moist, fine to medium grained, fine grained gravel, angular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>6-14-30 (44)</td>
<td></td>
<td></td>
<td>Alluvium: Well graded sand with silt and gravel (SW-SM), yellowish brown / moderate yellowish brown (10YR 5/4), moist, dense, fine to coarse grained sand, angular to subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>89</td>
<td>38-27-43 (70)</td>
<td></td>
<td></td>
<td>Till: Poorly graded sand with silt and gravel (SP-SM), very pale brown (10YR 7/4) to brownish yellow (10YR 6/6), moist, very dense, fine to medium grained sand, subangular to subrounded, with trace amounts of coarse grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>50</td>
<td>6-19-30 (49)</td>
<td>15.5</td>
<td></td>
<td>Becomes dense, moderate yellowish brown, trace subrounded gravel</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery</th>
<th>Blows (N Value)</th>
<th>USCS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: GRAVEL (GM), with sand, with silt, trace organics, grayish blue green to dark yellowish brown, damp, very fine to fine grained, medium to coarse grained gravel, angular</td>
</tr>
<tr>
<td>5</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>TILL: SILTY SAND (SM), yellowish gray, moist, medium dense, fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 1</td>
<td>100</td>
<td>9-11-11 (22)</td>
<td></td>
<td>-becomes wet, with trace clay</td>
</tr>
<tr>
<td>15</td>
<td>SPT 2</td>
<td>89</td>
<td>9-10-7 (17)</td>
<td>SM</td>
<td>TILL: POORLY GRADED SAND WITH SILT (SP-SM), pale yellowish brown, wet, dense, fine to medium grained</td>
</tr>
<tr>
<td></td>
<td>SPT 3</td>
<td>83</td>
<td>12-20-13 (33)</td>
<td></td>
<td>Bottom of borehole at 16.5 ft. Backfilled with auger cuttings</td>
</tr>
<tr>
<td>DEPTH (ft)</td>
<td>SPT</td>
<td>SAMPLE TYPE</td>
<td>NUMBER</td>
<td>RECOVERY %</td>
<td>BLOWS (N VALUE)</td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td>-------------</td>
<td>--------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>SM</td>
<td>100</td>
<td>7-8-8</td>
<td>(16)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>ML</td>
<td>100</td>
<td>4-6-7</td>
<td>(13)</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>SP-SM</td>
<td>89</td>
<td>4-6-6</td>
<td>(12)</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. 
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>4-4-4 (8)</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>100</td>
<td>6-11-21 (32)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>89</td>
<td>10-14-16 (30)</td>
<td>SM</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL**: SILTY SAND WITH GRAVEL (SM), olive brown, moist, fine to medium grained, fine to coarse grained gravel, subangular
- **ALLUVIUM**: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, reddish yellow to olive brown, moist, loose, fine grained, subrounded
- Becomes dense, olive, without gravel

- **TILL**: SILTY SAND WITH GRAVEL (SM), olive gray (SY 5/2), moist, medium dense, fine to medium grained sand

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
SPT
1
SPT
2
SPT
3

17-22-27
(49)

15-23-50
(73)

16-26-36
(62)

15.5

SM
FILL: GRAVEL (SM), with sand, with silt, trace organics, dark brown, moist

ALLUVIUM: WELL GRADED SAND WITH SILT (SW-SM), trace gravel, light brown to pale brown, moist, dense, fine to coarse grained gravel, fine to coarse grained sand, subangular, trace fines, fine grained matrix

- becomes very dense, minor zones of oxidation

ALLUVIUM: GRAVEL WITH SILT AND SAND (GM), brown, wet, very dense, fine to coarse grained gravel, fine grained sand, angular to subangular, weak cementation, very fine to fine grained matrix

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>RECOVERY %</th>
<th>U.S.C.S. MATERIAL</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: GRAVEL (GM), with sand, with silt, with organics, grayish blue green to dark yellowish brown, moist, very fine to fine grained, fine to coarse grained gravel, angular</td>
<td>IC</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>1</td>
<td>13-17-20 (37)</td>
<td>100</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL (SP), trace fines, light olive gray, wet, dense, medium grained gravel, fine grained sand, subangular, zones of oxidation</td>
<td>IC</td>
</tr>
<tr>
<td>10</td>
<td>ML</td>
<td></td>
<td></td>
<td></td>
<td>ALLUVIUM: SILT (ML), trace sand, and clay, light olive gray, wet, low plasticity, very fine grained, minor oxidation</td>
<td>IC</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>2</td>
<td>5-6-7 (13)</td>
<td>100</td>
<td>ALLUVIUM: SILTY SAND (SM), moderate yellowish brown, wet, medium dense, very fine to fine grained, iron oxide staining</td>
<td>IC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-with trace clay</td>
<td>IC</td>
</tr>
</tbody>
</table>

Bottom of borehole at 16.5 ft. 
Backfilled with auger cuttings
**Sample Type** | **Recovery %** | **Blows \( N \) Value** | **U.S.C.S.** | **Graphic Log** | **Material Description**
--- | --- | --- | --- | --- | ---
SM | | | | | Fill: Silty sand with gravel (SM), olive brown, moist, fine to medium grained, fine to coarse grained gravel, subangular

SW-SM | | | | | Alluvium: Well graded sand with silt and gravel (SW-SM), very pale brown (10YR 7/4), moist, medium dense, fine to coarse grained sand, subrounded

SP-SM | | | | | Alluvium: Poorly graded sand with silt (SP-SM), olive gray (5Y 5/2), moist, medium dense, fine grained sand

CL | | | | | Alluvium: Lean clay with sand (CL), yellowish brown (10YR 5/4), moist to wet, soft, medium plasticity, fine grained sand

SM | | | | | Alluvium: Silty sand (SM), brownish yellow (10YR 6/6), moist, very loose, fine grained sand

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
### Notes

- **Ground Elevation:** NA
- **Hole Size:** 4 in ID/8 in OD
- **Date Started:** 8/16/16
- **Completed:** 8/16/16
- **Latitude:** 44.139454
- **Longitude:** -71.786657
- **Drilling Contractor:** Geosearch
- **Drilling Method:** Hollow Stem Auger
- **Logging By:** S. Laing
- **Checked By:** S. Keamey
- **Drilling Equipment:** CME 75, 140 lb Auto
- **Drilling Method:** Hollow Stem Auger
- **Sample Type:**
  - **Recovery %:**
  - **U.S.C.S. Material Description:**
    - **SM:** Fill: Silty Sand with Gravel (SM), olive brown, moist, fine to medium grained, fine to coarse grained gravel, subrounded
    - **GM:** Glaciolacustrine: Silty Gravel with Sand (GM), yellowish brown (10YR 5/4), moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, subangular to subrounded
    - **SP-SM:** Glaciolacustrine: Poorly Graded Sand with Silt (SP-SM), pale olive (5Y 6/4), moist, loose, fine grained sand, with 1/8 inch layers of silt and clay
    - **CL:** Glaciolacustrine: Lean Clay (CL), with silt, brownish yellow (10YR 6/6), moist, medium stiff, low plasticity

**Bottom of borehole at 15.0 ft.**
**Backfilled with auger cuttings**
**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>67</td>
<td>12-16-21 (37)</td>
<td>SP-SM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 1</td>
<td>20</td>
<td>50/5&quot;</td>
<td>GW-GM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **FILL**: SILTY SAND WITH GRAVEL (SM), moderate brown, moist, fine to medium grained, fine grained gravel, subangular
- **ALLUVIUM**: gneissic boulder from 3 to 7 ft
- **ALLUVIUM**: WELL GRADED GRAVEL WITH SAND WITH SILT (GW-GM), moist, dense, fine to coarse grained gravel, fine to medium grained sand, angular to subangular
- **ALLUVIUM**: POORLY GRADED SAND WITH SILT (SP-SM), brownish yellow (10YR 6/6) to olive gray (5Y 5/2), moist, dense, fine to medium grained sand
- With silt and clay, dark yellowish orange, fine grained sand, micaceous

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
### Notes
- FILL: SILTY SAND WITH GRAVEL (SM), grayish brown, moist, fine to medium grained, fine to coarse grained gravel, subangular
- ALLUVIUM: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), yellowish brown (10YR 5/4), moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, subangular to subrounded
- ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), olive gray (5Y 5/2), moist, loose, fine grained sand
  - becomes yellowish orange, with silt and clay, very loose

Bottom of borehole at 15.0 ft.
Backfill with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>89</td>
<td>4-6-10 (16)</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>67</td>
<td>4-6-10 (16)</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>94</td>
<td>2-3-3 (6)</td>
<td>15.0</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **SM**
  - FILL: SILTY SAND WITH GRAVEL (SM), olive brown, moist, fine to medium grained, fine grained gravel, subrounded

- **SP-SM**
  - ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, olive, moist, medium dense, fine grained gravel, fine to medium grained sand, subrounded, with 1/2 inch layers of fine grained sand, silt, and clay

- **CL**
  - ALLUVIUM: LEAN CLAY (CL), trace silt, olive, moist, very stiff, low plasticity, laminated

- **SP-SM**
  - ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), olive, moist, loose, fine grained sand

**NOTES**

- Bottom of borehole at 15.0 ft.
- Backfilled with auger cuttings
ALLUVIUM: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), olive to olive gray, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular

BEDROCK: Fresh (I), white (N9) and grayish black (N2), fine to medium grained, medium strong (R3), GNEISS

Bottom of borehole at 15.0 ft.

Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>GM</td>
<td>FILL: GRAVEL WITH SILT AND SAND (GM), trace organics, moderate brown, moist</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>100</td>
<td>4-7-10</td>
<td>SM</td>
<td>ALLUVIUM: SILTY SAND (SM), olive gray, moist to wet, medium dense, very fine to fine grained, stratified, with layers of grading and oxidation</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>50/1&quot;</td>
<td></td>
<td>BEDROCK: Weathered granitic rock</td>
<td>roller bit 7 to 15 ft</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>50/0&quot;</td>
<td>15.0</td>
<td></td>
<td>Bottom of borehole at 15.0 ft. Backfilled with auger cuttings</td>
<td></td>
</tr>
</tbody>
</table>
### Material Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>SPT Type</th>
<th>Sample Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>3-3-3 (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>61</td>
<td>15-27-26 (53)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>89</td>
<td>16-19-20 (39)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FILL:** GRAVEL WITH SILT AND SAND (GM), trace organics, moderate brown, moist

**ALLUVIUM:** SILTY SAND (SM), olive gray, moist, loose, very fine to medium grained

**ALLUVIUM:** SILT (OL), with clay, with organics, reddish brown, moist, medium stiff, low plasticity, very fine to fine grained

**ALLUVIUM:** POORLY GRADED SAND WITH SILT (SP-SM), trace fines, olive gray, moist, very dense, fine grained sand, cobble present in sample

**ALLUVIUM:** POORLY GRADED GRAVEL WITH SAND (GP), trace fines, olive gray, moist, dense, coarse grained gravel, fine grained sand, subangular

**Bottom of borehole at 15.5 ft.**
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

0 ft
- **SM**
  - FILL: GRAVEL (SM), with sand, with silt, trace organics, moderate brown, moist

5 ft
- **SM**
  - ALLUVIUM: SILTY SAND (SM), dark brown olive gray, moist, medium dense, very fine to fine grained, with lenses of clay, oxidation zones

10 ft
- **GC**
  - TILL: CLAYEY GRAVEL (GC), trace sand, medium brown, wet, fine to coarse grained gravel, fine grained sand, angular to subangular, iron oxide staining, weak cementation

**BEDROCK**: Highly to completely weathered, schistose rock

Bottom of borehole at 14.2 ft.
Backfilled with auger cuttings
NOTES: drilled 2.9 ft from digsafe arrow

---

**Material Description**

**0 ft**
- **Sample Type:** GM
- **Blows (N Value):** 2.0
- **Recovery %:**
- **U.S.C.S.:**
- **Graphic Log:**
- **Material:** FILL: GRAVEL WITH SILT AND SAND (GM), trace organics, moderate brown, moist

**5 ft**
- **Sample Type:** GM
- **Blows (N Value):** 6.0
- **Recovery %:**
- **U.S.C.S.:**
- **Graphic Log:**
- **Material:** ALLUVIUM: SILTY GRAVEL WITH SAND (GM), light brown, dry to moist, fine to coarse grained, medium to coarse grained gravel, angular to subangular, zones of oxidation throughout

**10 ft**
- **Sample Type:** CL
- **Blows (N Value):** 6.5
- **Recovery %:**
- **U.S.C.S.:**
- **Graphic Log:**
- **Material:** ALLUVIUM: LEAN CLAY (CL), trace sand, light brown, moist, very stiff, low plasticity, fine grained sand

**14.5 ft**
- **Sample Type:** GM
- **Blows (N Value):** 14.5
- **Recovery %:**
- **U.S.C.S.:**
- **Graphic Log:**
- **Material:** ALLUVIUM: GRAVEL WITH SILT AND SAND (GM), medium brown to olive gray, moist, fine grained, coarse grained gravel, subangular, iron oxide staining, with lenses of clay

*Bottom of borehole at 14.5 ft.*

*Backfilled with auger cuttings.*
### Boring Number BH-118

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Completed:** 8/5/16  
**Drilling Contractor:** SW Cole  
**Logging:** J. Melton  
**Checked by:** S. Keamey  
**Drilling Method:** Hollow Stem Auger  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto  

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery</th>
<th>Bore Count (N Value)</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td>FILL: GRAVEL WITH SILT AND SAND (GM), trace organics, moderate brown, moist, fine to coarse grained gravel, fine grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>100</td>
<td>50/4&quot;</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>100</td>
<td>12-14-50/3&quot;</td>
<td>TILL: GRAVEL WITH SILT AND SAND (GM), moderate brown, wet, very dense, very fine to fine grained, fine to coarse grained gravel, subangular, iron oxide staining</td>
</tr>
<tr>
<td>14.3</td>
<td>SPT</td>
<td>100</td>
<td>50/3&quot;</td>
<td>-becomes pale brownish gray, with lenses of clay, coarse grained angular gravel, moderate cementation</td>
</tr>
</tbody>
</table>

**Ground Water Level:** 3.0 ft

**Notes:** Drilled 4 ft from digsafe arrow. Backfilled with auger cuttings.

**Drilling Equipment:**
- **Equipment:** Diedrich D50
- **Hammer:** 140 lb Auto

**General Information:**
- **Client:** PAR Electrical Contractors
- **Project:** Northern Pass
- **Location:** Easton, NH
- **Drilling:** Hollow Stem Auger
- **Equipment:** Diedrich D50
- **Hammer:** 140 lb Auto

**Ground Water Level:**
- **Latitude:** 44.112152
- **Longitude:** -71.818869
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td>FILL: GRAVEL WITH SILT AND SAND (GM), trace organics, moderate brown, moist</td>
</tr>
<tr>
<td>5</td>
<td>PT</td>
<td>ORGANIC DEPOSITS: PEAT (PT), with organics, dusky brown, wet, medium stiff, very fine to fine grained, strong odor</td>
</tr>
<tr>
<td>10</td>
<td>SPT GC</td>
<td>STREAM TERRACE DEPOSITS: SANDY GRAVEL (GP-GC), trace organics, moderate grayish brown, wet, dense, very fine to fine grained, fine to coarse grained gravel, angular, with lenses of clay</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>BEDROCK: Highly weathered, granitic rock</td>
</tr>
</tbody>
</table>

**Notes:**
- Drilled 2 ft from digsafe arrow
- Backfilled with auger cuttings
**BORE HOLE LOG**

**Boring Number:** BH-120  
**Project Name:** Northern Pass  
**Project Location:** Easton, NH

**Client:** PAR Electrical Contractors  
**Project Number:** 16004

**Date Started:** 8/3/16  
**Completed:** 8/4/16

**Drilling Contractor:** SW Cole  
**Drilling Method:** SSA/Wireline Coring / NQ Size/Series 8

**Logged By:** S. Laing / J. Melton  
**Checked By:** S. Keamey

**Notes:** Drilled 2 ft from digsafe arrow point

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery % (RQD)</th>
<th>Blows (N Value)</th>
<th>U.S.C.S. Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td>100</td>
<td>50/3</td>
<td>Fill: Silty Gravel with Sand (GM)</td>
</tr>
<tr>
<td></td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>Stream Terrace Deposits: Silty Sand (SM), olive gray to olive brown, moist, fine grained sand, zones of oxidation throughout</td>
</tr>
<tr>
<td></td>
<td>RC 1</td>
<td>100 (77)</td>
<td></td>
<td>15</td>
<td>Bedrock: Fresh (I), grayish blue green (5BG 5/2), very fine to fine grained, strong (R4), Schist, weakly foliated</td>
</tr>
<tr>
<td></td>
<td>RC 2</td>
<td>100 (63)</td>
<td></td>
<td>15</td>
<td>Zone of extensive pyrite mineralization between 13.6 and 14.2 ft</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bottom of borehole at 15.0 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

**Drilling Equipment:** Diedrich D50  
**Spt Hammer:** 140 lb Auto

**Ground Water Level:**
- **Latitude:** 44.107177  
- **Longitude:** -71.819752
**BORING NUMBER BH-121**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Easton, NH  

**DATE STARTED**  8/3/16  
**COMPLETED**  8/3/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  4 in  
**LATITUDE**  44.104394  
**LONGITUDE**  -71.820177  
**GROUND WATER LEVEL:**

**LOGGED BY**  S. Laing  
**CHECKED BY**  S. Keamey  

**NOTES**
- Drilled 3.5 ft from digsafe arrow point

---

**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>72</td>
<td>25-8-7 (15)</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>6-9-23 (32)</td>
</tr>
<tr>
<td>14.6</td>
<td>SPT 3</td>
<td>100</td>
<td>36-50/1&quot;</td>
</tr>
</tbody>
</table>
| Bottom of borehole at 14.6 ft.  
Backfilled with auger cuttings

- **FILL**: SILTY SAND WITH GRAVEL (SM), olive brown, moist, fine to medium grained, fine grained gravel, subangular
- **ALLUVIUM**: WELL GRADED SAND WITH GRAVEL (SW-SM), trace silt, light brown to olive brown, moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, angular to rounded
- **-becomes dense**
- **TILL**: CLAYEY SAND (SC), olive gray, moist, very dense, low plasticity, fine grained
### GENERAL INFORMATION

- **CLIENT**: PAR Electrical Contractors
- **PROJECT NAME**: Northern Pass
- **PROJECT NUMBER**: 16004
- **PROJECT LOCATION**: Easton, NH
- **DATE STARTED**: 8/3/16
- **COMPLETED**: 8/3/16
- **GROUND ELEVATION**: NA
- **HOLE SIZE**: 4 in
- **LATITUDE**: 44.10232
- **LONGITUDE**: -71.82255
- **DRILLING CONTRACTOR**: SW Cole
- **DRILLING METHOD**: Solid Stem Auger
- **LOGGED BY**: S. Laing
- **CHECKED BY**: S. Keamey
- **NOTES**: Drilled 32 inches from digsafe arrow point

### BORING NUMBER BH-122

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>SM</td>
<td>1.8</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM)</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>6-8-10 (18)</td>
<td>SW-SM</td>
<td>STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH GRAVEL WITH SILT (SW-SM), olive to olive brown, moist, medium dense, fine grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>56</td>
<td>3-4-30 (34)</td>
<td>SP</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), black, moist, medium dense, fine grained sand, subrounded, hydrocarbon odor, hydrocarbon staining</td>
</tr>
</tbody>
</table>

Bottom of borehole at 10.5 ft.
Backfilled with bentonite and drill cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>FILL</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>72</td>
<td>11-11-13 (24)</td>
<td>11-11-13 (24)</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), dark brown (7.5YR 3/2) to dark grayish brown (2.5Y 4/2), moist, medium dense, fine grained sand</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>50/2&quot;</td>
<td>50/2&quot;</td>
<td>STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), olive brown to dark brown, fine grained gravel, fine to coarse grained sand, angular to subrounded, weathered schist fragments</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>13.0</td>
<td>13.0</td>
<td>13.0</td>
<td>BEDROCK: Highly weathered (IV), SCHIST</td>
<td></td>
</tr>
</tbody>
</table>

- Becomes fresh to slightly weathered, with quartz, biotite, and pyrite

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
### General Information

- **Client**: PAR Electrical Contractors
- **Project Name**: Northern Pass
- **Project Location**: Easton, NH
- **Date Started**: 8/3/16
- **Completed**: 8/3/16
- **Ground Elevation**: NA
- **Hole Size**: 4 in
- **Drilling Contractor**: SW Cole
- **Drilling Method**: SSA/Wireline Coring / NQ Size/Series 8
- **Logged By**: S. Laing
- **Checked By**: S. Kearney
- **Drilling Equipment**: Diedrich D50
- **SPT Hammer**: 140 lb Auto
- **Drilling Equipment**: D50
- **Drilling Method**: SSA/Wireline Coring / NQ Size/Series 8

### Logs

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SW-SM</td>
<td>50</td>
<td>3-5-3 (8)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>50</td>
<td>50/0&quot;</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>RC</td>
<td>93 (75)</td>
<td>15.0</td>
<td></td>
</tr>
</tbody>
</table>

### Material Description

- **0-5 ft**: Fill
- **5-10 ft**: SW-SM
  - Stream Terrace Deposits: Well-graded sand with silt and gravel (SW-SM), trace organics, grayish brown and dark brown, moist, loose, fine grained gravel, fine to coarse grained sand, subangular, organic odor
- **10-15 ft**: Bedrock: Highly weathered (IV), foliated blueish, dark blueish gray fine grained, Schist

### Remarks

- Drilled 1 ft from digsafe arrow point
- Bottom of borehole at 15.0 ft.
- Backfilled with auger cuttings
- Roller bit from 8.5 to 11 ft
**BORING NUMBER BH-125**

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>PAR Electrical Contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT NUMBER</td>
<td>16004</td>
</tr>
<tr>
<td>PROJECT NAME</td>
<td>Northern Pass</td>
</tr>
<tr>
<td>PROJECT LOCATION</td>
<td>Easton, NH</td>
</tr>
<tr>
<td>DATE STARTED</td>
<td>8/3/16</td>
</tr>
<tr>
<td>COMPLETED</td>
<td>8/3/16</td>
</tr>
<tr>
<td>GROUND ELEVATION</td>
<td>NA</td>
</tr>
<tr>
<td>HOLE SIZE</td>
<td>4 in</td>
</tr>
<tr>
<td>DRILLING CONTRACTOR</td>
<td>SW Cole</td>
</tr>
<tr>
<td>DRILLING METHOD</td>
<td>Hollow Stem Auger</td>
</tr>
<tr>
<td>DRILLING EQUIPMENT</td>
<td>Diedrich D50</td>
</tr>
<tr>
<td>SPT HAMMER</td>
<td>140 lb Auto</td>
</tr>
<tr>
<td>LOGGED BY</td>
<td>S. Laing</td>
</tr>
<tr>
<td>CHECKED BY</td>
<td>S. Keamey</td>
</tr>
<tr>
<td>GROUND WATER LEVEL:</td>
<td></td>
</tr>
<tr>
<td>NOTES</td>
<td>4 ft off road from digsafe arrow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), dark brown, hydrocarbon odor noted</td>
</tr>
<tr>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td>Bottom of borehole at 4.0 ft. Backfilled with bentonite and drill cuttings</td>
</tr>
</tbody>
</table>
### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT-SP-SM</td>
<td>100</td>
<td>5-7-4 (11)</td>
<td>50/5&quot;</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT-SP-SM</td>
<td>100</td>
<td>36-46-50/5&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-15.4</td>
<td>SPT-SP-SM</td>
<td>100</td>
<td></td>
<td>50/5&quot;</td>
<td></td>
</tr>
</tbody>
</table>

- **FILL: SILTY SAND WITH GRAVEL (SM)**
- **STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM)**, light brown to olive, moist, medium dense, fine grained sand
  - becomes olive to olive brown, wet, very dense, fine to medium grained sand, gravel content increases
  - becomes yellowish brown, moist, fine grained sand, with weak cementation, possible derived from granitic source

Bottom of borehole at 15.4 ft.
Backfilled with auger cuttings
**BORING NUMBER BH-128**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Woodstock, NH

**DATE STARTED**  8/1/16  
**COMPLETED**  8/1/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  4 in ID/8 in OD

**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger  
**LOGGED BY**  S. Laing  
**CHECKED BY**  S. Keamey  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>GM</td>
<td></td>
<td>FILL: SILTY GRAVEL (GM), trace sand, dark brown, moist, very loose, fine to coarse grained gravel, fine to coarse grained sand, subrounded, hydrocarbon odor noted</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>50</td>
<td></td>
<td></td>
<td>2-0-0 (0)</td>
</tr>
</tbody>
</table>

Bottom of borehole at 6.8 ft.  
Backfilled with bentonite and drill cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>61</td>
<td>2-1-11 (12)</td>
<td>SW-SM</td>
<td></td>
<td>FILL: WELL GRADED SAND (SW-SM), dark brown, moist, medium dense, fine to medium grained sand</td>
</tr>
<tr>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
<td>SW-SM</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND (SM), olive brown, wet, medium dense, fine grained sand, hydrocarbon odor at 7.2 ft</td>
</tr>
<tr>
<td>7.2</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>Bottom of borehole at 7.2 ft. Backfilled with bentonite and drill cuttings</td>
</tr>
</tbody>
</table>
NOTES  
1.5 ft off of road from arrow point

FILL: POORLY GRADED SAND WITH GRAVEL (SP), olive gray, moist, loose, fine grained sand, subrounded to rounded

STREAM TERRACE DEPOSITS: SILTY GRAVEL WITH SAND (GM), olive, moist, very dense, fine to coarse grained gravel, fine grained sand, subangular to subrounded

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), olive gray, moist, dense, fine grained sand

Bottom of borehole at 14.7 ft.  
Backfilled with auger cuttings
FILL: SILTY SAND WITH GRAVEL (SM), olive brown, moist, fine grained gravel, fine to medium grained sand, subangular

STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), olive, wet, very dense, fine to coarse grained gravel, fine to coarse grained sand, subangular

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), olive to olive brown, moist, very dense, fine to coarse grained gravel, fine grained sand, angular to subangular

-bottoms from 13 to 15 ft

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>FILL</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>10-8-4</td>
<td>SW-SM, Stream Terrace Deposits: Well Graded Sand with Gravel and Silt (SW-SM), with silt, brown to olive brown, moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>67</td>
<td>3-9-17</td>
<td>SW-SM, Stream Terrace Deposits: Sandy Clay with Gravel (CL), Olive gray, moist to wet, stiff, low plasticity, fine grained gravel, fine grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>4-5-6</td>
<td>ML, Stream Terrace Deposits: Sandy Silt (ML), Trace Clay, Stiff, Fine Grained Sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings.
FILL

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), reddish gray, moist, dense, fine grained gravel, fine to medium grained sand, subangular to subrounded

STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), olive, wet, dense, fine grained gravel, fine to coarse grained sand, subangular to subrounded

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), olive, wet, medium dense, fine grained sand

STREAM TERRACE DEPOSITS: POORLY GRADED SAND (SP), olive gray, wet, medium dense, medium to coarse grained sand

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**BORING NUMBER BH-135**

**CLIENT**: PAR Electrical Contractors  
**PROJECT NUMBER**: 16004

**DATE STARTED**: 8/1/16  
**COMPLETED**: 8/1/16

**DRILLING CONTRACTOR**: SW Cole

**LOGGED BY**: S. Laing  
**CHECKED BY**: S. Keamey

**NOTES**: 4 ft from arrow tip

**GROUND ELEVATION**: NA  
**HOLE SIZE**: 4 in ID/8 in OD

**LATITUDE**: 44.07836  
**LONGITUDE**: -71.800313

**GROUND WATER LEVEL**: NA

---

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fill</td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td>83</td>
<td>50</td>
<td></td>
<td>Alluvium: Poorly Graded Sand with Gravel (SP), light brown to olive brown, moist, very dense, fine to coarse grained gravel, fine to medium grained sand, subangular to subrounded, cobbles present</td>
</tr>
<tr>
<td>10</td>
<td>SPT 1</td>
<td>83</td>
<td>50</td>
<td></td>
<td>Alluvium: Well Graded Sand with Silt and Gravel (SW-SM), light brown to grayish brown, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>78</td>
<td>24-32-35 (67)</td>
<td></td>
<td>Alluvium: Poorly Graded Sand with Silt (SP-SM), light brown to gray, moist, loose, fine grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>3-4-5 (9)</td>
<td></td>
<td>Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: COBBLES, and sand</td>
</tr>
<tr>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH SILT (SP-SM), trace clay, trace organics, olive brown, moist, very loose, fine grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>72</td>
<td>3-2-2 (4)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), light brown to olive brown, moist, medium dense, fine grained gravel, fine to medium grained sand, subangular to subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>50</td>
<td>11-7-9 (16)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), olive brown, wet, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded to rounded</td>
</tr>
<tr>
<td>15.5</td>
<td>SPT 3</td>
<td>72</td>
<td>17-12-11 (23)</td>
<td></td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>
ORGANIC DEPOSITS: CLAYEY SAND (SC), with roots, and organics, dark brown to grayish brown, moist, very loose, fine grained sand, organic smell

- becomes olive gray to olive, with silt, moist to wet, medium dense, trace organics

ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), and clay, olive brown, wet, medium dense, fine grained sand

- becomes dense

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>33</td>
<td>SP-SM</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), brown, moist, loose, fine grained gravel, fine to coarse grained sand, angular to subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td></td>
<td>6-4-2 (6)</td>
<td>SP-SM</td>
<td>STREAM TERRACE DEPOSITS: CLAYEY SAND WITH GRAVEL (SC), olive gray, moist, medium dense, low plasticity, fine grained gravel, fine grained sand, subrounded to rounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>44</td>
<td>5-5-6 (11)</td>
<td>SC</td>
<td>STREAM TERRACE DEPOSITS: LEAN CLAY (CL), trace gravel, light brownish gray to olive gray, wet, very stiff, fine grained gravel, subrounded</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>56</td>
<td>7-7-9 (16)</td>
<td>CL</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>
FILL: POORLY GRADED SAND WITH GRAVEL (SM), with silt, light brown to brown, moist, medium dense, fine to medium grained sand, subangular

STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM), brown to olive brown, moist, medium dense, fine to medium grained sand, subrounded to rounded, black patches of organic rich sediment

- boulders from 9 to 13.5 ft

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), brownish gray to reddish gray, moist, medium dense to very dense, fine to medium grained sand, subrounded, weathered schist at bottom of sample

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SW-SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: WELL GRADED SAND WITH GRAVEL (SW-SM), with silt, brown, moist, very loose, fine grained gravel, fine to coarse grained sand, subrounded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SW-SM</td>
<td>88</td>
<td>11-50/2&quot;</td>
<td></td>
<td></td>
<td>-hydrocarbon odor noted</td>
<td></td>
</tr>
<tr>
<td>4.7</td>
<td>SPT 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>refusal at 4.7 ft.</td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 4.7 ft.
Backfilled with bentonite and drill cuttings
FILL: SILTY SAND WITH GRAVEL (SM), brownish gray to reddish gray, moist, medium dense, fine grained gravel, fine to coarse grained sand, subangular to subrounded

TILL: WELL GRADED SAND WITH GRAVEL (SW-SM), with silt, light brown to brown, moist, very dense, fine to coarse grained sand, angular to subangular

TILL: POORLY GRADED SAND WITH GRAVEL WITH SILT (SP-SM), grayish brown, moist, very dense, fine to coarse grained gravel, fine to medium grained sand, subangular, broken up cobble

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**BORING NUMBER BH-143**

**CLIENT:** PAR Electrical Contractors  
**PROJECT NUMBER:** 16004  
**PROJECT NAME:** Northern Pass  
**PROJECT LOCATION:** Woodstock, NH

**DATE STARTED:** 7/29/16  
**COMPLETED:** 7/29/16  
**GROUND ELEVATION:** NA  
**HOLE SIZE:** 4 in  
**LATITUDE:** 44.036727  
**LONGITUDE:** -71.783512

**DRILLING CONTRACTOR:** SW Cole  
**DRILLING METHOD:** Solid Stem Auger/Mud Rotary  
**DRILLING EQUIPMENT:** Diedrich D50  
**SPT HAMMER:** 140 lb Auto

**LOGGED BY:** S. Laing  
**CHECKED BY:** S. Keamey

**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), light brown to reddish brown, moist, medium dense, fine grained gravel, fine to medium grained sand, subrounded</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>78</td>
<td>9-6-6 (12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 2</td>
<td>0</td>
<td>50/1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

- Bottom of borehole at 15.0 ft.  
- Backfilled with auger cuttings  
- Roller bit from 8.6 to 15 ft

**PROJECT NAME:** Northern Pass  
**PROJECT LOCATION:** Woodstock, NH  
**CLIENT:** PAR Electrical Contractors  
**PROJECT NUMBER:** 16004  
**GROUND ELEVATION:** NA  
**HOLE SIZE:** 4 in  
**LATITUDE:** 44.036727  
**LONGITUDE:** -71.783512

**DRILLING CONTRACTOR:** SW Cole  
**DRILLING METHOD:** Solid Stem Auger/Mud Rotary  
**DRILLING EQUIPMENT:** Diedrich D50  
**SPT HAMMER:** 140 lb Auto

**LOGGED BY:** S. Laing  
**CHECKED BY:** S. Keamey

**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), light brown to reddish brown, moist, medium dense, fine grained gravel, fine to medium grained sand, subrounded</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>78</td>
<td>9-6-6 (12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 2</td>
<td>0</td>
<td>50/1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Material Description

- **Fill:** Silty sand with gravel (SM), trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, subrounded

- **Stream Terrace Deposits:** Poorly graded sand with gravel (SP), grayish brown, moist, medium dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded

- **Stream Terrace Deposits:** Boulders and cobbles

- **Stream Terrace Deposits:** Poorly graded gravel (GP), white and black and gray, coarse grained, subrounded, with some boulders

### Remarks
- Bottom of borehole at 15.0 ft.
- Backfilled with auger cuttings
- Cored through boulder from 10 to 11.5 ft
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS/ 10O (N VALUE)</th>
<th>U.S.C.S</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, angular</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>1</td>
<td>78</td>
<td>6-9-6 (15)</td>
<td>3.0</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown (7.5YR 5/3), moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
<td>auger refusal at 8 ft</td>
</tr>
<tr>
<td>10</td>
<td>RC</td>
<td>1</td>
<td>97 (60)</td>
<td></td>
<td></td>
<td></td>
<td>BEDROCk: Fresh (I), whiteish green and black, coarse grained, strong (R4) to very strong (R5), GRANITE, granular, slightly metamorphosed, minor amounts of epidote</td>
<td>Core loss from 10.8 to 11 ft -becomes slightly weathered, medium strong to strong</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15.0</td>
<td></td>
<td>Bottom of borehole at 15.0 ft. Backfilled with auger cuttings</td>
<td></td>
</tr>
<tr>
<td>DEPTH (ft)</td>
<td>SAMPLE TYPE NUMBER</td>
<td>RECOVERY %</td>
<td>BLOWS (N VALUE)</td>
<td>U.S.C.S. GRAPHIC LOG</td>
<td>MATERIAL DESCRIPTION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>------------</td>
<td>----------------</td>
<td>---------------------</td>
<td>----------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, angular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>67</td>
<td>6-15-24 (39)</td>
<td>3.0</td>
<td>TILL: SILTY SAND WITH GRAVEL (SM), olive brown, moist, dense, coarse grained gravel, fine to medium grained sand, angular, iron oxide staining</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>67</td>
<td>50/3</td>
<td>9.0</td>
<td>TILL: SANDY SILT WITH GRAVEL (ML), grayish brown, moist, hard, fine to coarse grained gravel, fine to medium grained sand, angular -boulder at 9.5 ft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>RC 1</td>
<td>71 (71)</td>
<td></td>
<td>12.2</td>
<td>BEDROCK: Fresh (I), gray and black, medium to coarse grained, strong (R4) to very strong (R5), GRANITE, biotite rich</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
### Sample Type Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>89</td>
<td>12-19-27 (46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>100</td>
<td>16-32-34 (66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.8</td>
<td>SPT 3</td>
<td>100</td>
<td>50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Material Description

- **FILL: SILTY SAND WITH GRAVEL (SM)**, grayish brown, moist, fine to coarse grained gravel, fine to medium grained sand, angular
- **TILL: SILTY SAND (SM)**, trace gravel, gray, moist, very dense, fine grained, fine grained gravel, trace coarse sand, micaceous
- **TILL: POORLY GRADED SAND WITH GRAVEL (SP)**, gray, moist, very dense, fine to coarse grained gravel, fine to medium grained sand, subrounded
- **-boulder from 11.6 to 12.8 ft**
- **TILL: SILTY SAND WITH GRAVEL (SM)**, dark gray, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular

Bottom of borehole at 14.5 ft. Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SC</td>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS: CLAYEY SAND (SC), trace organics, dark brown, moist, fine to medium grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SM</td>
<td>61</td>
<td>23-9-18 (27)</td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM), dark brown, moist, medium dense, fine to coarse grained gravel, fine to medium grained sand, angular</td>
</tr>
<tr>
<td>10</td>
<td>GP</td>
<td>100</td>
<td>50</td>
<td>TILL: POORLY GRADED GRAVEL WITH SAND (GP), brown, moist, very dense, fine to coarse grained gravel, medium to coarse grained sand, subangular, iron oxide staining</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-cobbles and boulders from 10 to 12.5 ft</td>
</tr>
<tr>
<td>15</td>
<td>SP-SM</td>
<td>100</td>
<td>43-43-44 (87)</td>
<td>TILL: POORLY GRADED SAND WITH SILT (SP-SM), gray, moist, very dense, medium to coarse grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings.
FILL: SILTY SAND WITH GRAVEL (SM), brown, fine to coarse grained gravel, fine to medium grained sand, angular

STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown, moist, medium dense, fine grained gravel, fine to coarse grained sand, subangular

TILL: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), gray, moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subangular -becomes wet, dense

TILL: CLAY WITH GRAVEL (CL), dark gray, wet, stiff, fine grained gravel, fine to medium grained sand, angular

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td>SPT 1</td>
<td>61</td>
<td>7-9-8 (17)</td>
<td>FILL: GRAVELLY POORLY GRADED SAND (SP), grayish brown, moist, fine to coarse grained gravel,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-becomes dark brown, silt content increases</td>
</tr>
<tr>
<td>5</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND (SM), grayish brown, wet, medium dense, medium to coarse grained sand</td>
</tr>
<tr>
<td>10</td>
<td>OL</td>
<td>SPT 2</td>
<td>50</td>
<td>1-2-50/4&quot;</td>
<td>ORGANIC DEPOSITS: GRAVELLY ORGANIC SOIL WITH SAND (OL), black, moist, very stiff, fine</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-boulder from 9 to 10.3 ft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-trace gravel and clay, wet, soft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-boulder from 12 to 13.5 ft</td>
</tr>
<tr>
<td>14.9</td>
<td>OL</td>
<td></td>
<td></td>
<td></td>
<td>BEDROCK: Probable bedrock</td>
</tr>
</tbody>
</table>

Bottom of borehole at 14.9 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>TYPE</th>
<th>TV</th>
<th>RECOVERY (%)</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>FILL:</strong> POORLY GRADED SAND WITH SILT (SP-SM), gray, moist, loose, medium grained sand</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>1</td>
<td>50</td>
<td>3-3-5 (8)</td>
<td></td>
<td></td>
<td><strong>ORGANIC DEPOSITS:</strong> ORGANIC SOIL (OL), black, moist, fine to medium grained sand</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>2</td>
<td>100</td>
<td>50/3&quot;</td>
<td></td>
<td></td>
<td><strong>STREAM TERRACE DEPOSITS:</strong> WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), orange and brown, wet, very dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>BEDROCK:</strong> Probable bedrock</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**
- Bottom of borehole at 15.0 ft.
- Backfilled with auger cuttings
### Project Details

**Client:** PAR Electrical Contractors  
**Boring Number:** BH-152  
**Project Name:** Northern Pass  
**Project Location:** Woodstock, NH  
**Project Number:** 16004  
**Date Started:** 7/26/16  
**Completed:** 7/26/16  
**Ground Elevation:** NA  
**Hole Size:** 4 in  
**Drilling Contractor:** SW Cole  
**Drilling Method:** Solid Stem Auger  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto  
**Logged By:** S. Kearney  
**Checked By:** S. Kearney  
**Ground Water Level:**

### Log Data

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), trace organics, grayish brown, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>47</td>
<td>2-3-50/3*</td>
<td></td>
<td></td>
<td>TILL: SILTY SAND WITH GRAVEL (SM), dark gray, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular -boulder from 5.3 to 8.6 ft</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>28</td>
<td>4-11-19 (30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPT 3</td>
<td>100</td>
<td>50/4*</td>
<td></td>
<td></td>
<td>Bottom of borehole at 14.3 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

**Bedrock:** Highly weathered (IV), orangeish white and brown, medium to coarse grained, medium strong (R3), GRANITE, moist
**BORING NUMBER BH-153**

**DATE STARTED** 7/26/16  |  **COMPLETED** 7/26/16
**DRILLING CONTRACTOR** SW Cole
**DRILLING METHOD** Solid Stem Auger
**LOGGED BY** S. Kearney  |  **CHECKED BY** S. Kearney
**DATE STARTED** 7/26/16  |  **COMPLETED** 7/26/16

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SW-SM</td>
</tr>
<tr>
<td></td>
<td>FILL: GRAVELLY WELL GRADED SAND WITH SILT (SW-SM), grayish brown, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>OL</td>
</tr>
<tr>
<td></td>
<td>ORGANIC DEPOSITS: ORGANIC SOIL WITH SAND (OL), dark brown, wet, medium dense, fine to medium grained sand, some cobbles</td>
</tr>
<tr>
<td>10</td>
<td>SM-GM</td>
</tr>
<tr>
<td></td>
<td>STREAM TERRACE DEPOSITS: COBBLES AND BOULDERS</td>
</tr>
<tr>
<td>15</td>
<td>SM-GM</td>
</tr>
<tr>
<td></td>
<td>TILL: SILTY SAND WITH GRAVEL (SM-GM), dark gray, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular</td>
</tr>
</tbody>
</table>

- gravel and cobbles at 13 ft
- highly oxidized zone

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
ORGANIC DEPOSITS: ORGANIC SOIL WITH SAND (OL), black, wet, medium dense, fine to medium grained sand, granitic cobble

TILL: SILTY SAND WITH GRAVEL (SM), gray, moist, very dense, fine grained gravel, fine grained sand, angular

TILL: Granitic cobbles

Bottom of borehole at 14.5 ft. Backfilled with auger cuttings
### BORING NUMBER BH-155

**CLIENT**: PAR Electrical Contractors  
**PROJECT NUMBER**: 16004  
**PROJECT NAME**: Northern Pass  
**PROJECT LOCATION**: Woodstock, NH

**DATE STARTED**: 7/26/16  
**COMPLETED**: 7/26/16  
**GROUND ELEVATION**: NA  
**HOLE SIZE**: 4 in

**DRILLING CONTRACTOR**: SW Cole  
**LATITUDE**: 44.023933  
**LONGITUDE**: -71.727683

**DRILLING METHOD**: Solid Stem Auger/Hollow Stem Auger  
**DRILLING EQUIPMENT**: Diedrich D50  
**SPT HAMMER**: 140 lb Auto

**LOGGED BY**: S. Kearney  
**CHECKED BY**: S. Kearney

**GROUND WATER LEVEL**:  
\[ \text{AT TIME OF DRILLING: } 8.5 \text{ ft} \]

---

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS: SANDY CLAY (SC), with gravel, trace organics, black, coarse grained gravel, fine to medium grained sand, subrounded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>GP</td>
<td></td>
<td>50/2&quot;</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED GRAVEL (GP), brownish gray, moist, very dense</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-boulders present</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SM-ML</td>
<td></td>
<td>31-41-54 (95)</td>
<td>8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TILL: SILTY SAND WITH GRAVEL (SM-ML), gray, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, angular</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-gravel content increases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.5</td>
<td>SM-ML</td>
<td></td>
<td>100 50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|            |             | Bottom of borehole at 14.5 ft.  
Backfilled with auger cuttings |

---

**NOTES**

- Backfilled with auger cuttings
- **BOILING NUMBER BH-155**
- **SAMPLE TYPE**
- **RECOVERY %**
- **BLOWS (N VALUE)**
- **U.S.C.S.**
- **GRAPHIC LOG**
- **LOG**

---

**QUANTA SUBSURFACE**  
**4708 N Barker RD**  
**Spokane Valley, WA 99027**  
**Telephone**: 509-892-9409
**BORING NUMBER BH-156**

**CLIENT**    PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**DATE STARTED**  7/25/16  
**COMPLETED**  7/25/16  
**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger  
**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney  
**PROJECT LOCATION**  Woodstock, NH  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  5.5 in  
**LATITUDE**  44.026197  
**LONGITUDE**  -71.72425  
**DRILLING EQUIPMENT**  Diedrich D50  
**SPT HAMMER**  140 lb Auto  
**GROUND WATER LEVEL**:

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS/ENG (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: CLAYEY SAND (SC), brown and black, wet, medium dense, fine to medium grained sand, with organic clay clumps</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>7-8-14 (22)</td>
<td></td>
<td></td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), brown, moist, medium dense, fine to medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>100</td>
<td>15-50</td>
<td></td>
<td></td>
<td></td>
<td>TILL: SANDY SILT WITH GRAVEL (ML), dark gray, wet, very hard, coarse grained gravel, fine to medium grained sand, angular, iron oxide staining</td>
</tr>
</tbody>
</table>
| 14.5 | SPT 3 | 0 | 50 | | | | Bottom of borehole at 14.5 ft.  
Backfilled with auger cuttings |
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, fine to coarse grained gravel, fine to medium grained sand, subangular, cobbles present</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>17</td>
<td>5-4-4</td>
<td>0.5</td>
<td>4.0</td>
<td>ORGANIC DEPOSITS: SANDY SILT (ML), trace organics, dark brown, wet, firm, fine to medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>83</td>
<td>7-50</td>
<td>1.0</td>
<td>7.0</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND (SP), gray, wet, very dense, medium grained sand, light brown, silty sand at 10 ft</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>56</td>
<td>22-20-27</td>
<td>1.0</td>
<td>15.5</td>
<td>TILL: SANDY SILT WITH GRAVEL (ML), dark gray, moist, hard, fine grained gravel, fine to coarse grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOW COUNT</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND (SP), trace gravel, trace asphalt, dark brown, moist to wet, very loose, coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>2-1-2 (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS: SANDY SILT (ML), trace organics, dark brown to black, wet, very soft, low plasticity, fine to medium grained sand, gravel present at 10 ft</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>39</td>
<td>1-1-10 (11)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP-GP), light brown, moist, very dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded - boulder present from 11.1 to 13.1 ft</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>56</td>
<td>16-50/3&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**Notes**

**Logged by**: S. Tiger  
**Checked by**: S. Keamey  
**Drilling Contractor**: SW Cole  
**Drilling Method**: Solid Stem Auger  
**Ground Water Level**:

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>FILL: POORLY GRADED SAND (SP), trace gravel, grayish brown, moist, loose, fine grained gravel, fine to medium grained sand, subangular to subrounded</td>
</tr>
<tr>
<td>5</td>
<td>ALLUVIUM: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), trace organics, moderate yellowish brown, moist, loose, fine grained gravel, fine to coarse grained sand, subangular to subrounded, micaceous</td>
</tr>
<tr>
<td>10</td>
<td>TILL: SILT WITH GRAVEL (ML), olive gray, moist, very stiff, fine to coarse grained gravel, angular to subangular, trace pyrite</td>
</tr>
<tr>
<td>15</td>
<td>-becomes hard, with sand</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 16.4 ft.**  
Backfilled with auger cuttings
**ORGANIC DEPOSITS: (OL)**

- **STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP-GP), with cobbles, and boulders, greyish brown, moist, very dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded**

**TILL: POORLY GRADED GRAVEL WITH SAND (GP), gray, moist, very dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded**

**TILL: SILTY SAND WITH GRAVEL (SM), gray, moist, very dense, fine to coarse grained gravel, fine to medium grained sand, subrounded**

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
### BORING NUMBER BH-162

**CLIENT**  PAR Electrical Contractors  
**PROJECT NAME**  Northern Pass  
**PROJECT NUMBER**  16004  
**PROJECT LOCATION**  Woodstock, NH  
**DATE STARTED**  5/27/16  
**COMPLETED**  5/27/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**LATITUDE**  44.029997  
**LONGITUDE**  -71.704391  
**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger  
**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney  
**GROUND WATER LEVEL:**  

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>ORGANIC DEPOSITS</td>
</tr>
<tr>
<td></td>
<td>SM</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), and cobbles, brown, loose, fine to coarse grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td>72</td>
<td>22-41-50 (91)</td>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), and cobbles, gray, moist, very dense, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>7.5</td>
<td>SM</td>
<td>94</td>
<td>36-42-50 (92)</td>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM), gray, moist, very dense, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td>56</td>
<td>15-33-21 (54)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 15.5       | SM          |            |                 |          |             | Bottom of borehole at 15.5 ft.  

Backfilled with auger cuttings
**Boring Number BH-164**

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Woodstock, NH  
**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Logged By:** S. Kearney  
**Checked By:** S. Kearney  
**Date Started:** 5/27/16  
**Completed:** 5/27/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in  
**Latitude:** 44.032878  
**Longitude:** -71.69814  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb  

---

**Material Description:**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>61</td>
<td>4-2-1 (3)</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ML</td>
<td></td>
<td></td>
<td>3.0</td>
<td></td>
</tr>
</tbody>
</table>

**Fill: Silty Sand (SM), trace gravel, trace organics, brown, moist, loose, fine to medium grained**

**Fill: Sandy Silt (ML), dark brown, moist, soft, fine grained, hydrocarbon odor**

Bottom of borehole at 7.7 ft.  
Backfilled with bentonite and drill cuttings.
**BORING NUMBER BH-165**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), brown, moist, medium dense, fine to medium grained, fine grained gravel</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>28</td>
<td>8-10-9 (19)</td>
<td></td>
<td></td>
<td>6.4</td>
</tr>
</tbody>
</table>

**NOTES**
- hit unmarked water line at 6.4 ft
- Bottom of borehole at 6.4 ft
- Backfilled with auger cuttings
Asphalt

FILL: Silty SAND (SM), with cobbles, rounded

ALLUVIUM

- boulders up to 1 ft in diameter

GRAVEL WITH SAND AND SILT, pale yellowish brown, dry, loose, very fine to fine grained, medium to very coarse grained gravel, angular to subangular, dry

-with oxidation zones

Bottom of Borehole at 16.5 feet
**BORING NUMBER BH-167**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NAME**  Northern Pass  
**PROJECT NUMBER**  16004  
**PROJECT LOCATION**  Woodstock, NH

**DATE STARTED**  9/27/16  **COMPLETED**  9/28/16  **GROUND ELEVATION**  NA  **HOLE SIZE**  6 in

**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  HSA/Wireline Coring / NQ Size/Series 8

**LOGGED BY**  J. Melton  **CHECKED BY**  S. Keamey

**NOTES**  Drilled at stake location

**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>50</td>
<td>15-12-11 (23)</td>
<td>4.3</td>
</tr>
<tr>
<td>10</td>
<td>78 (56)</td>
<td></td>
<td>6.0</td>
</tr>
<tr>
<td>15</td>
<td>100 (100)</td>
<td></td>
<td>7.5</td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- FILL: ORGANIC SILT (OL), with organics, dusky brown, dry, very loose, very fine grained
- ALLUVIUM: Highly to completely weathered, massive, light brown (5YR 5/6), medium to coarse grained, extremely weak granite
- BEDROCK: Highly weathered (IV) to completely weathered (V), light brown, yellowish red / light brown (5YR 5/6), medium to coarse grained, extremely weak (R0), GRANITE, with extensive oxidation
- BEDROCK: Fresh (I), light gray to medium dark gray, light gray (N7) to medium dark gray (N4), medium to coarse grained, strong (R4), GNEISS, weakly foliated, with extensive pyrite mineralization

- becomes foliated

Bottom of borehole at 15.0 ft.  
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded

ALLUVIUM: (SM), dark gray and black, wet, medium to coarse grained, highly weathered, foliated, boulders from 3 to 4 ft

BEDROCK: Slightly weathered (II), white and black, strong (R4), SCHIST, schistose foliated, biotite rich, moderately fractured

-unfractured below 9 ft

Bottom of borehole at 15.0 ft.

Backfilled with auger cuttings
### Project Information

- **Client:** PAR Electrical Contractors
- **Project Name:** Northern Pass
- **Project Location:** Woodstock, NH
- **Date Started:** 5/27/16
- **Completed:** 5/27/16
- **Ground Elevation:** NA
- **Hole Size:** 6 in
- **Drilling Contractor:** SW Cole
- **Drilling Method:** Hollow Stem Auger
- **Logging:** S. Kearney
- **Checked:** S. Kearney

### Drilling Equipment
- **Drilling Equipment:** Diedrich D50
- **SPT Hammer:** 140 lb Auto

### Ground Water Level
- **Latitude:** 44.017684
- **Longitude:** -71.683719

### General Information
- **Bottom of borehole at 15.0 ft.**
- **Backfilled with auger cuttings**

### Sample Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>GP</td>
<td>3.0</td>
<td>14-38-34 (72)</td>
<td>7.5</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED GRAVEL (GP), with boulders, and cobbles, grayish brown, moist, very dense, coarse grained gravel, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SP-SM</td>
<td>75%</td>
<td>4-2-14 (16)</td>
<td>15.0</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), brown, wet, medium dense, medium to coarse grained</td>
</tr>
<tr>
<td>15</td>
<td>SP-SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-boulders and cobbles from 14 to 15 ft</td>
</tr>
</tbody>
</table>

- **At Time of Drilling:** 7.5 ft
FILL: GRAVEL (GM), with sand, with silt, trace organics, dark yellowish brown to dark yellowish brown, moist, medium dense, very fine to fine grained, coarse grained gravel, subangular

STREAM TERRACE DEPOSITS: SILTY GRAVEL WITH SAND (GM), pale yellowish brown, moist, dense, fine to coarse grained gravel, fine to medium grained sand, subrounded

- becomes wet, medium dense

STREAM TERRACE DEPOSITS: POORLY GRADED GRAVEL (GP), trace fines, pale yellowish brown, wet, loose

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**Sample Type**

- **SM**: Silty Sand with Gravel, brown, moist, loose, fine to coarse grained gravel, fine to coarse grained sand, subrounded

- **SP**: Poorly Graded Sand (SP), with asphalt, black, moist, loose, fine to medium grained, hydrocarbon odor

**Bottom of borehole at 5.5 ft.**
Backfilled with bentonite and drill cuttings
### Boring Number BH-173

**Client:** PAR Electrical Contractors  
**Project Number:** 16004  
**Project Name:** Northern Pass  
**Project Location:** Woodstock, NH

**Date Started:** 5/26/16  
**Completed:** 5/26/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in

**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Logged By:** S. Kearney  
**Checked By:** S. Kearney

**Ground Water Level:**

**Drilling Equipment:**
- **Diedrich D50**  
- **SPT Hammer:** 140 lb Auto

**Drilling Method:** Hollow Stem Auger

**Drill Log:**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S. Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM</td>
<td></td>
<td></td>
<td>Fill: Silty Sand with Gravel (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td>SP</td>
<td>0</td>
<td>50</td>
<td>Stream Terrace Deposits: Poorly Graded Sand with Gravel (SP), grayish brown, moist, medium dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>8-14-15 (29)</td>
<td>Becomes light brown, poorly graded, medium grained, without gravel</td>
</tr>
</tbody>
</table>

**Notes:**

- Drilled at stake location
- Bottom of borehole at 15.5 ft.
- Backfilled with auger cuttings
STREAM TERRACE DEPOSITS: POORLY GRADED SAND (SP), trace gravel, brown, moist, loose, fine grained gravel, fine to medium grained sand

STREAM TERRACE DEPOSITS: POORLY GRADED GRAVEL WITH SAND (GP), grayish brown, moist, very dense, fine to coarse grained gravel, medium to coarse grained sand, boulders and cobbles present

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), grayish brown, moist, medium dense, medium grained

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>4.0</td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>78</td>
<td>5-6-10 (16)</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND (SP), trace gravel, brown, moist, medium dense, fine grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>56</td>
<td>3-2-3 (5)</td>
<td>STREAM TERRACE DEPOSITS: SILT WITH SAND (ML), trace organics, black, wet, firm, fine to medium grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>61</td>
<td>2-7-14 (21)</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, grayish brown, wet, medium dense, coarse grained gravel, medium grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
null
FILL: SILTY SAND (SM), trace gravel, trace organics, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand

-becomes very loose, silt content decreases

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), light brown, moist, medium dense, medium grained

-becomes loose, moisture content increases

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
### Boring Number BH-179

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Woodstock, NH

**Date Started:** 5/26/16  
**Completed:** 5/26/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in

**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto

**Logged By:** S. Kearney  
**Checked By:** S. Keamey

**Notes:** Drilled at stake location  
**Ground Water Level:**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>Fill: Silty Sand with Gravel (SM), orange to brown, wet, medium dense, fine to coarse grained gravel, medium to coarse grained sand, chemical odor noted</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>8-6-8 (14)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 7.1 ft.  
Backfilled with bentonite and drill cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS COUNT (N VALUE)</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>78</td>
<td>24-33-45 (78)</td>
<td>SM</td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM), tan, moist, very dense, fine to coarse grained gravel, fine grained sand, subangular</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>90</td>
<td>38-50/4*</td>
<td>SM</td>
<td>-gravel content increases, cobbles and boulders present</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>38-50</td>
<td>SM</td>
<td>-with fine to medium grained sand, silt content increases</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Boring Number BH-181

**CLIENT** PAR Electrical Contractors  
**PROJECT NUMBER** 16004  
**PROJECT NAME** Northern Pass  
**PROJECT LOCATION** Woodstock, NH  
**DATE STARTED** 5/26/16  
**COMPLETED** 5/26/16  
**GROUND ELEVATION** NA  
**HOLE SIZE** 6 in  
**LATITUDE** 43.988052  
**LONGITUDE** -71.683679  
**DRILLING CONTRACTOR** SW Cole  
**DRILLING METHOD** Hollow Stem Auger  
**LOGGED BY** S. Kearney  
**CHECKED BY** S. Kearney  
**GROUND WATER LEVEL:**  
**DRILLING EQUIPMENT** Diedrich D50  
**SPT HAMMER** 140 lb Auto  
**NOTES** contaminated soil  
**DESIGNATED CONTRACTOR** QS  
**ADDRESS** 4708 N Barker RD  
**Spokane Valley, WA 99027**  
**Telephone:** 509-892-9409  

**PROJECT NAME** Northern Pass  
**PROJECT LOCATION** Woodstock, NH  
**CLIENT** PAR Electrical Contractors  
**PROJECT NUMBER** 16004  

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), trace asphalt, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, chemical odor noted</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>9-9-9 (18)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 8.0 ft.  
Backfilled with bentonite and drill cuttings.
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP-SM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1 83</td>
<td></td>
<td>3-3-2 (5)</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, grayish brown, moist, loose, fine grained gravel, medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2 78</td>
<td></td>
<td>3-4-5 (9)</td>
<td>-gravelly zone encountered</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3 78</td>
<td></td>
<td>6-6-8 (14)</td>
<td>-becomes medium dense, fine to medium grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND (SM), trace gravel, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>89</td>
<td>5-4-5 (9)</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), grayish brown, moist, loose, fine grained gravel, medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>78</td>
<td>4-5-6 (11)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>78</td>
<td>4-5-5 (10)</td>
<td>SP-SM</td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>56</td>
<td>4-4-3 (7)</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), light brown, moist, loose, fine grained gravel, medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>89</td>
<td>3-3-4 (7)</td>
<td>-becomes grayish brown, without gravel</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>83</td>
<td>4-5-6 (11)</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>
### General Information

- **Client**: PAR Electrical Contractors
- **Project Name**: Northern Pass
- **Project Number**: 16004
- **Project Location**: Woodstock, NH
- **Date Started**: 5/25/16
- **Completed**: 5/25/16
- **Ground Elevation**: NA
- **Hole Size**: 6 in
- **Drilling Contractor**: SW Cole
- **Drilling Method**: SSA/Wireline Coring / NQ Size/Series 8
- **Logging by**: S. Kearney
- **Checked by**: S. Kearney
- **Drilling Equipment**: Diedrich D50
- **SPT Hammer**: 140 lb Auto
- **Drilling Method**: SSA/Wireline Coring / NQ Size/Series 8
- **Logging by**: S. Kearney
- **Checked by**: S. Kearney
- **Date Started**: 5/25/16
- **Completed**: 5/25/16
- **Ground Water Level**: 
- **Latitude**: 43.978168
- **Longitude**: -71.685195
- **Sample Type**: SM

### Material Description
- **FILL**: SILTY SAND (SM), trace gravel, brown, moist, loose, fine to medium grained
- **STREAM TERRACE DEPOSITS**: brown, medium to coarse grained, highly weathered, massive, medium weak gneiss with schist zones boulder
- **- boulders and cobbles present**
- **BEDROCK**: Fresh (I), dark gray, strong (R4), SCHIST, slightly fractured, foliated

### Drilling Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>3.0</td>
<td>50/5”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>20</td>
<td>50/5”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>20</td>
<td>50/5”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>RC 1</td>
<td>100 (100)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.0 ft.**
**Backfilled with auger cuttings**
### BORING NUMBER BH-186

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**DATE STARTED**  5/25/16  
**COMPLETED**  5/25/16  
**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Solid Stem Auger  
**NOTES**  drilled at stake location  

#### Material Description

<table>
<thead>
<tr>
<th>BLOW COUNTS</th>
<th>RECOVERY %</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0</strong></td>
<td></td>
<td>FILL: SILTY SAND (SM), trace gravel, dark brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>100</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), dark brown, moist, medium dense, medium to coarse grained</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>72</td>
<td>-becomes brown to orange, poorly graded, fine to coarse grained gravel, iron oxide staining, fragments of highly weathered granitic rock</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 14.8 ft.**  
**Backfilled with auger cuttings**
### Boring Number BH-188

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Woodstock, NH

**Date Started:** 6/24/16  
**Completed:** 6/24/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in  
**Latitude:** 43.97037  
**Longitude:** -71.685067

**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger/Mud Rotary  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto  
**Logged By:** J. Melton  
**Checked By:** S. Kearney  
**Drilling Method:** Hollow Stem Auger/Mud Rotary  
**Drill Contract:** SW Cole

---

### Material Description

- **GM:** FILL: GRAVEL (GM), with sand, with silt, trace organics, dusky yellowish brown, dry to damp, loose, very fine to fine grained, medium to coarse grained gravel, subangular

- **SM:** TILL: SILTY SAND (SM), moderate yellowish brown, moist, dense, very fine to fine grained, iron oxide staining

- **SM:** -becomes pale yellowish brown, with lenses of light olive gray clay

---

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
**Sample Location**: Northern Pass  
**Project Location**: Woodstock, NH

**Date Started**: 6/24/16  
**Completed**: 6/24/16

**Client**: PAR Electrical Contractors  
**Project Number**: 16004

**Ground Elevation**: NA  
**Hole Size**: 6 in

**Drilling Contractor**: SW Cole  
**Drilling Method**: HSA/Wireline Coring / NQ Size/Series 8

**Logged By**: J. Melton  
**Checked By**: S. Keamey

**Drilling Equipment**: Diedrich D50  
**SPT Hammer**: 140 lb Auto

**Drilling Method**: HSA/Wireline Coring / NQ Size/Series 8

**Ground Water Level**:

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N-value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fill: gravel (GM), with sand, with silt, trace organics, dusky brown to moderate yellowish brown, dry, loose, very fine to fine grained, medium to coarse grained gravel, angular to subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>50</td>
<td>6-3-3 (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>72</td>
<td>5-9-9 (18)</td>
<td></td>
<td></td>
<td>Stream terrace deposits: silty sand with gravel (SM), pale yellowish brown, dry, medium dense, fine grained, fine to coarse grained gravel, subangular</td>
</tr>
<tr>
<td>15</td>
<td>RC 1</td>
<td>85</td>
<td>(85)</td>
<td></td>
<td></td>
<td>Bedrock: fresh (I), medium light gray and greenish gray, medium light gray (N6) and greenish gray (5GY 6/1), medium to coarse grained, strong (R4), granite</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.0 ft.**  
**Backfilled with auger cuttings**
### Notes
- Drilled at stake location.
- Backfilled with auger cuttings at 15.5 ft.

### Material Description
- **Fill: Silty Sand with Gravel (SM)**, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded.
- **Stream Terrace Deposits: Poorly Graded Sand with Gravel (SP)**, light brown, moist, medium dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded.
- Gravel content increases.

### Sample Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>50</td>
<td>7-9-9</td>
<td>(18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>56</td>
<td>6-10-10</td>
<td>(20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>72</td>
<td>13-16-23</td>
<td>(39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom of borehole at 15.5 ft.</td>
<td>Backfilled with auger cuttings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEPTH (ft)</td>
<td>SAMPLE TYPE NUMBER</td>
<td>RECOVERY %</td>
<td>BLOWS (N VALUE)</td>
<td>U.S.C.S.</td>
<td>GRAPHIC LOG</td>
<td>MATERIAL DESCRIPTION</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------</td>
<td>-----------</td>
<td>----------------</td>
<td>---------</td>
<td>------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), light brown, moist, medium dense, medium to coarse grained</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>5-5-7 (12)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>89</td>
<td>8-9-9 (18)</td>
<td></td>
<td></td>
<td>-becomes grayish brown, fine to medium grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>83</td>
<td>8-10-12 (22)</td>
<td></td>
<td></td>
<td>-with medium to coarse grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**BORING NUMBER BH-193**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Thornton, NH  

**DATE STARTED**  6/24/16  
**COMPLETED**  6/24/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**LATITUDE**  43.957186  
**LONGITUDE**  -71.679561  
**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger  
**LOGGED BY**  J. Melton  
**CHECKED BY**  S. Keamey  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>FILL: GRAVEL (GM), with sand, with silt, trace organics, pale brown, dry, loose</td>
</tr>
<tr>
<td>5</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), grayish orange and pale yellowish brown, damp, dense, fine grained, silt lenses</td>
</tr>
<tr>
<td>10</td>
<td>-becomes moderate yellowish brown, loose</td>
</tr>
<tr>
<td>15</td>
<td>ALLUVIUM: POORLY GRADED GRAVEL (GP-GM), light brown, dry, loose, medium to very coarse grained gravel, angular to subangular, fine grained matrix</td>
</tr>
</tbody>
</table>

**SAMPLE TYPE**  | **NUMBER**  |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SPT 1</td>
<td>94</td>
</tr>
<tr>
<td>SPT 2</td>
<td>83</td>
</tr>
<tr>
<td>SPT 3</td>
<td>28</td>
</tr>
</tbody>
</table>

**SAMPLE RECOVERY**  | **U.S.C.S.**  |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15-21-27 (48)</td>
<td>2.0</td>
</tr>
<tr>
<td>4-5-4 (9)</td>
<td></td>
</tr>
<tr>
<td>7-6-5 (11)</td>
<td>13.0</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
**BORING NUMBER BH-194**

**CLIENT:** PAR Electrical Contractors  
**PROJECT NUMBER:** 16004  
**DATE STARTED:** 5/25/16  
**COMPLETED:** 5/25/16

**DRILLING CONTRACTOR:** SW Cole  
**DRILLING METHOD:** Hollow Stem Auger

**LOGGED BY:** S. Kearney  
**CHECKED BY:** S. Kearney

**PROJECT NAME:** Northern Pass  
**PROJECT LOCATION:** Thornton, NH

**GROUND ELEVATION:** NA  
**HOLE SIZE:** 6 in

**LATITUDE:** 43.954718  
**LONGITUDE:** -71.680359

**GROUND WATER LEVEL:**

- **AT TIME OF DRILLING:** 13.0ft

**GROUND ELEVATION:**

- **Drilled at stake location**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>67</td>
<td>6-11-11 (22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>72</td>
<td>6-11-14 (25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>44</td>
<td>11-13-21 (34)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **SM:** FILL: SILTY SAND (SM), trace gravel, trace organics, brown to gray, moist, loose, fine to medium grained gravel
- **SM:** STREAM TERRACE DEPOSITS: SILTY SAND (SM), tan, moist, medium dense, medium grained
- **SP:** STREAM TERRACE DEPOSITS: POORLY GRADED SAND (SP), trace gravel, brown, moist, medium dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded

- **-gravel content increases**

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
### BORING NUMBER BH-195

**CLIENT**: PAR Electrical Contractors  
**PROJECT NUMBER**: 16004  
**DATE STARTED**: 5/25/16  
**COMPLETED**: 5/25/16  
**DRILLING CONTRACTOR**: SW Cole  
**DRILLING METHOD**: Hollow Stem Auger  
**LOGGED BY**: S. Kearney  
**CHECKED BY**: S. Kearney  

**PROJECT NAME**: Northern Pass  
**PROJECT LOCATION**: Thornton, NH  
**GROUND ELEVATION**: NA  
**HOLES**: 6 in  
**LATITUDE**: 43.952331  
**LONGITUDE**: -71.681529  
**DRILLING EQUIPMENT**: Diedrich D50  
**SPT HAMMER**: 140 lb Auto  
**GROUND WATER LEVEL**: 7.0 ft

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE</th>
<th>TYPE</th>
<th>RECOVERY</th>
<th>BLOWS</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), trace organics, dark brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>67</td>
<td>27-33-41 (74)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), trace cobbles, brown to gray, moist, very dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>72</td>
<td>14-14-18 (32)</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM), brown, wet, dense, fine to coarse grained gravel, fine to medium grained sand, subangular</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>89</td>
<td>2-2-3 (5)</td>
<td></td>
<td>-becomes loose, gray, fine grained, without gravel, micaceous, wet</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. 
Backfilled with auger cuttings
FILL: SILTY SAND WITH GRAVEL (SM), trace cobbles, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, rounded

ORGANIC DEPOSITS: SANDY SILT (ML), trace organics, dark brown, moist, soft, fine to medium grained sand

ALLUVIUM: SILTY SAND (SM), trace organics, dark brown and gray, wet, very loose, fine grained gravel

- becomes tan, silt content decreases, micaceous

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
**BORING NUMBER BH-197**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**DATE STARTED**  5/24/16  
**DATE COMPLETED**  5/24/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney  
**DATE STARTED**  5/24/16  
**COMPLETED**  5/24/16  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>100</td>
<td>50/5&quot;</td>
<td>3.5</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>RC 1</td>
<td>100</td>
<td></td>
<td></td>
<td>SAPROLITE: decomposed schist</td>
</tr>
<tr>
<td>15</td>
<td>RC 1</td>
<td>100 (100)</td>
<td></td>
<td></td>
<td>BEDROCK: Fresh (I), dark gray and white, strong (R4), GNEISS, biotite rich, with schistose zone</td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

Bottom of borehole at 15.0 ft.  
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), dark brown, moist, loose, fine to medium grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>6</td>
<td>6-5-10 (15)</td>
<td>SP</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL (SP), brown, moist, medium dense, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>83</td>
<td>6-7-7 (14)</td>
<td>SM</td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), tan, moist, medium dense, fine grained</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>94</td>
<td>5-6-7 (13)</td>
<td>SM</td>
<td></td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

NOTES: drilled at stake location

CHECKED BY: S. Keamey

GROUND WATER LEVEL:
FILL: CLAYEY SAND (SC), trace gravel, trace organics, dark brown, moist, loose, fine to medium grained sand, subrounded

STREAM TERRACE DEPOSITS: SILTY SAND (SM), light brown, wet, loose, fine to medium grained gravel, coarse sand in bottom 2 inches

- granitic boulder from 7.7 to 9 ft

STREAM TERRACE DEPOSITS: POORLY GRADED SANDY GRAVEL (GP), gray, fine to coarse grained gravel, fine to coarse grained sand, subangular

STREAM TERRACE DEPOSITS: SILTY SAND (SM), gray, wet, loose, fine grained

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>39</td>
<td>2-3-1 (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>72</td>
<td>9-13-9 (22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>78</td>
<td>13-13-11 (24)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL: SILTY SAND WITH GRAVEL (SM)**, brown, moist, loose, fine to coarse grained gravel, fine to coarse grained sand, subangular
- **ORGANIC DEPOSITS: SILT (ML)**, trace organics, dark brown, moist, firm
- **STREAM TERRACE DEPOSITS: POORLY GRADED SAND (SP)**, trace gravel, grayish brown, wet, medium dense, coarse grained gravel, fine to medium grained sand, subrounded

- Gravel content decreases

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>33</td>
<td>2-2-3 (5)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>83</td>
<td>0-0-3 (3)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>78</td>
<td>10-11-10 (21)</td>
<td>SP</td>
<td></td>
</tr>
</tbody>
</table>

**Fill:** Silty sand with gravel (SM), dark brown, loose, medium grained gravel, fine to coarse grained sand, subrounded, trace plastic

- with trace organics, moist

**Alluvium:** Silty sand (SM), grayish brown, wet, very loose, fine to medium grained, micaceous

- gravel layer

**Alluvium:** Poorly graded sand with gravel (SP), grayish brown, wet, medium dense, fine to coarse grained gravel, medium to coarse grained sand, subrounded

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### BORING NUMBER BH-204

**CLIENT**  PAR Electrical Contractors  
**PROJECT NAME**  Northern Pass  
**PROJECT NUMBER**  16004  
**PROJECT LOCATION**  Thornton, NH

**DATE STARTED**  5/23/16  
**COMPLETED**  5/23/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**LATITUDE**  43.30301  
**LONGITUDE**  -71.685076  
**DRILLING CONTRACTOR**  SW Cole  
**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney  
**GROUND WATER LEVEL:**

### NOTES
- Drilled at stake location
- At time of drilling 6.5 ft

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: Silty Sand with Gravel (SM), brown, moist, loose, coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>56</td>
<td>15-10-6 (16)</td>
<td></td>
<td>SP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Stream Terrace Deposits: Poorly Graded Sand with Gravel (SP), brown and white, moist, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>78</td>
<td>3-5-7 (12)</td>
<td></td>
<td>ML</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Stream Terrace Deposits: Sandy Silt (ML), olive brown, wet, stiff, fine grained sand, stratified, iron oxide staining</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>72</td>
<td>4-9-20 (29)</td>
<td></td>
<td>SM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Stream Terrace Deposits: Silty Sand (SM), olive brown, wet, medium dense, fine grained, coarse sand and gravel in bottom 3 inches</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.5 ft.**

**Backfilled with auger cuttings**
### Boring Number BH-205

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>RECOVERY %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ML</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Material Description**

- **FILL**: Silty Sand with Gravel (SM), trace asphalt, trace organics, dusky brown, damp, very fine to fine grained, medium to very coarse grained gravel, angular to subangular

- **STREAM TERRACE DEPOSITS**: Poorly Graded Sand with Gravel (SP), very pale orange, dry, medium dense, fine to coarse grained gravel, angular to subangular, iron oxide staining

- Becomes moist

- **STREAM TERRACE DEPOSITS**: Sandy Silt (ML), light olive gray, wet, medium dense, low plasticity, very fine grained, minor zones of oxidation

---

**Notes**

- Backfilled with auger cuttings at 16.5 ft.
### General BH / TP / WELL - GINT STD US LAB.GPJ - 10/3/16 11:53 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\THORNTON, NH\NPTHOR.GPJ

#### BORING NUMBER BH-206

**CLIENT**  PAR Electrical Contractors  
**PROJECT NAME**  Northern Pass

**PROJECT NUMBER**  16004  
**PROJECT LOCATION**  Thornton, NH

**DATE STARTED**  5/23/16  
**COMPLETED**  5/23/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in

**DRILLING CONTRACTOR**  SW Cole  
**LATITUDE**  43.924391  
**LONGITUDE**  -71.685804

**DRILLING METHOD**  Hollow Stem Auger  
**SPT HAMMER**  140 lb Auto

**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney

**NOTES** drilled at stake location  
**GROUND WATER LEVEL:**  12.0 ft

---

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND (SM), trace gravel, trace organics, brown, moist, fine to medium grained</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-becomes very loose, light brown, no gravel or organics</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>2</td>
<td>56</td>
<td>1-1-1</td>
<td>SM</td>
<td></td>
<td>ORGANIC DEPOSITS: SILTY SAND (SM), trace gravel, trace organics, dark brown, wet, loose</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>3</td>
<td>67</td>
<td>3-2-2</td>
<td>SM</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), brown, wet, very loose, fine to medium grained</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>4</td>
<td>89</td>
<td>1-1-2</td>
<td>SP-SM</td>
<td></td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

---

**GROUND ELEVATION:**
- **LATITUDE:** 43.924391
- **LONGITUDE:** -71.685804
**BORING NUMBER BH-208**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Thornton, NH

**DATE STARTED**  5/23/16  
**COMPLETED**  5/23/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**DRILLING CONTRACTOR**  SW Cole  
**LATITUDE**  43.919277  
**LONGITUDE**  -71.685079  
**DRILLING METHOD**  Hollow Stem Auger  
**DRILLING EQUIPMENT**  Diedrich D50  
**SPT HAMMER**  140 lb Auto  

**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney  

**NOTES**  Drilled at stake location  
**GROUND WATER LEVEL:**  - at time of drilling  13.0 ft

---

**DEPTH (ft)** | **SAMPLE TYPE** | **RECOVERY %** | **BLOWS (N VALUE)** | **U.S.C.S.** | **GRAPHIC LOG** | **MATERIAL DESCRIPTION**
---|---|---|---|---|---|---
0 | GB 1 | | | SM | | Alluvium: Silty Sand (SM), trace organics, brown, moist, loose, fine to medium grained
5 | SPT 2 | 89 | 6-7-7 (14) | SM | | -becomes medium dense, light brown, no organics, medium to coarse grained, wet
10 | SPT 3 | 78 | 4-5-2 (7) | SP-SM | | Alluvium: Poorly Graded Sand with Silt (SP-SM), light brown, moist, loose, medium to coarse grained
15 | SPT 4 | 78 | 5-6-9 (15) | SP-SM | | -becomes medium dense, wet

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
FILL: GRAVEL (GM), with sand, with silt, trace organics, dusky yellowish brown, dry to damp, loose, very fine to fine grained, medium to coarse grained gravel, subangular

ALLUVIUM: POORLY GRADED SAND (SP), dark yellowish brown and light brown, damp, very loose, fine grained

ALLUVIUM: SILTY GRAVEL WITH SAND (GM), moderate brown, wet, dense, very fine to fine grained, medium to coarse grained gravel, subangular

-becomes moderate yellowish brown and light brown, angular to subangular gravel

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows Count (N-value)</th>
<th>U.S.C.S.</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND (SM), trace organics, brown, moist, loose, fine to medium grained</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>89</td>
<td>1-2-2 (4)</td>
<td>ML</td>
<td>ORGANIC DEPOSITS: SANDY SILT (ML), trace organics, dark brown, fine grained</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>56</td>
<td>9-13-15 (28)</td>
<td>SM</td>
<td>ALLUVIUM: SILTY SAND (SM), brown and gray, moist, loose, fine to medium grained</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>GB</td>
<td></td>
<td></td>
<td>SP</td>
<td>ALLUVIUM: POORLY GRADED SAND (SP), trace gravel, gray and brown, wet, medium dense, fine to coarse grained gravel, medium to coarse grained sand</td>
<td>could not obtain 14 inch sample due to running sands</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.0 ft.  
Backfilled with auger cuttings.
### General Information

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Thornton, NH  
**Date Started:** 6/24/16  
**Completed:** 6/24/16  
**Ground Elevation:** NA  
**Hole Size:** 4 in  
**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Logging by:** J. Melton  
**Checked by:** S. Keamy  
**Drilling Equipment:**  
- Diedrich D50  
- SPT Hammer: 140 lb Auto

### Drilling Logs

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SM</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>78</td>
<td>1-2-1 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>72</td>
<td>11-12-12 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CL</td>
<td>9.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>3-3-6 (9)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Material Description:**

- **Fill:** Gravel (GM), with sand, with silt, dark yellowish brown, dry, loose
- **Alluvium:** Silty Sand (SM), yellowish gray to pale yellowish brown, damp to moist, very loose, fine grained
- **Alluvium:** Silty Clay (CL), trace sand, pale yellowish brown, moist, very stiff, low plasticity, fine grained sand
- Becomes stiff, wet, with minor zones of oxidation

**Notes:**

- Bottom of borehole at 15.5 ft.
- Backfilled with auger cuttings
### General Information

- **Client:** PAR Electrical Contractors
- **Project Name:** Northern Pass
- **Project Number:** 16004
- **Project Location:** Thornton, NH
- **Date Started:** 6/23/16
- **Completed:** 6/23/16
- **Ground Elevation:** NA
- **Hole Size:** 4 in
- **Drilling Contractor:** SW Cole
- **Drilling Method:** Hollow Stem Auger/Mud Rotary
- **Drilling Equipment:** Diedrich D50
- **SPT Hammer:** 140 lb Auto
- **Logged By:** J. Melton
- **Checked By:** S. Kearney
- **Ground Water Level:**
  - **Latitude:** 43.903706
  - **Longitude:** -71.682422
- **Sample Type:**
  - **Number:**
  - **Recovery %:**
  - **Blows (N Value):**

### Boring Number BH-212

### Core Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td>FILL: GRAVEL (GM), with sand, with silt, trace organics, dark yellowish brown, dry, loose</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>50</td>
<td>2-1-1 (2)</td>
<td>4.0</td>
<td>ALLUVIUM: POORLY GRADED SAND (SP), moderate yellowish brown, moist, medium dense, fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>89</td>
<td>14-19-11 (30)</td>
<td>5.0</td>
<td>ALLUVIUM: ORGANIC SILT (OL), with clay, with organics, grayish brown, moist, soft, very fine grained</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>56</td>
<td>20-13-14 (27)</td>
<td>13.0</td>
<td>ALLUVIUM: SILTY CLAY (CL), trace organics, moderate yellowish brown, damp, very stiff, low plasticity, very fine grained</td>
</tr>
</tbody>
</table>

---

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Boring Number BH-213

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Thornton, NH  
**Date Started:** 5/23/16  
**Completed:** 5/23/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in  
**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto  
**Logged By:** S. Kearney  
**Checked By:** S. Kearney  
**Drilling Equipment:** N/A  

**Notes:**  
- AT TIME OF DRILLING 13.5 ft

### Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>SM</td>
<td>3.5</td>
<td>FILL: SILTY SAND (SM), brown, moist, loose, fine to medium grained</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>72</td>
<td>3-4-5 (9)</td>
<td>SM</td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), gray, moist, loose, fine grained, thinly bedded, micaceous - becomes highly oxidized</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>78</td>
<td>5-7-7 (14)</td>
<td>ML</td>
<td></td>
<td>ALLUVIUM: SILT (ML), gray, moist, stiff, non plastic - becomes medium stiff, wet, 1 inch lens of coarse sand at bottom</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>3-3-4 (7)</td>
<td></td>
<td>ML</td>
<td>15.5</td>
<td>Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

**Ground Water Level:**

**Latitude:** 43.901083  
**Longitude:** -71.682271  

**Sample Type:**

- GS: Clean, rendered, plastic, moist, silt  
- SM: Clean, moist, loose, fine to medium grained  
- ML: Gray, moist, stiff, non plastic  

**Ground Elevation:**

**Drilling Method:**

- Hollow Stem Auger  
- SPT  
- FILL: SILTY SAND (SM), brown, moist, loose, fine to medium grained  
- ALLUVIUM: SILTY SAND (SM), gray, moist, loose, fine grained, thinly bedded, micaceous - becomes highly oxidized  
- ALLUVIUM: SILT (ML), gray, moist, stiff, non plastic - becomes medium stiff, wet, 1 inch lens of coarse sand at bottom  

**Backfilled with auger cuttings**
### Boring Number BH-214

**Project Name:** Northern Pass  
**Project Location:** Thornton, NH  
**Date Started:** 5/23/16  
**Completed:** 5/23/16  
**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Logged By:** S. Kearney  
**Checked By:** S. Kearney  
**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto  
**Sample Type:** U.S.C.S.  
**Graphic Log:**

#### Material Description

- **ALLUVIUM: CLAYEY SAND (SC)**
- **ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), brown, moist, loose, medium grained**
- Becomes medium dense, medium to coarse grained
- Becomes loose, with trace fine grained gravel, wet
- Becomes medium dense, fine to medium grained sand, moist, silt content increases

**General BH / TP / WELL - GINT STD US LAB.GPJ - 10/4/16 14:15 - C:\USERS\LGSCHWIND\DESKTOP\SW-GW.GPJ**

**QS**

**4708 N Barker RD**  
**Spokane Valley, WA 99027**  
**Telephone:** 509-892-9409

**Ground Water Level:**
- **Latitude:** 43.898609  
- **Longitude:** -71.681551

**Sample Type:**
- **Number:**

**Bottom of borehole at 15.5 ft.**  
Backfilled with auger cuttings
### Boring Number BH-215

**Client:** PAR Electrical Contractors  
**Project Number:** 16004  
**Project Location:** Thornton, NH

**Date Started:** 5/27/16  
**Completed:** 5/27/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in

**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger

**Logged By:** J. Melton  
**Checked By:** S. Keamey

**Drilling Equipment:** Diedrich D50  
**SPT Hammer:** 140 lb Auto

### Sample Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery %</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SM 1</td>
<td>67</td>
<td>ALLUVIUM: SILTY SAND (SM), pale yellowish brown, moist, medium dense, very fine to fine grained, micaceous</td>
</tr>
<tr>
<td>10</td>
<td>SM 2</td>
<td>50%</td>
<td>with minor traces of poorly graded sand, boulder from 9 to 11 ft</td>
</tr>
<tr>
<td>15</td>
<td>SM 3</td>
<td>50</td>
<td>ALLUVIUM: SILTY GRAVEL WITH SAND (GM), light brown to dusky brown, wet, dense, very fine to fine grained, coarse grained gravel, angular, with gravelly sand and silty sand</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
SPT 1
SPT 2
RC 1
RC 2
SM
SM
STREAM TERRACE DEPOSITS: SILTY SAND (SM), and boulders, brown, moist, dense, very fine to fine grained, iron oxide staining, granitic boulders

-felsic rock powder, high percentage of mica

BEDROCK: Fresh (I) to slightly weathered, very light gray and gray, strong (R4), GNEISS, high percentage of mica, zone of coarse mica mineralization at 14.6'-15'

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>SPT NUMBER</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: SILTY SAND (SM), trace gravel, dark brown, moist, fine to medium grained, fine grained gravel</td>
</tr>
<tr>
<td>5</td>
<td>SM</td>
<td>100</td>
<td>SPT 1</td>
<td>1-1-2</td>
<td></td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), brown, moist, very loose, fine grained, highly oxidized zones throughout sample</td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td>89</td>
<td>SPT 2</td>
<td>4-4-4</td>
<td></td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND (SP), yellowish brown, moist, loose, fine grained, micaceous</td>
</tr>
<tr>
<td>15</td>
<td>SW</td>
<td>89</td>
<td>SPT 3</td>
<td>3-2-3</td>
<td></td>
<td></td>
<td>ALLUVIUM: WELL GRADED SAND WITH GRAVEL (SW), pale yellowish brown to light brown, moist, loose, fine to coarse grained gravel, fine grained sand, subangular</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
**BORING NUMBER BH-219**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Thornton, NH  
**DATE STARTED**  5/26/16  
**COMPLETED**  5/26/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**LATITUDE**  43.88725  
**LONGITUDE**  -71.672328  
**DRILLING CONTRACTOR**  SW Cole  
**LOGGED BY**  J. Melton  
**CHECKED BY**  S. Kearney  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>BLOW COUNTS</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SP-SM</td>
<td>3-3-4 (7)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP-SM</td>
<td>3-5-6 (11)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SP-SM</td>
<td>5-7-7 (14)</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL:** (SM), brown, moist, loose
- **ALLUVIUM:** POORLY GRADED SAND WITH SILT (SP-SM), pale yellowish brown and light brown, moist, loose, fine to medium grained
- becomes medium dense

**Bottom of borehole at 15.5 ft.**

Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND (SM), brown, moist, loose, fine to medium grained</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SW</td>
<td>5-7-8 (15)</td>
<td>STREAM TERRACE DEPOSITS: WELL GRADED SAND WITH GRAVEL (SW), pale yellowish brown, moist, medium dense, fine grained, fine grained gravel, subrounded</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td>5-5-6 (11)</td>
<td>-becomes light brown and pale brown, without gravel</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td>8-7-8 (15)</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), light brown, moist, medium dense, coarse grained gravel, fine grained sand, subangular</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**
- drilled at stake location
- Bottom of borehole at 15.5 ft.
- Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>ML</td>
<td>ALLUVIUM: SANDY SILT (ML), pale yellowish brown, moist, stiff, very fine to fine grained, iron oxide staining</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>5-7-6 (13)</td>
<td>ML</td>
<td>-becomes very stiff</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>20-42-13 (55)</td>
<td>SP-SM</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), yellowish orange, moist, very dense, fine grained, contact with schistose boulder/cobble in SPT sample</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>8-11-13 (24)</td>
<td>SP-SM</td>
<td>-becomes medium dense</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft. Backfilled with auger cuttings
STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), light brown, moist, loose, fine to coarse grained gravel, fine to coarse grained sand

STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH SILT (SP-SM), pale yellowish brown, moist, medium dense, fine to medium grained

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL (SP), dark yellowish orange, moist, loose, fine grained gravel, fine grained sand</td>
<td>SP</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>4-4-5 (9)</td>
<td>-becomes light brown to dark yellowish orange, medium dense, with subangular gravel</td>
<td>SP</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>50-0</td>
<td>-cobbles within a poorly graded sand matrix at 9 ft</td>
<td>SP</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>6-6-7 (13)</td>
<td>ALLUVIUM: SILTY SAND (SM), pale yellowish brown to yellowish gray, moist, medium dense, very fine to fine grained, laminated</td>
<td>SM</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Boring Number BH-225

**Client**: PAR Electrical Contractors  
**Project Number**: 16004  
**Project Name**: Northern Pass  
**Project Location**: Thornton, NH  
**Date Started**: 5/26/16  
**Completed**: 5/26/16  
**Drilling Contractor**: SW Cole  
**Drilling Method**: Hollow Stem Auger  
**Logged By**: J. Melton  
**Checked By**: S. Keamey

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Blow Count (N Value)</th>
<th>U.S.C.S. Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td>Fill: Silty Sand (SM), brown, moist, loose, fine to medium grained</td>
</tr>
<tr>
<td>2-2-3</td>
<td>SM</td>
<td>2.0</td>
<td></td>
<td>Alluvium: Silty Sand (SM), light brown to dark yellowish orange, moist, loose, fine grained, lenses of silt throughout</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>2-2-3 (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>5-7-8 (15)</td>
<td></td>
<td>Alluvium: Poorly Graded Sand (SP), yellowish brown, wet, medium dense, fine grained</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>5-7-20 (27)</td>
<td></td>
<td>Alluvium: Well Graded Sand with Gravel (SW), light brown to dark yellowish orange, wet, medium dense, medium to coarse grained gravel, fine grained sand, subangular, granitic gravel</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings  

**Notes**: Drilled at stake location  

**Ground Elevation**: NA  
**Hole Size**: 6 in  
**Latitude**: 43.873466  
**Longitude**: -71.663005  
**Drilling Equipment**: Diedrich D50  
**SPT Hammer**: 140 lb Auto  
**Ground Water Level**:  

**At Time of Drilling**: 8.5 ft
**BORING NUMBER BH-226**

**DATE STARTED** 5/26/16  
**COMPLETED** 5/26/16  
**GROUND ELEVATION** NA  
**HOLE SIZE** 6 in  
**LATITUDE** 43.871339  
**LONGITUDE** -71.665427  

**LOGGED BY** J. Melton  
**CHECKED BY** S. Keamey  

**NOTES** drilled at stake location  

---

**DEPTH** (ft) | **SAMPLE TYPE NUMBER** | **BLOW COUNTS** (N VALUE) | **U. S. S.** | **GRAPHIC LOG** | **MATERIAL DESCRIPTION**
--- | --- | --- | --- | --- | ---
0 | | | | | FILL: SILTY SAND (SM), trace gravel, brown, moist, loose, fine to medium grained, fine grained gravel
5 | SPT 1 | 5-5-7 (12) | | | ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), yellowish brown to light brown, moist, medium dense, fine grained
10 | SPT 2 | 0-0-0 (0) | | | 

- becomes very loose, wet

15 | SPT 3 | 7-12-14 (26) | | | 

- becomes medium dense, with granitic gravels

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
**BORING NUMBER BH-227**

**CLIENT** PAR Electrical Contractors

**PROJECT NUMBER** 16004

**PROJECT NAME** Northern Pass

**PROJECT LOCATION** Thornton, NH

**DATE STARTED** 5/26/16  **COMPLETED** 5/26/16

**GROUND ELEVATION** NA  **HOLE SIZE** 6 in

**DRILLING CONTRACTOR** SW Cole

**DRILLING METHOD** Hollow Stem Auger

**LOGGED BY** J. Melton  **CHECKED BY** S. Keamey

**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>2.0</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM)</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>2-3-2 (5)</td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL (SP), yellowish brown to light brown, moist, loose, fine grained gravel, fine grained sand, angular</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>4-4-4 (8)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>1-0-0 (0)</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

**GROUND ELEVATION AT TIME OF DRILLING** 13.5 ft
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUES)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>89</td>
<td>8-12-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>83</td>
<td>4-4-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>6-8-11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL: GRAVEL (GM), with sand, with silt, trace organics, dark yellowish brown, dry, loose, medium to coarse grained gravel, angular**
- **ALLUVIUM: SILTY SAND WITH GRAVEL (SM), pale yellowish orange and light brown, dry, medium dense, fine grained, fine grained gravel, subangular**
- **ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), moderate yellowish brown and pale yellowish brown, moist, medium dense, fine grained**

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
FILL: POORLY GRADED SAND WITH GRAVEL (SP), and silt, pale yellowish brown, moist, medium dense, coarse grained gravel, fine grained sand, subangular, silt lenses

ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), pale yellowish brown, moist, medium dense, fine grained sand

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>BLOW COUNTS</th>
<th>U.S.C.S. GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SM</td>
<td>7-8-9 (17)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td>13-14-12 (26)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SM</td>
<td>9-11-12 (23)</td>
<td></td>
</tr>
</tbody>
</table>

- **FILL: SILTY SAND WITH GRAVEL (SM)**, yellowish brown, wet, medium dense, coarse grained gravel, fine grained sand, angular, iron oxide staining

- **STREAM TERRACE DEPOSITS: SILTY SAND WITH GRAVEL (SM)**, yellowish brown, moist, medium dense, fine grained, fine grained gravel, subrounded

- **STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP)**, pale yellowish brown, wet, medium dense, medium grained gravel, fine grained sand, angular

- **STREAM TERRACE DEPOSITS: SILTY SAND (SM)**, pale yellowish brown, wet, medium dense, fine grained

---

**NOTES**
- Drilled at stake location
- Backfilled with auger cuttings

**Ground Water Level:**
- **LATITUDE:** 43.857131
- **LONGITUDE:** -71.667562

**Ground Elevation:**
- **NA**

**Drilling Method:** Hollow Stem Auger

**Drilling Equipment:**
- **Diedrich D50**
- **SPT Hammer:** 140 lb Auto

**Date Started:** 5/25/16
**Completed:** 5/25/16

**Client:** PAR Electrical Contractors
**Project Name:** Northern Pass
**Project Location:** Campton, NH

**Project Number:** 16004
**Boring Number:** BH-231

**Sample Type:** Drilled at stake location
**Sample Number:**

---

**QS**
4708 N Barker RD
Spokane Valley, WA 99027
Telephone: 509-892-9409
**BORING NUMBER BH-232**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**DATE STARTED**  5/25/16  
**COMPLETED**  5/25/16  
**PROJECT LOCATION**  Campton, NH  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger  
**LOGGED BY**  J. Melton  
**CHECKED BY**  S. Keamey  
**GROUND WATER LEVEL:**  At time of drilling 13.0 ft  
**AT TIME OF DRILLING**  13.0 ft

---

**Sample Type**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Blows Count</th>
<th>U.S.C.S. Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP-SM</td>
<td></td>
<td></td>
<td>Alluvium: Poorly Graded Sand with Silt (SP-SM), light brown to pale orange, moist, medium dense, fine grained</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>5-8-11 (19)</td>
<td>SP-SM</td>
<td>Alluvium: Poorly Graded Sand with Silt (SP-SM), light brown to pale orange, moist, medium dense, fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>5-7-8 (15)</td>
<td>ML</td>
<td>Alluvium: Sandy Silt (ML), pale yellowish brown to dark yellowish orange, wet, stiff, very fine grained, iron oxide staining</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>5-5-7 (12)</td>
<td>ML</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
<tr>
<td>Depth (ft)</td>
<td>Sample Type</td>
<td>U.S.C.S. Graphic Log</td>
<td>Material Description</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>SP</td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), brown, moist, loose, coarse grained gravel, fine grained sand, subangular</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>4-4-3 (7)</td>
<td>ORGANIC DEPOSITS: GRAVELLY ORGANIC SOIL (OL), grayish brown, wet, medium stiff, very fine grained, high silt content</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>1-1-4 (5)</td>
<td>ALLUVIUM: SANDY SILT (ML), brown, wet, stiff, very fine grained, granitic gravel and cobbles at end of sample</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>3-10-5 (15)</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
<td></td>
</tr>
</tbody>
</table>
### Boring Number BH-234

**Client**: PAR Electrical Contractors  
**Project Name**: Northern Pass  
**Project Number**: 16004  
**Project Location**: Campton, NH

**Date Started**: 5/27/16  
**Completed**: 5/27/16  
**Ground Elevation**: NA  
**Hole Size**: 6 in

**Drilling Contractor**: SW Cole  
**Drilling Method**: Hollow Stem Auger  
**Logged By**: J. Melton  
**Checked By**: S. Kearney

**Notes**:  
At Time of Drilling: 10.0ft  

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td>28</td>
<td>4-37-50 (87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td>100</td>
<td>2-4-5 (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>ML</td>
<td>100</td>
<td>2-3-4 (7)</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ML</td>
<td>100</td>
<td></td>
<td>15.5</td>
<td></td>
</tr>
</tbody>
</table>

**Material Description**:

- **Glaciofluvial**: Poorly Graded Sand with Gravel (SP), with silt, light brown to grayish brown, moist, dense, coarse to very coarse grained gravel, fine grained sand, angular, lenses of silt material
- **Glaciofluvial**: Silt (ML), with clay, yellowish brown, wet, stiff, medium plasticity, very fine grained, iron oxide staining
- Becomes medium stiff, pale yellowish brown

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
GLACIOFLUVIAL: POORLY GRADED SAND WITH SILT (SP-SM), dark orange, moist, medium dense, fine grained

-with fine to coarse angular gravel

- becomes wet

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLER TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>GM</td>
<td></td>
<td><strong>FILL: GRAVEL (GM),</strong> with sand, with silt, trace organics, moderate yellowish brown, moist, loose, very fine to fine grained, fine to coarse grained gravel, subangular</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>50</td>
<td>13-4-5 (9)</td>
<td>GM</td>
<td></td>
<td><strong>TILL: SILTY GRAVEL WITH SAND,</strong> olive gray, moist, very dense, fine to coarse grained gravel, fine grained sand, subangular, with boulders and cobbles</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>0</td>
<td>50/1&quot;</td>
<td>GM</td>
<td>15.5</td>
<td>-with subangular, schistose, gravel, silt content increases</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>64</td>
<td>33-36-50/2&quot;</td>
<td>GM</td>
<td>15.2</td>
<td>-becomes light olive gray, dense, wet, angular gravel</td>
<td></td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.2 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>TYPE NUMBER</th>
<th>RECOVERY % (ROD)</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>2-7-4 (11)</td>
<td>GM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>RC 1</td>
<td>95 (94)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>RC 2</td>
<td>100 (99)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FILL:** GRAVEL (GM), with sand, with silt, trace asphalt, dark yellowish brown, damp, loose, very fine to fine grained, fine to coarse grained gravel, subangular

**BEDROCK:** Fresh (I) to slightly weathered (II), light gray (N7) to medium dark gray (N4), medium to coarse grained, strong (R4), GRANITE, with minor zones of oxidation, moderate pyrite mineralization

- without oxidation or mineralization

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

- **FILL**: SILTY SAND WITH GRAVEL (SM), brown, moist, loose, fine grained gravel, fine to medium grained sand, angular

- **TILL**: SILTY SAND WITH GRAVEL (SM), brown, moist, dense, coarse grained gravel, fine grained sand

- **BEDROCK**: Completely weathered (V), white (N9) and white / yellowish gray (5Y 8/1), very weak (R1), GRANITE, minor zones of oxidation

- **BEDROCK**: Fresh (I) to slightly weathered, yellowish red (5YR 5/6) and very pale brown (10YR 8/2), medium strong (R3), hornblende granite with zones of concentrated mineralization below 11 ft

  - Elongated hornblende crystals from 13-14.8 ft

**Bottom of borehole at 15.0 ft.**

**Backfilled with auger cuttings**
### Boring Number BH-239

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Campton, NH

**Date Started:** 5/24/16  
**Completed:** 5/24/16  
**Ground Elevation:** NA  
**Hole Size:** 6 in  
**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Logged By:** J. Melton  
**Checked By:** S. Kearney

**Drilling Equipment:**  
- **Drilling Equipment:** Diedrich D50  
- **SPT Hammer:** 140 lb Auto

**Notes:** Drilled at stake location

**Depth (ft)** | **Sample Type** | **BLOW COUNTS (N VALUE)** | **U.S.C.S. MATERIAL DESCRIPTION**
---|---|---|---
0 | SM | 2.0 | FILL: SILTY SAND (SM), trace gravel, brown, moist, loose, fine grained, fine grained gravel
5 | SP | 8-9-9 (18) | TILL: POORLY GRADED SAND (SP), light brown, moist, medium dense, fine grained
10 | ML | 8.0 | TILL: SANDY SILT (ML), light olive brown to dark yellow, moist, very fine to fine grained
15 | ML | 15.0 | -boulders and cobbles from 13.5 to 15 ft

**Ground Water Level:**
- **Latitude:** 43.83552  
- **Longitude:** -71.658971

**Sample Type:**
- **Number:**

**Ground Elevations:**
- **Drillling Equipment:**
  - **Diedrich D50**
  - **SPT Hammer:** 140 lb Auto

**Hole Size:** 6 in

**Project Name:** Northern Pass  
**Project Location:** Campton, NH  
**Client:** PAR Electrical Contractors  
**Project Number:** 16004

**General BH / TP / WELL - GINT STD US LAB.GPJ - 10/3/16 11:28 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\CAMPTON, NH\NP CAMPTON.GPJ**

**QS**
- **Address:** 4708 N Barker RD  
  Spokane Valley, WA 99027  
  Telephone: 509-892-9409
**Material Description**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Blow Counts</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ML</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ML</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>ML</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>OL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GLACIOLACUSTRINE: SANDY SILT (ML), light olive brown to dusky yellow, moist, stiff, very fine to fine grained, iron oxide staining**

**-becomes soft, laminated bedding**

**GLACIOLACUSTRINE: ORGANIC SILT (OL), trace organics, dusky yellowish brown, moist, medium stiff, very fine to fine grained**

Bottom of borehole at 16.5 ft. 
Backfilled with auger cuttings
## BORING NUMBER BH-241

### General Information
- **CLIENT**: PAR Electrical Contractors
- **PROJECT NUMBER**: 16004
- **PROJECT NAME**: Northern Pass
- **PROJECT LOCATION**: Campton, NH
- **DATE STARTED**: 5/24/16
- **COMPLETED**: 5/24/16
- **GROUND ELEVATION**: NA
- **HOLE SIZE**: 4 in
- **LATITUDE**: 43.830317
- **LONGITUDE**: -71.661102
- **DRILLING CONTRACTOR**: SW Cole
- **LOGGED BY**: J. Melton
- **CHECKED BY**: S. Keamey
- **DATE STARTED**: 5/24/16
- **COMPLETED**: 5/24/16
- **GROUND WATER LEVEL**:

### Drilling Details
- **DRILLING METHOD**: Hollow Stem Auger
- **DRILLING EQUIPMENT**: Diedrich D50
- **SPT HAMMER**: 140 lb Auto
- **DRILLING METHOD**: Hollow Stem Auger

### Sample Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td><strong>FILL</strong>: SILTY SAND WITH GRAVEL (SM), trace organics, dark brown, moist, very loose, coarse to very coarse grained gravel, fine grained sand, angular</td>
</tr>
<tr>
<td>5</td>
<td>SPT-SP-SM</td>
<td>4-4-5 (9)</td>
<td></td>
<td></td>
<td><strong>ALLUVIUM</strong>: POORLY GRADED SAND WITH SILT (SP-SM), light brown, moist, medium dense, fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT-SP-SM</td>
<td>5-6-6 (12)</td>
<td></td>
<td></td>
<td>-schistose boulders and cobbles from 13 to 15 ft</td>
</tr>
<tr>
<td>15</td>
<td>SPT-SP-SM</td>
<td>50/0°</td>
<td></td>
<td></td>
<td>Bottom of borehole at 15.0 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

**NOTES**
- Drilled at stake location.
### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>GM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>3-4-4 (8)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>100</td>
<td>3-5-5 (10)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>6-8-9 (17)</td>
<td>SP-SM</td>
<td></td>
</tr>
</tbody>
</table>

- **FILL**: GRAVELLY SAND (GM), and silt, trace organics, dark yellowish brown, dry, loose, very fine to fine grained
- **ALLUVIUM**: POORLY GRADED SAND WITH SILT (SP-SM), pale orange, dry, loose, fine grained
- Becomes moist
- Becomes medium dense, silt content increases

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### Boring Number BH-244

**Client:** PAR Electrical Contractors  
**Project Name:** Northern Pass  
**Project Number:** 16004  
**Project Location:** Campton, NH

**Date Started:** 6/21/16  
**Completed:** 6/21/16  
**Ground Elevation:** NA  
**Hole Size:** 4 in

**Drilling Contractor:** SW Cole  
**Drilling Method:** Hollow Stem Auger  
**Logged By:** J. Melton  
**Checked By:** S. Keamey

**Notes:** Drilled at stake location

### Material Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>B.S. Count</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>72</td>
<td>4-13-10 (23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>89</td>
<td>8-10-9 (19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.5</td>
<td>SPT 3</td>
<td>100</td>
<td>7-14-17 (31)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fill:** Sandy gravel with silt (GM), trace asphalt, dark yellowish brown, moist, medium dense, medium to coarse grained gravel, very fine to fine grained sand, subangular

- Becomes light greenish gray, medium grained gravel, weakly cemented, without asphalt

**Stream Terrace Deposits:** Poorly Graded Gravel with Sand (GP), yellowish gray, moist, medium dense, fine grained gravel, fine to medium grained sand, subrounded

- Lenses of yellowish gray silty clay

**Bottom of borehole at 15.5 ft.**  
**Backfilled with auger cuttings**
**BORING NUMBER BH-245**

**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Campton, NH

**DATE STARTED**  6/21/16  
**COMPLETED**  6/21/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  4 in

**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger  

**LOGGED BY**  J. Melton  
**CHECKED BY**  S. Keamey  
**GROUNDS WATER LEVEL:**

**NOTES**  Drilled at stake location

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>BLOWS (N VALUE)</th>
<th>RECOVERY %</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td></td>
<td>Fill: Poorly graded sand with gravel (SP), light brown, moist, medium dense, fine to coarse grained gravel, fine grained sand, subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>10-8-7</td>
<td>72</td>
<td>SP</td>
<td>5.0</td>
<td>Alluvium: Poorly graded sand (SP), trace silt, yellowish gray, moist, loose, fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>2-2-1</td>
<td>50</td>
<td>GM</td>
<td>8.0</td>
<td>Alluvium: Sandy gravel with silt (GM), dark yellowish brown, moist, very loose, medium to coarse grained gravel, very fine to fine grained sand, subangular</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>3-4-5</td>
<td>56</td>
<td>CL</td>
<td>12.5</td>
<td>Alluvium: Silty clay (CL), light olive gray, moist, stiff, very fine grained, iron oxide staining</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

**FILL: ASPHALT**
- FILL: GRAVEL (GW), with sand, with silt, dark yellowish orange, dry, dense, fine grained, fine to coarse grained gravel, angular to subangular, iron oxide staining

**ALLUVIUM: SILTY SAND WITH GRAVEL (SM)**
- moderate yellowish brown, damp, medium dense, fine grained, fine to coarse grained gravel, subangular, iron oxide staining

- becomes stratified, with 0.25 inch layers of dark yellowish brown siltly sand with trace clay

Bottom of borehole at 16.5 ft.
Backfilled with auger cuttings
**GROUND ELEVATION:** NA  
**HOLE SIZE:** 6 in  
**DRILLING METHOD:** Hollow Stem Auger  
**LOGGED BY:** J. Melton  
**CHECKED BY:** S. Kearney  
**DRILLING CONTRACTOR:** SW Cole  
**DATE STARTED:** 6/21/16  
**COMPLETED:** 6/21/16  
**LATITUDE:** 43.814372  
**LONGITUDE:** -71.663772  
**GROUND WATER LEVEL:**

**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GM</td>
<td></td>
<td></td>
<td>1.0</td>
<td>FILL: SANDY GRAVEL WITH SILT (GM), trace organics, loose, medium to coarse grained gravel, very fine to fine grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>67</td>
<td>23-28-26 (54)</td>
<td>SM</td>
<td>STREAM TERRACE DEPOSITS: SILTY SAND (SM), yellowish brown, moist, dense, very fine to fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>78</td>
<td>12-13-14 (27)</td>
<td>SM</td>
<td>-becomes medium dense, with medium grained, angular gravel</td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>89</td>
<td>11-22-24 (46)</td>
<td>SM</td>
<td>-becomes dense, with medium to coarse grained, sub angular gravel</td>
</tr>
</tbody>
</table>

**NOTES:** Drilled at stake location.  
**BACKFILLED WITH AUGER CUTTINGS:**

Bottom of borehole at 15.5 ft.
### Material Description

- **Fill:** Poorly Graded Sand (SP), yellowish brown to dark yellowish orange, moist, loose, fine grained
- **Stream Terrace Deposits:** Poorly Graded Sand with Silt (SP-SM), yellowish brown, moist, loose, fine grained
- **Stream Terrace Deposits:** Completely to highly weathered, white-light gray and light brown, extremely weak, granitic boulder
  - Zone of cobbles and boulders
- **Stream Terrace Deposits:** Silty Sand (SM), light brown, wet, medium dense, fine grained

__Backfilled with auger cuttings__
ALLUVIUM: POORLY GRADED SAND WITH GRAVEL (SP), trace organics, brown, moist, very loose, coarse grained gravel, fine grained sand, subangular

- no gravel or organics

TILL: SILTY SAND WITH GRAVEL (SM), yellowish brown to dark yellowish brown, moist, medium dense, coarse to very coarse grained gravel, fine grained sand

TILL: BOULDERS, pale blue, iron oxide staining, highly to completely weathered, fine grained, very weak, foliated

-boulders from 15 to 15.2 ft, with zones of oxidation and clay

Bottom of borehole at 15.2 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SP</td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), trace organics, dark brown, moist, loose, coarse to very coarse grained gravel, fine grained sand, angular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>50</td>
<td>1-3-22 (25)</td>
<td>SP</td>
<td>STREAM TERRACE DEPOSITS: POORLY GRADED SAND WITH GRAVEL (SP), light brown, moist, medium dense, fine to medium grained, fine grained gravel, subrounded</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>83</td>
<td>22-19-17 (36)</td>
<td>ML</td>
<td>STREAM TERRACE DEPOSITS: SANDY SILT (ML), yellowish brown, wet, hard, very fine grained</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>100</td>
<td>50/4&quot;</td>
<td></td>
<td>STREAM TERRACE DEPOSITS: BOULDERS, grayish white and light brown, highly weathered, massive, extremely weak granite with zones of argilic alteration -becomes completely to highly weathered</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.0 ft.
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

- **FILL: POORLY GRADED SAND WITH GRAVEL (SP), trace organics, brown, wet, very loose, coarse to very coarse grained gravel, fine grained sand, angular, lenses of silt material, wet**

- **-loose, moist** Grayish white and light brown, highly to moderately weathered, very weak, medium to coarse grained, massive granitic boulder

- **-becomes extremely weak, completely to highly weathered granite, argillic alteration**

- **Silty SAND WITH GRAVEL (SM), reddish brown, wet, very dense, coarse to very coarse grained gravel, fine grained sand, rounded, granitic gravels, wet**
## Material Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>44</td>
<td>6-6-6 (12)</td>
<td>GM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>39</td>
<td>2-3-4 (7)</td>
<td>GP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>3-3-3 (6)</td>
<td>CL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **GM**: Fill: Sandy Gravel with Silt (GM), trace organics, dry, loose, medium to coarse grained gravel
- **GP**: Alluvium: Poorly Graded Gravel with Sand (GP), yellowish brown, wet, loose, medium to coarse grained gravel, fine grained sand, subangular
- **CL**: Glaciolacustrine: Silty Clay (CL), light olive gray, wet, medium stiff, low plasticity, fine grained sand
  - Zones of oxidation throughout

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
 клиент PAR Electrical Contractors

Проектовий номер 16004

Назва проекту Northern Pass

Місцезнаходження Plymouth, NH

Дата початку 6/20/16

Дата закінчення 6/20/16

Підземний рівень не визначений (NA)

Розмір отвору 4 дюйми

Подрядчик SW Cole

Метод буріння Пустотелій ушкоджувачі

Експлуатаційна обладнання Diedrich D50

Насіння товщини 140 фунтів Авто

Записаний J. Melton

Оглядуваний S. Keam

Змістів попередні значення

Виробничий номер BH-255

Глибина (фут) 0

Тип пробы GM

Відносна збагаченість 50

Взяття проб 17-21-29 (50)

Опис грунту Наповнення: Пічок і глиняний пісок (GM), рослинне, сухий, густий, середній до крупняний пісок, субанголь

Глибина 5,0 футів

Тип пробы GM

Відносна збагаченість 72

Взяття проб 22-27-30 (57)

Опис грунту Струмовий терасовий дозор: Пічок і глиняний пісок (GM), рослині, жовтувато-коричневі, вологі, густі, середній до крупняний пісок, субанголь

Глибина 10,0 футів

Тип пробы GM

Відносна збагаченість 0

Взяття проб 50/1°

Опис грунту -підпливка піщаних гравітів і середніх гравітів

Глибина 15,0 футів

Вниз до скінчення отвору 15,0 футів.

Залишки армічних вирізанних зір
### Material Description

- **Fill:** Sandy gravel with silt, with silt, trace organics, grayish brown, moist, medium to coarse grained gravel, fine grained sand, angular.
  - Sample: SP-SM
  - Depth: 5 ft
- **Alluvium:** Poorly graded sand with silt (SP-SM), trace organics, yellowish brown, moist, very loose, fine grained.
  - Sample: SP-SM
  - Depth: 10 ft
- **Till:** Sandy gravel with silt (GM), yellowish brown, wet, very dense, medium to coarse grained gravel, very fine to fine grained sand, subangular.
  - Sample: GM
  - Depth: 15 ft

**Notes:**
- Backfilled with auger cuttings
- Bottom of borehole at 15.5 ft
GB
1
SPT
2
SPT
3
SPT
4
2-2-2
(4)
2-1-3
(4)
9-11-10
(21)
83
83
83
89
FILL: POORLY GRADED SAND WITH GRAVEL (SP), trace organics, brown to dark brown, moist, loose, medium grained gravel, fine grained sand, subangular, lensed, silt lenses

SM
3.0
ALLUVIUM: SILTY SAND (SM), dark yellowish orange, moist, very loose, fine grained

SP
ALLUVIUM: POORLY GRADED SAND (SP), grayish orange, moist, very loose, fine grained

SP
-becomes loose

SM
ALLUVIUM: SILTY SAND (SM), yellowish gray, moist, medium dense, fine grained

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
### BORING NUMBER BH-259

**CLIENT** PAR Electrical Contractors  
**PROJECT NAME** Northern Pass  
**PROJECT NUMBER** 16004  
**PROJECT LOCATION** Easton, NH

**DATE STARTED** 6/20/16  
**COMPLETED** 6/20/16  
**GROUND ELEVATION** NA  
**HOLE SIZE** 6 in

**DRILLING CONTRACTOR** SW Cole  
**DRILLING METHOD** Hollow Stem Auger  
**DRILLING EQUIPMENT** Diedrich D50  
**SPT HAMMER** 140 lb Auto

**LOGGED BY** J. Melton  
**CHECKED BY** S. Kearney  
**GROUND WATER LEVEL:** ![at time of drilling](13.5 ft)

---

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>83</td>
<td>2-3-4 (7)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>100</td>
<td>9-16-39 (55)</td>
<td>ML</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>100</td>
<td>19-50-31 (81)</td>
<td>SM</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL:** SILTY SAND WITH GRAVEL (SM), trace organics, trace roots, grayish brown, moist, loose, fine to medium grained, coarse grained gravel, subangular.

- **ALLUVIUM:** SANDY SILT (ML), dark yellowish orange, moist, medium stiff, fine grained, micaceous.

- **ALLUVIUM:** SILTY SAND (SM), grayish brown, moist, dense, fine grained, with granitic cobbles.

- **ALLUVIUM:** slight to moderately weathered, very pale orange (10YR 8/2) and light brown (5YR 5/6), medium to coarse grained, medium weak, massive, granitic boulder.

- Becomes completely to highly weathered, extremely to very weak.

---

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SP</td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), olive gray, moist, very loose, medium to coarse grained gravel, fine to medium grained sand, subangular, lensed, silt lenses</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>100</td>
<td>2-1-2 (3)</td>
<td>SP</td>
<td>4.5</td>
<td>GLACIOLACustrine: SANDY SILT (ML), light olive brown to dark yellow, wet, soft, very fine to fine grained, iron oxide staining</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>100</td>
<td>3-4-6 (10)</td>
<td>ML</td>
<td></td>
<td>-becomes stiff, pale yellowish brown to light greenish brown, increase in oxidation zones</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>100</td>
<td>50-50/1&quot;</td>
<td>SM</td>
<td></td>
<td>GLACIOLACustrine: Silty Sand (SM), gray to grayish brown, wet, very dense, fine grained</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.0 ft.**
Backfilled with auger cuttings
### General BH / TP / Well - GINT STD US LAB.GPJ - 10/3/16 17:11 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\PLYMOUTH, NH\NPPLYM.GPJ

**Boring Number BH-261**

**Project Name**: Northern Pass  
**Project Location**: Plymouth, NH  
**Client**: PAR Electrical Contractors

**Date Started**: 5/21/16  
**Completed**: 5/21/16  
**Ground Elevation**: NA  
**Hole Size**: 6 in  
**Drilling Contractor**: SW Cole  
**Drilling Method**: Hollow Stem Auger  
**Drilling Equipment**: Diedrich D50  
**SPT Hammer**: 140 lb Auto

**Notes**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blow Count (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>100</td>
<td>2-1-1 (2)</td>
<td>SP-SM</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH SILT (SP-SM), trace organics, yellowish brown, moist, very loose, fine to medium grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>100</td>
<td>1-1-1 (2)</td>
<td>SP-SM</td>
<td></td>
<td>-becomes dark yellowish brown, higher percentage of organics, wet</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>89</td>
<td>3-4-4 (8)</td>
<td>SP-SM</td>
<td></td>
<td>-lens of coarse sand from 14-14.5 ft</td>
</tr>
</tbody>
</table>

- **Bottom of borehole at 15.5 ft.**  
- **Backfilled with auger cuttings**

**Ground Water Level**:  
- **Latitude**: 43.781941  
- **Longitude**: -71.674072

**Sample Type**: FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics  
**U.S.C.S.**: FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics

**Client**

**PAR Electrical Contractors**

**Ground Water Level**:  
- **Latitude**: 43.781941  
- **Longitude**: -71.674072

**Sample Type**: FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics  
**U.S.C.S.**: FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics

**General BH / TP / Well - GINT STD US LAB.GPJ - 10/3/16 17:11 - C:\USERS\LGSCHWIND\DESKTOP\PROJECTS\NORTHERN PASS NH\NORTHERN PASS TRENCH COMPLETED LOGS\PLYMOUTH, NH\NPPLYM.GPJ**

**Sample Type**: FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics  
**U.S.C.S.**: FILL: SILTY SAND (SM), and asphalt, trace organics, brown, moist, loose, coarse grained gravel, fine to medium grained sand, angular, trace organics
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS/ (N VALUE)</th>
<th>U.S.C.S.</th>
<th>LOG TYPE</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), trace organics, and silt, yellowish brown, moist, loose, coarse grained gravel, medium grained sand, subangular, lensed, lenses of silt</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>2</td>
<td>100</td>
<td>4-4-5 (9)</td>
<td></td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), grayish brown, moist, loose, fine grained, stratified</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>3</td>
<td>100</td>
<td>4-4-5 (9)</td>
<td></td>
<td></td>
<td>-increase in silt content, wet</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>4</td>
<td>100</td>
<td>3-4-6 (10)</td>
<td></td>
<td></td>
<td>-becomes medium dense</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SP</td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), yellowish brown, wet, loose, medium grained gravel, medium to coarse grained sand, subangular</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>83</td>
<td>1-2-5 (7)</td>
<td>SP</td>
<td>ALLUVIUM: SILTY SAND (SM), grayish brown, moist, loose, fine to medium grained</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>-becomes medium dense, fine grained</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>100</td>
<td>5-7-8 (15)</td>
<td>SM</td>
<td>-becomes loose, micaceous</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>100</td>
<td>5-4-5 (9)</td>
<td>SM</td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>
### Material Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>GB</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>GB</td>
<td></td>
<td>3-1-2</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SM</td>
<td></td>
<td>2-2-2</td>
<td>OL</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SM</td>
<td></td>
<td>5-7-7</td>
<td>SM</td>
<td></td>
</tr>
</tbody>
</table>

**FILL:** SILTY SAND (SM), trace gravel, trace organics, brown, moist, loose, fine to medium grained, fine grained gravel

**ORGANIC DEPOSITS:** ORGANIC SILT (OL), dark brown, moist, soft, very fine grained, organic silt

**ALLUVIUM:** SILTY SAND WITH GRAVEL (SM), dark yellowish orange, moist, loose, medium to coarse grained gravel, fine to medium grained sand, subangular

-becomes medium dense, grayish brown, fine to medium grained sand without gravel

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY % (ROD)</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SPT 1</td>
<td>89</td>
<td>4-5-6 (11)</td>
<td>SP</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>67</td>
<td>17-24-50/3*</td>
<td>SP</td>
</tr>
<tr>
<td>10</td>
<td>RC 1</td>
<td>90 (54)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL: ASPHALT**
- **FILL: POORLY GRADED SAND WITH GRAVEL AND SILT (SP),** moderate brown to light brown, dry, loose, fine to coarse grained gravel, fine to coarse grained sand, subangular to subrounded

- **ALLUVIUM: POORLY GRADED SAND WITH SILT (SP),** trace gravel, moderate brown to moderate reddish orange, dry, medium dense, fine to coarse grained gravel, fine to coarse grained sand, subangular to subrounded

- Becomes very dense, increase in silt and gravel content

- **BEDROCK:** Fresh (I) to slightly weathered (II), grayish black (N2) and very light gray (N8), fine to coarse grained, strong (R4), GNEISS, foliated, with zones of garnet, pyroxene mineralization, and chlorite alteration

Bottom of borehole at 16.5 ft.
Backfilled with auger cuttings
### BORING NUMBER BH-268

**CLIENT** PAR Electrical Contractors  
**PROJECT NAME** Northern Pass  
**PROJECT NUMBER** 16004  
**DATE STARTED** 9/14/16  
**DATE COMPLETED** 9/14/16  
**GROUND ELEVATION** NA  
**HOLE SIZE** 4 in  
**DRILLING CONTRACTOR** SW Cole  
**DRILLING METHOD** Solid Stem Auger  
**LOGGED BY** S. Tiger  
**CHECKED BY** S. Keamey  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>BLOW COUNTS (N VALUE)</th>
<th>RECOVERY %</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP</td>
<td>0.3</td>
<td></td>
<td>FILL: ASPHALT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FILL: POORLY GRADED SAND WITH GRAVEL (SP), reddish brown / moderate brown (5YR 4/4), moist, loose, fine grained gravel, fine to medium grained sand, subangular to subrounded</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SP</td>
<td>4.0</td>
<td></td>
<td>ALLUVIUM: POORLY GRADED SAND WITH GRAVEL (SP), dark grayish brown (10YR 4/2), moist, medium dense, fine to coarse grained gravel, fine to medium grained sand, subangular to subrounded, interbedded with medium to coarse grained sand</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SP</td>
<td>16.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPT 1</td>
<td>58</td>
<td>8-14-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPT 2</td>
<td>54</td>
<td>10-9-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPT 3</td>
<td>50</td>
<td>11-37-37</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Becomes very dense, increase in silt content, with coarse, angular to subangular gravel

Bottom of borehole at 16.5 ft.  
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

- **FILL: ASPHALT**
- **FILL: POORLY GRADED SILTY SAND WITH GRAVEL (SP), reddish brown (5YR 4/4), moist, loose, fine grained gravel, fine to medium grained sand, subangular to subrounded**
- **GLACIOLACUSTRINE: SILT (ML), gray (5Y 6/1), moist, medium stiff, low plasticity**

-with fine grained sand, and trace, fine grained gravel, becomes stiff

-with clay and mottled oxidation staining

Bottom of borehole at 16.5 ft.
Backfilled with auger cuttings
### General Information

**Client**: PAR Electrical Contractors  
**Project Name**: Northern Pass  
**Project Number**: 16004  
**Project Location**: Plymouth, NH

**Date Started**: 9/1/16  
**Completed**: 9/1/16  
**Ground Elevation**: NA  
**Hole Size**: 2.25 in

**Drilling Contractor**: SW Cole  
**Drilling Method**: Solid Stem Auger  
**Drilling Equipment**: Acker  
**SPT Hammer**: 140 lb Auto

**Logged By**: T. Vernon  
**Checked By**: S. Keamey

**Ground Water Level**:

**Latitude**: 43.754132  
**Longitude**: -71.687767

---

### Material Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>U.S.C.S.</th>
<th>Recovery</th>
<th>Blows (N Value)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 1</td>
<td>67</td>
<td>8-17-14 (31)</td>
<td>FILL: ASPHALT</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 2</td>
<td>61</td>
<td>4-6-8 (14)</td>
<td>FILL: CONCRETE</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 3</td>
<td>67</td>
<td>3-6-8 (14)</td>
<td>FILL: POORLY GRADED SAND WITH SILT (SM), and gravel, grayish red, moist, dense, fine to medium grained, coarse grained gravel, angular</td>
<td></td>
</tr>
</tbody>
</table>

**Glaciolacustrine**: Clayey Sand (SC), moderate olive brown, moist, stiff, low plasticity, fine grained

**Glaciolacustrine**: Lean Clay (CL), moderate olive brown, moist to wet, medium dense, medium plasticity

---

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td>100</td>
<td>4-16-5(21)</td>
<td>GP</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>33</td>
<td>4-16-5(21)</td>
<td>GP</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>100</td>
<td>28-18-14(32)</td>
<td>ML</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>100</td>
<td>4-1-2(3)</td>
<td>ML</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL:** POORLY GRADED GRAVEL WITH SAND (GP), trace boulders, trace organics, brown, moist, loose, fine grained gravel, fine to medium grained sand, angular

- becomes medium dense

- **GLACIOLACUSTRINE:** SANDY SILT (ML), pale green and dark yellow, moist, dense, stratified, hydrocarbon odor noted, iron oxide staining

- fine grained, hydrocarbon odor noted, 5 inch lens of dry sand, moist

---

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
SMALLUVIUM: SILTY SAND WITH GRAVEL (SM), light brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded

BEDROCK: Fresh (I), medium dark gray (N4), fine to medium grained, very strong (R5), SCHIST, weak foliation, unfractured

-5 inch felsic dike

BEDROCK: Fresh (I), white (N9) and dark greenish gray (5G 4/1), coarse grained, very strong (R5), GRANITE, slightly fractured

-silicified zone from 11 to 11.4 ft

BEDROCK: Fresh (I), medium dark gray (N4), fine to medium grained, very strong (R5), SCHIST, weak foliation, unfractured

Bottom of borehole at 16.0 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>44</td>
<td>2-1-1 (2)</td>
<td>ML</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>89</td>
<td>4-6-7 (13)</td>
<td>ML</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>89</td>
<td>5-15-16 (31)</td>
<td>SP</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **FILL:** SILTY SAND WITH GRAVEL (SM), trace asphalt, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded
- **GLACIOLACUSTRINE:** SANDY SILT (ML), trace organics, brown, moist, very soft, fine grained sand
- Becomes stiff, gray, stratified, wet, without organics
- **GLACIOLACUSTRINE:** POORLY GRADED SAND (SP), trace gravel, orange, moist, dense, fine grained gravel, fine to medium grained sand, iron oxide staining

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**BORING NUMBER BH-274**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**PROJECT LOCATION**  Plymouth, NH

**DATE STARTED**  5/18/16  
**COMPLETED**  5/18/16  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in

**DRILLING CONTRACTOR**  SW Cole  
**DRILLING METHOD**  Hollow Stem Auger/Wireline Coring / NQ Size/Series  
**DRILLING EQUIPMENT**  Diedrich D50  
**SPT HAMMER**  140 lb Auto

**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Kearney  
**GROUND WATER LEVEL:**

**NOTES**  drilled 1' east of pavement edge

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>TILL: SILTY SAND (SM), trace gravel, trace cobbles, light brown, moist, loose, fine to medium grained, fine to coarse grained gravel</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>78</td>
<td>6-10-11 (21)</td>
<td>SM</td>
<td></td>
<td>-becomes medium dense, fine grained, with trace gravel, iron oxide staining, wet</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>67</td>
<td>4-6-9 (15)</td>
<td>SM</td>
<td></td>
<td>-fine to medium grained sand, coarse grained angular gravel</td>
</tr>
<tr>
<td>15</td>
<td>RC 1</td>
<td>100 (100)</td>
<td></td>
<td>RC</td>
<td></td>
<td>BEDROCK: Fresh (I), white and black, very strong (R5), GRANITE, quartz and biotite rich</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.4 ft.  
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

1. **FILL:** SILTY SAND (SM), and gravel, trace organics, brown, moist, loose, fine to coarse grained gravel, fine to coarse grained sand, subrounded

2. -becomes very loose, grayish brown to orange, mottled, fine grained, silty sand

3. **ALLUVIUM:** SILTY SAND (SM), grayish brown to orange, wet, very loose, fine grained, stratified, iron oxide staining

4. -encountered cobbles at 12 ft

5. -becomes medium dense, with fine to coarse grained subangular gravel

---

**NOTES:** Drilled at stake location.
**BORING NUMBER BH-276**

**CLIENT** PAR Electrical Contractors  
**PROJECT NAME** Northern Pass

**PROJECT NUMBER** 16004  
**PROJECT LOCATION** Plymouth, NH

**DATE STARTED** 5/18/16  
**COMPLETED** 5/18/16  
**GROUND ELEVATION** NA  
**HOLE SIZE** 6 in

**DRILLING CONTRACTOR** SW Cole  
**DRILLING METHODS** Hollow Stem Auger

**LOGGED BY** S. Kearney  
**CHECKED BY** S. Kearney  
**GROUND WATER LEVEL:**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS/VALUE</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), light brown, moist, loose, fine grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>89</td>
<td>2-2-2 (4)</td>
<td>ML</td>
<td>4.5</td>
<td>ORGANIC DEPOSITS: SANDY SILT (ML), and sand, trace organics, black, moist, soft, fine grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>67</td>
<td>2-2-1 (3)</td>
<td>SM</td>
<td>6.0</td>
<td>ALLUVIUM: SILTY SAND (SM), brown, moist, very loose, fine grained sand</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>100</td>
<td>1-1-1 (2)</td>
<td>SM</td>
<td>15.5</td>
<td>-becomes grayish brown to orange, stratified, iron oxide staining, silt content increases, wet</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.  
Backfilled with auger cuttings
**NOTES**

- Drilled 4' west of stake location

**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S. MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td></td>
<td></td>
<td>ALLUVIUM: POORLY GRADED GRAVEL WITH SAND (GP), brown, moist, loose, fine grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>67</td>
<td>6-5-3 (8)</td>
<td>ALLUVIUM: SILTY SAND (SM), trace organics, orangeish brown, moist, loose, fine to medium grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>50</td>
<td>2-3-3 (6)</td>
<td>-becomes loose, gravel content decreases, iron oxide staining</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>78</td>
<td>2-1-3 (4)</td>
<td>-organic content increases, fine to coarse grained sand in spoon tip</td>
</tr>
</tbody>
</table>

**Bottom of borehole at 15.5 ft.**

**Backfilled with auger cuttings**
**BORING NUMBER BH-279**

**CLIENT**  PAR Electrical Contractors  
**PROJECT NUMBER**  16004  
**PROJECT NAME**  Northern Pass  
**DATE STARTED**  5/16/16  
**COMPLETED**  5/16/16  
**DRILLING CONTRACTOR**  SW Cole  
**GROUND ELEVATION**  NA  
**HOLE SIZE**  6 in  
**LATITUDE**  43.731144  
**LONGITUDE**  -71.675103  
**DRILLING METHOD**  Hollow Stem Auger  
**DRILLING EQUIPMENT**  Diedrich D50  
**SPT HAMMER**  140 lb Auto  
**LOGGED BY**  S. Kearney  
**CHECKED BY**  S. Keamey  

**NOTES**  drilled at survey stake

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
<th>MATERIAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), dark brown, fine to coarse grained gravel, fine to medium grained sand, 4 inches of gravel base</td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>2</td>
<td>89</td>
<td>3-5-5</td>
<td>(10)</td>
<td>SM</td>
<td>-becomes moist, medium dense, orangeish brown, without gravel, iron oxide staining</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>3</td>
<td>100</td>
<td>10-19-27</td>
<td>(46)</td>
<td>SM</td>
<td>TILL: SILTY SAND (SM), trace gravel, light gray to orange, moist, very dense, fine grained gravel, fine grained sand, subrounded, iron oxide staining, thinly stratified</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>4</td>
<td>89</td>
<td>23-50-50</td>
<td>(100)</td>
<td>SM</td>
<td>-becomes dark gray to brown, with gravel and cobbles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bottom of borehole at 15.5 ft. Backfilled with auger cuttings</td>
</tr>
</tbody>
</table>

**GROUND WATER LEVEL:**
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery%</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>3.0</td>
<td></td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), trace asphalt, brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subrounded</td>
</tr>
<tr>
<td>5</td>
<td>GB</td>
<td>78</td>
<td>3-5-10</td>
<td>SP-SM</td>
<td></td>
<td>TILL: POORLY GRADED SAND WITH SILT (SP-SM), orangeish brown, moist, medium dense, fine grained sand</td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>72</td>
<td>5-10-11</td>
<td>ML</td>
<td></td>
<td>TILL: SANDY SILT (ML), trace cobbles, gray to orange, moist, very stiff, fine grained sand, cobbles up to 2 inches</td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>78</td>
<td>8-8-9</td>
<td>SM</td>
<td></td>
<td>TILL: SILTY SAND (SM), gray to orange, wet, medium dense, fine grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type Number</th>
<th>U.S.C.S.</th>
<th>Blows Count (N Value)</th>
<th>Recovery %</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td>GB</td>
<td></td>
<td></td>
<td>0.0</td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), trace organics, brown, moist, loose, fine grained gravel, fine to medium grained sand</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>SM</td>
<td>3-7-7 (14)</td>
<td>89</td>
<td>3.0</td>
<td>GLACIOlacustrine: SILTY SAND (SM), grayish brown and orange, medium dense, fine grained gravel, mottled, thinly stratified</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>SM</td>
<td>3-4-5 (9)</td>
<td>78</td>
<td>10.5</td>
<td>-becomes loose, wet, silt content increases</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>ML</td>
<td>5-7-6 (13)</td>
<td>89</td>
<td>15.5</td>
<td>GLACIOlacustrine: SANDY SILT (ML), grayish brown, wet, stiff, fine grained sand</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
GLACIOLACUSTRINE: SILTY SAND WITH GRAVEL (SM), dark brown, moist, loose, fine to coarse grained gravel, fine to medium grained sand, subangular

- becomes light gray to orange, thinly stratified, iron oxide staining, micaceous

- becomes medium dense, tan to orange, weak stratification, silt content decreases

- becomes gray to orange, stratified, silt content increases

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows/Value</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB 1</td>
<td></td>
<td></td>
<td>SM</td>
<td></td>
<td>FILL: SILTY SAND WITH GRAVEL (SM), trace asphalt, dark brown, moist, loose, fine to coarse grained</td>
</tr>
<tr>
<td>5</td>
<td>SPT 2</td>
<td>78</td>
<td>1-1-1 (2)</td>
<td>ML</td>
<td></td>
<td>ORGANIC DEPOSITS: SILT WITH SAND (ML), trace organics, dark brown, moist, soft, fine to medium grained sand, grades to orange brown in spoon tip</td>
</tr>
<tr>
<td>10</td>
<td>SPT 3</td>
<td>100</td>
<td>4-6-5 (11)</td>
<td>SM</td>
<td></td>
<td>ALLUVIUM: SILTY SAND (SM), brown to light gray, moist, medium dense, fine grained sand, lensed, 1 inch thick sand medium to coarse grained sand lens</td>
</tr>
<tr>
<td>15</td>
<td>SPT 4</td>
<td>100</td>
<td>4-3-5 (8)</td>
<td>SM</td>
<td></td>
<td>-becomes loose, light brown, fine to medium grained</td>
</tr>
</tbody>
</table>

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
**MATERIAL DESCRIPTION**

- **FILL:** POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, trace organics, brown, moist, loose, fine to medium grained sand
- **GLACIOLACUSTRINE:** SILT (ML), orangeish brown, moist, soft, mottled
- **GLACIOLACUSTRINE:** POORLY GRADED SAND WITH SILT (SP-SM), brown, moist, loose, fine to medium grained sand
  - becomes medium dense, grayish brown, medium to coarse grained sand lenses

**Drilling Details**

- **Drilled at survey stake**
- **Logged by:** S. Kearney
- **Checked by:** S. Kearney

**Project Information**

- **Client:** PAR Electrical Contractors
- **Project Name:** Northern Pass
- **Project Location:** Plymouth, NH
- **Drilling Method:** Hollow Stem Auger
- **Drilling Contractor:** SW Cole
- **Drilling Equipment:** Diedrich D50 SPT Hammer 140 lb Auto
- **Date Started:** 5/16/16
- **Completed:** 5/16/16
- **Ground Elevation:** NA
- **Ground Water Level:**
  - **Latitude:** 43.714565
  - **Longitude:** -71.659359

**Sample Log**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Recovery %</th>
<th>Blows (N Value)</th>
<th>U.S.C.S.</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB 1</td>
<td></td>
<td></td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>SPT 2</td>
<td>94</td>
<td>2-1-1 (2)</td>
<td>ML</td>
<td></td>
</tr>
<tr>
<td>SPT 3</td>
<td>72</td>
<td>4-3-5 (8)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>SPT 4</td>
<td>100</td>
<td>5-5-5 (10)</td>
<td>SP-SM</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

- Bottom of borehole at 15.5 ft.
- Backfilled with auger cuttings
<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>SAMPLE TYPE</th>
<th>NUMBER</th>
<th>RECOVERY %</th>
<th>BLOWS (N VALUE)</th>
<th>U.S.C.S.</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>GB</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SPT</td>
<td>2</td>
<td>78</td>
<td>2-2-3 (5)</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SPT</td>
<td>3</td>
<td>28</td>
<td>4-5-6 (11)</td>
<td>SP-SM</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SPT</td>
<td>4</td>
<td>67</td>
<td>5-6-8 (14)</td>
<td>SP-SM</td>
<td></td>
</tr>
</tbody>
</table>

**MATERIAL DESCRIPTION**

- **ORGANIC DEPOSITS: SILTY SAND (SM), trace organics, black**
- **GLACIOLACUSTRINE: POORLY GRADED SAND WITH SILT (SP-SM), brown, loose, medium grained sand, becomes gray in spoon tip**
- **becomes medium dense, medium to coarse grained gravel in spoon tip**
- **becomes grayish brown**

Bottom of borehole at 15.5 ft.
Backfilled with auger cuttings
BH-112: 9.6 ft – 14.6 ft
BH-120: 9.7 ft – 15 ft
BH-217: 10 ft – 15 ft
BH-238: 11 ft – 15 ft

BH-145: 10 ft – 15 ft
BH-146: 12.2 ft – 15 ft
BH-197: 7.6 ft – 15 ft
BH-267: 11.5 ft – 16.5 ft
BH-189: 13 ft – 15 ft
BH-185: 11.3 ft – 15 ft
BH-124: 11 ft – 15 ft
BH-237: 6 ft – 15 ft
BH-167: 5 ft – 15 ft

BH-168: 3.7 ft – 15 ft
BH-272: 3 ft – 16 ft
BH-274: 13.6 – 15.4 ft
ATTACHMENT B

Thermal Resistivity Test Results
June 30, 2016

Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on thirty-three (33) undisturbed tube samples of native soil received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the tube samples were tested ‘as-is’. A series of thermal resistivity measurements were made in stages with moisture content ranging from the ‘as-received’ to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in Figures 1 to 6.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-168, S1 @ 4.0'-5.5'</td>
<td>Silty sand with gravel</td>
<td>78 315</td>
<td>33</td>
<td>77</td>
</tr>
<tr>
<td>BH-169, S2 @ 4.0'-5.5'</td>
<td>Poorly graded gravel</td>
<td>141 167</td>
<td>1</td>
<td>116</td>
</tr>
<tr>
<td>BH-174, S1 @ 4.0'-5.5'</td>
<td>Sandy gravel</td>
<td>60 103</td>
<td>1</td>
<td>121</td>
</tr>
<tr>
<td>BH-175, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>72 188</td>
<td>6</td>
<td>107</td>
</tr>
<tr>
<td>BH-177, S1 @ 4.0'-5.5'</td>
<td>Silty sand with gravel</td>
<td>52 158</td>
<td>6</td>
<td>104</td>
</tr>
<tr>
<td>BH-178, S1 @ 4.0'-5.5'</td>
<td>Silty sand</td>
<td>82 248</td>
<td>8</td>
<td>101</td>
</tr>
<tr>
<td>BH-179, S1 @ 4.0'-5.5'</td>
<td>Silty sand with gravel</td>
<td>62 193</td>
<td>14</td>
<td>107</td>
</tr>
</tbody>
</table>
## Sample ID, Description, Thermal Resistivity, Moisture Content and Density

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C·cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-180, S1 @ 4.0'-5.5'</td>
<td>Silty sand with gravel</td>
<td>68</td>
<td>6</td>
<td>93</td>
</tr>
<tr>
<td>BH-181, S1 @ 4.0'-5.5'</td>
<td>Silty sand with gravel</td>
<td>62</td>
<td>6</td>
<td>95</td>
</tr>
<tr>
<td>BH-182, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>74</td>
<td>5</td>
<td>96</td>
</tr>
<tr>
<td>BH-183, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>92</td>
<td>2</td>
<td>107</td>
</tr>
<tr>
<td>BH-184, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>68</td>
<td>5</td>
<td>93</td>
</tr>
<tr>
<td>BH-186, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>54</td>
<td>10</td>
<td>91</td>
</tr>
<tr>
<td>BH-189, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>82</td>
<td>3</td>
<td>112</td>
</tr>
<tr>
<td>BH-191, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>107</td>
<td>3</td>
<td>105</td>
</tr>
<tr>
<td>BH-194, S1 @ 4.0'-5.5'</td>
<td>Silty sand</td>
<td>82</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>BH-195, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>64</td>
<td>15</td>
<td>101</td>
</tr>
<tr>
<td>BH-196, S1 @ 4.0'-5.5'</td>
<td>Sandy silt</td>
<td>87</td>
<td>41</td>
<td>74</td>
</tr>
<tr>
<td>BH-197, S1 @ 4.0'-5.5'</td>
<td>Silty sand with gravel</td>
<td>50</td>
<td>7</td>
<td>120</td>
</tr>
<tr>
<td>BH-215, S1 @ 4.0'-5.5'</td>
<td>Silty sand</td>
<td>78</td>
<td>6</td>
<td>102</td>
</tr>
<tr>
<td>BH-217, S1 @ 4.0'-5.5'</td>
<td>Silty sand</td>
<td>41</td>
<td>19</td>
<td>93</td>
</tr>
<tr>
<td>BH-218, S1 @ 4.0'-5.5'</td>
<td>Silty sand</td>
<td>88</td>
<td>16</td>
<td>79</td>
</tr>
<tr>
<td>BH-219, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>64</td>
<td>5</td>
<td>98</td>
</tr>
<tr>
<td>BH-220, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>74</td>
<td>16</td>
<td>85</td>
</tr>
<tr>
<td>BH-221, S1 @ 4.0'-5.5'</td>
<td>Sandy silt</td>
<td>74</td>
<td>32</td>
<td>78</td>
</tr>
<tr>
<td>BH-223, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>64</td>
<td>3</td>
<td>103</td>
</tr>
<tr>
<td>BH-224, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>68</td>
<td>4</td>
<td>102</td>
</tr>
</tbody>
</table>
Sample ID, Description, Thermal Resistivity, Moisture Content and Density

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-225, S1 @ 4.0'-5.5'</td>
<td>Silty sand</td>
<td>94 As-rcvd 367 Dry</td>
<td>12</td>
<td>79</td>
</tr>
<tr>
<td>BH-226, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>84 As-rcvd 281 Dry</td>
<td>9</td>
<td>95</td>
</tr>
<tr>
<td>BH-227, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>88 As-rcvd 302 Dry</td>
<td>11</td>
<td>89</td>
</tr>
<tr>
<td>BH-229, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>94 As-rcvd 180 Dry</td>
<td>4</td>
<td>99</td>
</tr>
<tr>
<td>BH-232, S1 @ 4.0'-5.5'</td>
<td>Poorly graded sand</td>
<td>98 As-rcvd 194 Dry</td>
<td>4</td>
<td>95</td>
</tr>
<tr>
<td>BH-240, S1 @ 4.0'-5.5'</td>
<td>Sandy silt</td>
<td>71 As-rcvd 294 Dry</td>
<td>14</td>
<td>88</td>
</tr>
</tbody>
</table>

**Comments:**

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

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

**Geotherm USA**

Nimesh Patel

**Please Note:** All samples will be disposed of after 5 days from date of report.
THERMAL DRYOUT CURVES

Native Soil
- BH-168, S1 @ 4.0'-5.5'
- BH-169, S2 @ 4.0'-5.5'
- BH-174, S1 @ 4.0'-5.5'
- BH-175, S1 @ 4.0'-5.5'
- BH-177, S1 @ 4.0'-5.5'
- BH-178, S1 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

June 2016

Figure 1
THERMAL DRYOUT CURVES

Native Soil

- BH-179, S1 @ 4.0'-5.5'
- BH-180, S1 @ 4.0'-5.5'
- BH-181, S1 @ 4.0'-5.5'
- BH-182, S1 @ 4.0'-5.5'
- BH-183, S1 @ 4.0'-5.5'
- BH-184, S1 @ 4.0'-5.5'

THERMAL RESISTIVITY (°C·cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

June 2016

Figure 2
THERMAL DRYOUT CURVES

Native Soil

- BH-197, S1 @ 4.0'-5.5'
- BH-215, S1 @ 4.0'-5.5'
- BH-217, S1 @ 4.0'-5.5'
- BH-218, S1 @ 4.0'-5.5'
- BH-219, S1 @ 4.0'-5.5'
- BH-220, S1 @ 4.0'-5.5'

THERMAL RESISTIVITY (°C-cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

June 2016

Figure 4
THERMAL DRYOUT CURVES

Native Soil

- BH-221, S1 @ 4.0'-5.5'
- BH-223, S1 @ 4.0'-5.5'
- BH-224, S1 @ 4.0'-5.5'
- BH-225, S1 @ 4.0'-5.5'
- BH-226, S1 @ 4.0'-5.5'
- BH-227, S1 @ 4.0'-5.5'

Thermal Resistivity (°C·cm/W)

Moisture Content (% Dry Weight)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

June 2016

Figure 5
The following is the report of thermal dryout characterization tests conducted on nineteen (19) undisturbed tube samples of native soil received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the tube samples were tested ‘as-received’. A series of thermal resistivity measurements were made in stages with moisture content ranging from the ‘as-received’ to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in Figures 1 to 4.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-161 @ 4' - 5.5'</td>
<td>Sand with gravel (SP)</td>
<td>98</td>
<td>3</td>
<td>107</td>
</tr>
<tr>
<td>BH-162 @ 4' - 5.5'</td>
<td>Poorly graded silty sand with gravel (SP-GP)</td>
<td>65</td>
<td>6</td>
<td>126</td>
</tr>
<tr>
<td>BH-200 @ 4' - 5.5'</td>
<td>Silty sand (SM)</td>
<td>54</td>
<td>19</td>
<td>83</td>
</tr>
<tr>
<td>BH-201 @ 4' - 5.5'</td>
<td>Silty sand with gravel and silt with trace organics (SM-ML)</td>
<td>85</td>
<td>18</td>
<td>99</td>
</tr>
<tr>
<td>BH-202 @ 4' - 5.5'</td>
<td>Silty sand with gravel and trace organics (SM)</td>
<td>78</td>
<td>20</td>
<td>75</td>
</tr>
<tr>
<td>BH-231 @ 4' - 5.5'</td>
<td>Silty sand with gravel (SM)</td>
<td>62</td>
<td>16</td>
<td>112</td>
</tr>
<tr>
<td>BH-233 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel (SP)</td>
<td>68</td>
<td>9</td>
<td>99</td>
</tr>
</tbody>
</table>
### Sample ID, Description, Thermal Resistivity, Moisture Content and Density

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-235 @ 4' - 5.5'</td>
<td>Poorly graded sand (SP)</td>
<td>65 (As-rcvd) 198 (Dry)</td>
<td>11</td>
<td>97</td>
</tr>
<tr>
<td>BH-238 @ 4' - 5.5'</td>
<td>Silty sand with gravel (SM)</td>
<td>57 (As-rcvd) 219 (Dry)</td>
<td>10</td>
<td>106</td>
</tr>
<tr>
<td>BH-239 @ 5' - 6.5'</td>
<td>Poorly graded sand (SP)</td>
<td>62 (As-rcvd) 188 (Dry)</td>
<td>5</td>
<td>104</td>
</tr>
<tr>
<td>BH-241 @ 4' - 5.5'</td>
<td>Poorly graded sand (SP)</td>
<td>59 (As-rcvd) 227 (Dry)</td>
<td>7</td>
<td>98</td>
</tr>
<tr>
<td>BH-243 @ 4' - 5.5'</td>
<td>Poorly graded sand (SP)</td>
<td>67 (As-rcvd) 254 (Dry)</td>
<td>5</td>
<td>88</td>
</tr>
<tr>
<td>BH-244alt @ 4' - 5.5'</td>
<td>Sandy gravel with silt and trace asphalt (GM)</td>
<td>55 (As-rcvd) 197 (Dry)</td>
<td>7</td>
<td>109</td>
</tr>
<tr>
<td>BH-245alt @ 4' - 5.5'</td>
<td>Sandy gravel and poorly graded sand (GW-SP)</td>
<td>56 (As-rcvd) 162 (Dry)</td>
<td>9</td>
<td>102</td>
</tr>
<tr>
<td>BH-247A @ 4' - 5.5'</td>
<td>Boulders, cobbles and silty sand</td>
<td>52 (As-rcvd) 86 (Dry)</td>
<td>3</td>
<td>122</td>
</tr>
<tr>
<td>BH-249 @ 4' - 5.5'</td>
<td>Poorly graded sand (SP)</td>
<td>60 (As-rcvd) 231 (Dry)</td>
<td>4</td>
<td>98</td>
</tr>
<tr>
<td>BH-254 @ 4' - 5.5'</td>
<td>Sandy gravel (GW)</td>
<td>41 (As-rcvd) 98 (Dry)</td>
<td>11</td>
<td>114</td>
</tr>
<tr>
<td>BH-255 @ 4' - 5.5'</td>
<td>Sandy gravel with silt and trace asphalt (GM)</td>
<td>58 (As-rcvd) 244 (Dry)</td>
<td>13</td>
<td>90</td>
</tr>
<tr>
<td>BH-256 @ 4' - 5.5'</td>
<td>Poorly graded sand with trace organics (SP)</td>
<td>82 (As-rcvd) 360 (Dry)</td>
<td>15</td>
<td>90</td>
</tr>
</tbody>
</table>

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

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

*Geotherm USA*

Nimesh Patel

**Please Note: All samples will be disposed of after 5 days from date of report.**
THERMAL DRYOUT CURVES

- Native Soil

- BH-161 @ 4’ - 5.5’
- BH-162 @ 4’ - 5.5’
- BH-200 @ 4’ - 5.5’
- BH-201 @ 4’ - 5.5’
- BH-202 @ 4’ - 5.5’

THERMAL RESISTIVITY (°C-cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

July 2016  Figure 1
THERMAL DRYOUT CURVES

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

July 2016

Figure 2
THERMAL DRYOUT CURVES

Native Soil
- BH-241 @ 4' - 5.5'
- BH-243 @ 4' - 5.5'
- BH-244alt @ 4' - 5.5'
- BH-245alt @ 4' - 5.5'
- BH-247A @ 4' - 5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

July 2016

Figure 3
THERMAL DRYOUT CURVES

Native Soil

BH-249 @ 4’ - 5.5’
BH-254 @ 4’ - 5.5”
BH-255 @ 4’ - 5.5’
BH-256 @ 4’ - 5.5’

THERMAL RESISTIVITY (°C-cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

July 2016

Figure 4
August 25, 2016

Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on fifty-five (55) undisturbed tube samples of native soil received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the tube samples were tested ‘as-received’. A series of thermal resistivity measurements were made in stages with moisture content ranging from the ‘as-received’ to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in Figures 1 to 10.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-77 @ 4' - 5.5'</td>
<td>Silty gravel with sand</td>
<td>105</td>
<td>194</td>
<td>1.8</td>
</tr>
<tr>
<td>BH-94 @ 4' - 5.5'</td>
<td>Silty gravel with sand</td>
<td>56</td>
<td>177</td>
<td>7</td>
</tr>
<tr>
<td>BH-98 @ 4' - 5.5'</td>
<td>Silty gravel with sand</td>
<td>94</td>
<td>218</td>
<td>3.8</td>
</tr>
<tr>
<td>BH-99 @ 4' - 5.5'</td>
<td>Well graded sand</td>
<td>65</td>
<td>198</td>
<td>19</td>
</tr>
<tr>
<td>BH-102 @ 4' - 5.5'</td>
<td>Sandy silt</td>
<td>54</td>
<td>233</td>
<td>24</td>
</tr>
<tr>
<td>BH-104 @ 4' - 5.5'</td>
<td>Well graded sand</td>
<td>66</td>
<td>167</td>
<td>7</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Description</td>
<td>Thermal Resistivity (°C-cm/W)</td>
<td>Moisture Content (%)</td>
<td>Dry Density (lb/ft³)</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------</td>
<td>------------------------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>BH-113 @ 4' - 5.5'</td>
<td>Silty sand</td>
<td>48</td>
<td>27</td>
<td>87</td>
</tr>
<tr>
<td>BH-114 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>65</td>
<td>41</td>
<td>53</td>
</tr>
<tr>
<td>BH-115 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>56</td>
<td>26</td>
<td>80</td>
</tr>
<tr>
<td>BH-117 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>78</td>
<td>7</td>
<td>103</td>
</tr>
<tr>
<td>BH-119 @ 4' - 5.5'</td>
<td>Poorly graded sand</td>
<td>44</td>
<td>38</td>
<td>56</td>
</tr>
<tr>
<td>BH-121 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>53</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>BH-122 @ 4' - 5.5'</td>
<td>Well graded sand</td>
<td>70</td>
<td>4.3</td>
<td>116</td>
</tr>
<tr>
<td>BH-123 @ 4' - 5.5'</td>
<td>Poorly graded sand</td>
<td>49</td>
<td>12</td>
<td>118</td>
</tr>
<tr>
<td>BH-124 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>77</td>
<td>42</td>
<td>50</td>
</tr>
<tr>
<td>BH-126 @ 4' - 5.5'</td>
<td>Poorly graded sand</td>
<td>88</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>BH-129 @ 4' - 5.5'</td>
<td>Silty sand</td>
<td>58</td>
<td>24</td>
<td>75</td>
</tr>
<tr>
<td>BH-130 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>61</td>
<td>33</td>
<td>71</td>
</tr>
<tr>
<td>BH-131 @ 4' - 5.5'</td>
<td>Well graded sand</td>
<td>51</td>
<td>19</td>
<td>110</td>
</tr>
<tr>
<td>BH-133 @ 4' - 5.5'</td>
<td>Well graded sand</td>
<td>58</td>
<td>13</td>
<td>100</td>
</tr>
<tr>
<td>BH-135 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>90</td>
<td>2.8</td>
<td>103</td>
</tr>
<tr>
<td>BH-136 @ 4' - 5.5'</td>
<td>Poorly graded sand with silt</td>
<td>64</td>
<td>30</td>
<td>76</td>
</tr>
<tr>
<td>BH-137 @ 4' - 5.5'</td>
<td>Clayey sand</td>
<td>74</td>
<td>25</td>
<td>80</td>
</tr>
<tr>
<td>BH-138 @ 4' - 5.5'</td>
<td>Poorly graded sand with silt</td>
<td>55</td>
<td>34</td>
<td>63</td>
</tr>
<tr>
<td>BH-139 @ 4' - 5.5'</td>
<td>Silty sand</td>
<td>67</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Description (Quanta)</td>
<td>Thermal Resistivity (°C-cm/W)</td>
<td>Moisture Content (%)</td>
<td>Dry Density (lb/ft³)</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------</td>
<td>-------------------------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>As-rcvd</td>
<td>Dry</td>
<td></td>
</tr>
<tr>
<td>BH-141 @ 4’ - 5.5’</td>
<td>Silty sand</td>
<td>52</td>
<td>138</td>
<td>7</td>
</tr>
<tr>
<td>BH-142 @ 4’ - 5.5’</td>
<td>Silty sand</td>
<td>57</td>
<td>156</td>
<td>6</td>
</tr>
<tr>
<td>BH-143 @ 4’ - 5.5’</td>
<td>Poorly graded sand with gravel</td>
<td>77</td>
<td>165</td>
<td>4.2</td>
</tr>
<tr>
<td>BH-144 @ 4’ - 5.5’</td>
<td>Silty sand with gravel</td>
<td>80</td>
<td>184</td>
<td>4</td>
</tr>
<tr>
<td>BH-145 @ 4’ - 5.5’</td>
<td>Silty sand with gravel</td>
<td>68</td>
<td>143</td>
<td>8</td>
</tr>
<tr>
<td>BH-146 ALT @ 4’ - 5.5’</td>
<td>Silty sand with gravel</td>
<td>71</td>
<td>177</td>
<td>9</td>
</tr>
<tr>
<td>BH-147 @ 4’ - 5.5’</td>
<td>Silty sand</td>
<td>58</td>
<td>184</td>
<td>11</td>
</tr>
<tr>
<td>BH-148 @ 4’ - 5.5’</td>
<td>Silty sand with gravel</td>
<td>69</td>
<td>208</td>
<td>14</td>
</tr>
<tr>
<td>BH-149 @ 4’ - 5.5’</td>
<td>Well graded sand</td>
<td>63</td>
<td>193</td>
<td>6</td>
</tr>
<tr>
<td>BH-150 @ 4’ - 5.5’</td>
<td>Silty Sand</td>
<td>66</td>
<td>188</td>
<td>12</td>
</tr>
<tr>
<td>BH-151 @ 4’ - 5.5’</td>
<td>Poorly graded sand</td>
<td>74</td>
<td>216</td>
<td>13</td>
</tr>
<tr>
<td>BH-152 @ 4’ - 5.5’</td>
<td>Poorly graded sand with gravel</td>
<td>61</td>
<td>197</td>
<td>18</td>
</tr>
<tr>
<td>BH-153 @ 4’ - 5.5’</td>
<td>Sandy peat</td>
<td>108</td>
<td>385</td>
<td>15</td>
</tr>
<tr>
<td>BH-154 @ 4’ - 5.5’</td>
<td>Sandy peat</td>
<td>94</td>
<td>328</td>
<td>24</td>
</tr>
<tr>
<td>BH-156 @ 4’ - 5.5’</td>
<td>Clayey sand</td>
<td>95</td>
<td>189</td>
<td>5</td>
</tr>
<tr>
<td>BH-157 @ 4’ - 5.5’</td>
<td>Sandy silt</td>
<td>66</td>
<td>244</td>
<td>19</td>
</tr>
<tr>
<td>BH-159 @ 4’ - 5.5’</td>
<td>Poorly graded sand with gravel</td>
<td>61</td>
<td>172</td>
<td>15</td>
</tr>
<tr>
<td>BH-164 @ 4’ - 5.5’</td>
<td>Sandy silt</td>
<td>77</td>
<td>277</td>
<td>25</td>
</tr>
<tr>
<td>BH-167 @ 4’ - 5.5’</td>
<td>Sandy silt</td>
<td>63</td>
<td>190</td>
<td>12</td>
</tr>
</tbody>
</table>
### Sample ID, Description, Thermal Resistivity, Moisture Content and Density

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-171 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>80</td>
<td>164</td>
<td>6</td>
</tr>
<tr>
<td>BH-172 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>69</td>
<td>170</td>
<td>10</td>
</tr>
<tr>
<td>BH-189 @ 4' - 5.5'</td>
<td>Silty gravel with sand</td>
<td>75</td>
<td>212</td>
<td>11</td>
</tr>
<tr>
<td>BH-193 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>68</td>
<td>194</td>
<td>8</td>
</tr>
<tr>
<td>BH-209 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>55</td>
<td>152</td>
<td>17</td>
</tr>
<tr>
<td>BH-211 @ 4' - 5.5'</td>
<td>Silty sand</td>
<td>61</td>
<td>188</td>
<td>8</td>
</tr>
<tr>
<td>BH-212 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>59</td>
<td>178</td>
<td>15</td>
</tr>
<tr>
<td>BH-228 @ 4' - 5.5'</td>
<td>Well graded sand</td>
<td>70</td>
<td>216</td>
<td>5</td>
</tr>
<tr>
<td>BH-230 @ 4' - 5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>64</td>
<td>199</td>
<td>10</td>
</tr>
<tr>
<td>BH-236 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>57</td>
<td>183</td>
<td>14</td>
</tr>
<tr>
<td>BH-237 @ 4' - 5.5'</td>
<td>Silty sand with gravel</td>
<td>80</td>
<td>207</td>
<td>5</td>
</tr>
</tbody>
</table>

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

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

*Geotherm USA*

Nimesh Patel

*Please Note: All samples will be disposed of after 5 days from date of report.*
Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016

Figure 1
THERMAL DRYOUT CURVES

Native Soil

- BH-113 @ 4.0'-5.5'
- BH-114 @ 4.0'-5.5'
- BH-115 @ 4.0'-5.5'
- BH-117 @ 4.0'-5.5'
- BH-119 @ 4.0'-5.5'
- BH-121 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016  Figure 2
THERMAL DRYOUT CURVES

Native Soil
- BH-122 @ 4.0'-5.5'
- BH-123 @ 4.0'-5.5'
- BH-124 @ 4.0'-5.5'
- BH-126 @ 4.0'-5.5'
- BH-129 @ 4.0'-5.5'
- BH-130 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016

Figure 3
THERMAL DRYOUT CURVES

Native Soil

BH-131 @ 4.0'-5.5'
BH-133 @ 4.0'-5.5'
BH-135 @ 4.0'-5.5'
BH-136 @ 4.0'-5.5'
BH-137 @ 4.0'-5.5'
BH-138 @ 4.0'-5.5'

THERMAL RESISTIVITY (°C-cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016
THERMAL DRYOUT CURVES

Native Soil
- BH-139 @ 4.0'-5.5'
- BH-141 @ 4.0'-5.5'
- BH-142 @ 4.0'-5.5'
- BH-143 @ 4.0'-5.5'
- BH-144 @ 4.0'-5.5'
- BH-145 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016

Figure 5
Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016

Figure 6
THERMAL DRYOUT CURVES

MOISTURE CONTENT (% DRY WEIGHT)

THERMAL RESISTIVITY (°C-cm/W)

Native Soil

- BH-152 @ 4.0'-5.5'
- BH-153 @ 4.0'-5.5'
- BH-154 @ 4.0'-5.5'
- BH-156 @ 4.0'-5.5'
- BH-157 @ 4.0'-5.5'
- BH-159 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016  Figure 7
THERMAL DRYOUT CURVES

Native Soil

BH-164 @ 4.0'-5.5'
BH-167 @ 4.0'-5.5'
BH-171 @ 4.0'-5.5'
BH-172 @ 4.0'-5.5'
BH-189 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016

Figure 8
THERMAL DRYOUT CURVES

Native Soil
- BH-193 @ 4.0'-5.5'
- BH-209 @ 4.0'-5.5'
- BH-211 @ 4.0'-5.5'
- BH-212 @ 4.0'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016
THERMAL DRYOUT CURVES

Native Soil
- BH-228 @ 4.0'-5.5'
- BH-230 @ 4.0'-5.5'
- BH-236 @ 4.0'-5.5'
- BH-237 @ 4.0'-5.5'

THERMAL RESISTIVITY (°C·cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil Samples
Northern Pass Trenchless Investigation

August 2016

Figure 10
September 16, 2016
Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on twenty-five (25) bulk samples of native soil received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the bulk samples were tested at ‘as-received’ moisture content and 95% of maximum dry density **provided by Quanta Subsurface.** A series of thermal resistivity measurements were made in stages with moisture content ranging from the ‘as-received’ to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in **Figures 1 to 5.**

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-208 @ 0-4'</td>
<td>Brown fine to coarse silty sand with trace fine to coarse gravel</td>
<td>46</td>
<td>142</td>
<td>6</td>
</tr>
<tr>
<td>BH-210 @ 0-4'</td>
<td>Brown fine to coarse silty sand with trace fine to coarse gravel</td>
<td>52</td>
<td>144</td>
<td>4</td>
</tr>
<tr>
<td>BH-213 @ 0-4'</td>
<td>Brown fine to medium silty sand</td>
<td>39</td>
<td>160</td>
<td>14</td>
</tr>
<tr>
<td>BH-250 @ 0-4'</td>
<td>Brown fine to coarse silty sand with trace fine gravel</td>
<td>43</td>
<td>146</td>
<td>6</td>
</tr>
<tr>
<td>BH-251 @ 0-4'</td>
<td>Dark brown medium to coarse silty sand with trace fine gravel</td>
<td>45</td>
<td>143</td>
<td>8</td>
</tr>
<tr>
<td>BH-252 @ 0-4'</td>
<td>Brown fine to coarse silty sand with little fine to coarse gravel</td>
<td>44</td>
<td>138</td>
<td>9</td>
</tr>
<tr>
<td>BH257 @ 0-4'</td>
<td>Silty sand</td>
<td>42</td>
<td>158</td>
<td>19</td>
</tr>
</tbody>
</table>
## Sample ID, Description, Thermal Resistivity, Moisture Content and Density

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH260 @ 0-4’</td>
<td>Sandy silt clay</td>
<td>45</td>
<td>13</td>
<td>114</td>
</tr>
<tr>
<td>BH261 @ 0-4’</td>
<td>Silty sand</td>
<td>55</td>
<td>10</td>
<td>116</td>
</tr>
<tr>
<td>BH262 @ 0-4’</td>
<td>Silty sand</td>
<td>57</td>
<td>10</td>
<td>116</td>
</tr>
<tr>
<td>BH264 @ 0-4’</td>
<td>Poorly grade sand</td>
<td>45</td>
<td>8</td>
<td>121</td>
</tr>
<tr>
<td>BH265 @ 0-4’</td>
<td>Silty sand</td>
<td>47</td>
<td>11</td>
<td>116</td>
</tr>
<tr>
<td>BH271 @ 0-4’</td>
<td>poorly graded gravel</td>
<td>46</td>
<td>9</td>
<td>122</td>
</tr>
<tr>
<td>BH273 @ 0-4’</td>
<td>Silty sand</td>
<td>50</td>
<td>10</td>
<td>121</td>
</tr>
<tr>
<td>BH274 @ 0-4’</td>
<td>Silty sand</td>
<td>49</td>
<td>7</td>
<td>123</td>
</tr>
<tr>
<td>BH275 @ 0-4’</td>
<td>Silty sand</td>
<td>55</td>
<td>5</td>
<td>123</td>
</tr>
<tr>
<td>BH276 @ 0-4’</td>
<td>Silty sand</td>
<td>46</td>
<td>11</td>
<td>126</td>
</tr>
<tr>
<td>BH278 @ 0-4’</td>
<td>poorly graded gravel</td>
<td>44</td>
<td>6</td>
<td>137</td>
</tr>
<tr>
<td>BH279 @ 3’-5.5’</td>
<td>Silty sand</td>
<td>51</td>
<td>11</td>
<td>121</td>
</tr>
<tr>
<td>BH281 @ 0-4’</td>
<td>Silty sand</td>
<td>48</td>
<td>9</td>
<td>121</td>
</tr>
<tr>
<td>BH283 @ 0-4’</td>
<td>Silty sand</td>
<td>56</td>
<td>19</td>
<td>121</td>
</tr>
<tr>
<td>BH284 @ 0-4’</td>
<td>Silty sand</td>
<td>52</td>
<td>12</td>
<td>121</td>
</tr>
<tr>
<td>BH285 @ 0-4’</td>
<td>Silty sand</td>
<td>47</td>
<td>12</td>
<td>124</td>
</tr>
<tr>
<td>BH287 @ 0-4’</td>
<td>Silty sand</td>
<td>48</td>
<td>13</td>
<td>121</td>
</tr>
<tr>
<td>BH288 @ 1-4’</td>
<td>Silty sand</td>
<td>50</td>
<td>5</td>
<td>116</td>
</tr>
</tbody>
</table>
Comments: The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

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

Geotherm USA

Nimesh Patel
THERMAL DRYOUT CURVES

Native Soil

- BH-208 @ 0-4'
- BH-210 @ 0-4'
- BH-213 @ 0-4'
- BH-250 @ 0-4'
- BH-251 @ 0-4'

Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

Quanta Subsurface

September 2016

Figure 1
THERMAL DRYOUT CURVES

THERMAL RESISTIVITY (°C-cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Native Soil

BH-252 @ 0-4'
BH-257 @ 0-4'
BH-260 @ 0-4'
BH-261 @ 0-4'
BH-262 @ 0-4'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 2
THERMAL DRYOUT CURVES

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 4
THERMAL DRYOUT CURVES

Native Soil
- BH-183 @ 0-4'
- BH-184 @ 0-4'
- BH-285 @ 0-4'
- BH-287 @ 0-4'
- BH-288 @ 1-4'

THERMAL RESISTIVITY (°C-cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 5
September 30, 2016

Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on forty-four (44) undisturbed tube samples and two (2) bulk samples of native soil received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the tube samples were tested 'as-received' and the bulk samples were tested at the 'as-received' moisture content and 95% of the maximum dry density *provided by Quanta Subsurface*. A series of thermal resistivity measurements were made in stages with moisture content ranging from the 'as-received' to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in *Figures 1 to 8*.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>As-recd</td>
<td>Dry</td>
<td></td>
</tr>
<tr>
<td>BH-53 S1 @ 4'-5.1'</td>
<td>Silty sand with gravel</td>
<td>58</td>
<td>151</td>
<td>8</td>
</tr>
<tr>
<td>BH-54 S1 @ 4'-5.5'</td>
<td>Silty sand</td>
<td>54</td>
<td>175</td>
<td>26</td>
</tr>
<tr>
<td>BH-55 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>50</td>
<td>161</td>
<td>18</td>
</tr>
<tr>
<td>BH-56 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>60</td>
<td>202</td>
<td>13</td>
</tr>
<tr>
<td>BH-57 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>69</td>
<td>155</td>
<td>3</td>
</tr>
<tr>
<td>BH-58 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>72</td>
<td>175</td>
<td>3</td>
</tr>
<tr>
<td>BH-59 S1 @ 4'-5.5'</td>
<td>Well graded sand</td>
<td>68</td>
<td>146</td>
<td>4</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Description (Quanta)</td>
<td>Thermal Resistivity (°C-cm/W)</td>
<td>Moisture Content (%)</td>
<td>Dry Density (lb/ft³)</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>BH-60 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt</td>
<td>65</td>
<td>8</td>
<td>121</td>
</tr>
<tr>
<td>BH-61 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt</td>
<td>59</td>
<td>11</td>
<td>123</td>
</tr>
<tr>
<td>BH-62 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt and gravel</td>
<td>56</td>
<td>7</td>
<td>121</td>
</tr>
<tr>
<td>BH-63 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt and gravel</td>
<td>62</td>
<td>8</td>
<td>114</td>
</tr>
<tr>
<td>BH-64 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt and gravel</td>
<td>56</td>
<td>4</td>
<td>127</td>
</tr>
<tr>
<td>BH-65 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>63</td>
<td>6</td>
<td>117</td>
</tr>
<tr>
<td>BH-66 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt</td>
<td>52</td>
<td>11</td>
<td>126</td>
</tr>
<tr>
<td>BH-67 S1 @ 4'-4.5'</td>
<td>Silty sand with gravel</td>
<td>62</td>
<td>12</td>
<td>106</td>
</tr>
<tr>
<td>BH-70 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt</td>
<td>59</td>
<td>17</td>
<td>110</td>
</tr>
<tr>
<td>BH-72 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>57</td>
<td>5</td>
<td>129</td>
</tr>
<tr>
<td>BH-73 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>68</td>
<td>7</td>
<td>98</td>
</tr>
<tr>
<td>BH-75 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>73</td>
<td>5</td>
<td>127</td>
</tr>
<tr>
<td>BH-76 S1 @ 4'-5.5'</td>
<td>Silty sand</td>
<td>57</td>
<td>15</td>
<td>105</td>
</tr>
<tr>
<td>BH-78 S1 @ 5-6.5'</td>
<td>Silty sand with gravel</td>
<td>79</td>
<td>3</td>
<td>112</td>
</tr>
<tr>
<td>BH-81 S1 @ 4'-5.5'</td>
<td>Organic soil with sand</td>
<td>127</td>
<td>8</td>
<td>90</td>
</tr>
<tr>
<td>BH-82 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>66</td>
<td>12</td>
<td>101</td>
</tr>
<tr>
<td>BH-83 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>77</td>
<td>5</td>
<td>105</td>
</tr>
<tr>
<td>BH-84 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>68</td>
<td>27</td>
<td>84</td>
</tr>
<tr>
<td>BH-85 S1 @ 4'-5.5'</td>
<td>Lean Clay</td>
<td>82</td>
<td>25</td>
<td>99</td>
</tr>
<tr>
<td>BH-86 S1 @ 4'-5.5'</td>
<td>Silty sand</td>
<td>58</td>
<td>17</td>
<td>108</td>
</tr>
<tr>
<td>BH-87 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>70</td>
<td>3</td>
<td>102</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Description (Quanta)</td>
<td>Thermal Resistivity (°C·cm/W)</td>
<td>Moisture Content (%)</td>
<td>Dry Density (lb/ft³)</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------</td>
<td>-----------------------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>As-recvd</td>
<td>Dry</td>
<td></td>
</tr>
<tr>
<td>BH-88 S1 @ 4'-5.5'</td>
<td>Silty sand with gravel</td>
<td>55</td>
<td>162</td>
<td>13</td>
</tr>
<tr>
<td>BH-89 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt and gravel</td>
<td>50</td>
<td>140</td>
<td>9</td>
</tr>
<tr>
<td>BH-90 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>58</td>
<td>170</td>
<td>15</td>
</tr>
<tr>
<td>BH-91 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>75</td>
<td>223</td>
<td>8</td>
</tr>
<tr>
<td>BH-92 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>64</td>
<td>170</td>
<td>7</td>
</tr>
<tr>
<td>BH-95 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with gravel</td>
<td>60</td>
<td>155</td>
<td>7</td>
</tr>
<tr>
<td>BH-96 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>56</td>
<td>165</td>
<td>6</td>
</tr>
<tr>
<td>BH-100 S1 @ 4'-5.5'</td>
<td>Well graded sand</td>
<td>62</td>
<td>181</td>
<td>3</td>
</tr>
<tr>
<td>BH-103 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>59</td>
<td>263</td>
<td>16</td>
</tr>
<tr>
<td>BH-106 S1 @ 4'-5.5'</td>
<td>Poorly graded sand with silt</td>
<td>66</td>
<td>228</td>
<td>17</td>
</tr>
<tr>
<td>BH-107 S1 @ 0-4'</td>
<td>Silty gravel</td>
<td>60</td>
<td>218</td>
<td>8</td>
</tr>
<tr>
<td>BH-109 S1 @ 4'-5.5'</td>
<td>Well graded sand with gravel</td>
<td>63</td>
<td>142</td>
<td>6</td>
</tr>
<tr>
<td>BH-110 S1 @ 4'-5.5'</td>
<td>Poorly graded sand</td>
<td>66</td>
<td>205</td>
<td>9</td>
</tr>
<tr>
<td>BH-166 S1 @ 0-4'</td>
<td>Silty sand with gravel</td>
<td>70</td>
<td>160</td>
<td>4</td>
</tr>
<tr>
<td>BH-173 S2 @ 9-10.5'</td>
<td>Poorly graded sand with gravel</td>
<td>64</td>
<td>170</td>
<td>5</td>
</tr>
<tr>
<td>BH-206 @ 0-4'</td>
<td>Silty sand with gravel</td>
<td>66</td>
<td>165</td>
<td>8</td>
</tr>
<tr>
<td>BH-234 S1 @ 9-10.5'</td>
<td>Sandy silt</td>
<td>55</td>
<td>228</td>
<td>29</td>
</tr>
<tr>
<td>BH-270 S1 @ 0-4'</td>
<td>Silty sand with gravel</td>
<td>79</td>
<td>208</td>
<td>5</td>
</tr>
</tbody>
</table>
**Comments:** The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

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

*Geotherm USA*

Nimesh Patel
THERMAL DRYOUT CURVES

Native Soil

BH-53 S1 @ 4'-5.5'
BH-54 S1 @ 4'-5.5'
BH-55 S1 @ 4'-5.5'
BH-56 S1 @ 4'-5.5'
BH-57 S1 @ 4'-5.5'
BH-58 S1 @ 4'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 1
Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016
THERMAL DRYOUT CURVES

Native Soil

- BH-65 S1 @ 4'-5.5'
- BH-66 S1 @ 4'-5.5'
- BH-67 S1 @ 4'-4.5'
- BH-70 S1 @ 4'-5.5'
- BH-72 S1 @ 4'-5.5'
- BH-73 S1 @ 4'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016
THERMAL DRYOUT CURVES

Native Soil
- BH-75 S1 @ 4'-5.5'
- BH-76 S1 @ 4'-5.5'
- BH-78 S1 @ 5'-6.5'
- BH-81 S1 @ 4'-5.5'
- BH-82 S1 @ 4'-5.5'
- BH-83 S1 @ 4'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 4
THERMAL DRYOUT CURVES

Native Soil

BH-84 S1 @ 4'-5.5'
BH-85 S1 @ 4'-5.5'
BH-86 S1 @ 4'-5.5'
BH-87 S1 @ 4'-5.5'
BH-88 S1 @ 4'-5.5'
BH-89 S1 @ 4'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 5
THERMAL DRYOUT CURVES

Native Soil

BH-90 S1 @ 4'-5.5'
BH-91 S1 @ 4'-5.5'
BH-92 S1 @ 4'-5.5'
BH-95 S1 @ 4'-5.5'
BH-96 S1 @ 4'-5.5'
BH-100 S1 @ 4'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 6
THERMAL DRYOUT CURVES

Native Soil

- BH-103 S1 @ 4'-5.5'
- BH-106 S1 @ 4'-5.5'
- BH-107 S1 @ 0-4'
- BH-109 S1 @ 4'-5.5'
- BH-110 S1 @ 4'-5.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 7
THERMAL DRYOUT CURVES

Native Soil

- BH-166 S1 @ 0-4'
- BH-173 S2 @ 9'-10.5'
- BH-206 S1 @ 0-4'
- BH-234 S1 @ 9'-10.5'
- BH-270 S1 @ 0-4'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

September 2016

Figure 8
October 7, 2016

Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on sixteen (16) undisturbed tube samples and one (1) bulk sample of native soil received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the tube samples were tested 'as-received' and the bulk sample was tested at the 'as-received' moisture content and 95% of the maximum dry density provided by Quanta Subsurface. A series of thermal resistivity measurements were made in stages with moisture content ranging from the 'as-received' to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in Figures 1 to 3.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-68 S1 @ 6’ – 7.5’</td>
<td>Silty sand</td>
<td>80 (As-rcvd) 242 (Dry)</td>
<td>7</td>
<td>106</td>
</tr>
<tr>
<td>BH-69 S1 @ 4’ – 5.5’</td>
<td>Silty sand</td>
<td>78 (As-rcvd) 168 (Dry)</td>
<td>3</td>
<td>123</td>
</tr>
<tr>
<td>BH-71 S1 @ 4’ – 5.5’</td>
<td>Poorly graded sand</td>
<td>77 (As-rcvd) 322 (Dry)</td>
<td>10</td>
<td>98</td>
</tr>
<tr>
<td>BH-101 S1 @ 5.5’ – 7’</td>
<td>Silty sand</td>
<td>79 (As-rcvd) 287 (Dry)</td>
<td>10</td>
<td>96</td>
</tr>
<tr>
<td>BH-105 S1 @ 5.5’ – 7’</td>
<td>Poorly graded sand</td>
<td>65 (As-rcvd) 158 (Dry)</td>
<td>15</td>
<td>123</td>
</tr>
<tr>
<td>BH-108 S1 @ 9.5’ – 11’</td>
<td>Gravel sand silt mixture poorly graded sand</td>
<td>64 (As-rcvd) 174 (Dry)</td>
<td>14</td>
<td>117</td>
</tr>
<tr>
<td>BH-118 S1 @ 9.5’ – 11’</td>
<td>Gravel sand silt mixture</td>
<td>62 (As-rcvd) 144 (Dry)</td>
<td>12</td>
<td>131</td>
</tr>
</tbody>
</table>
### Sample ID, Description, Thermal Resistivity, Moisture Content and Density

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>As-rcvd</td>
<td>Dry</td>
<td></td>
</tr>
<tr>
<td>BH-134 S1 @ 4.5’ – 6’</td>
<td>Well graded sand</td>
<td>59</td>
<td>140</td>
<td>8</td>
</tr>
<tr>
<td>BH-155 S1 @ 4’ – 5.5’</td>
<td>Sandy gravel</td>
<td>72</td>
<td>178</td>
<td>5</td>
</tr>
<tr>
<td>BH-165 S1 @ 4’ – 5.5’</td>
<td>Poorly graded sand</td>
<td>87</td>
<td>329</td>
<td>4</td>
</tr>
<tr>
<td>BH-188 S1 @ 9.5’ – 11’</td>
<td>Silty sand</td>
<td>62</td>
<td>171</td>
<td>12</td>
</tr>
<tr>
<td>BH-199 S1 @ 9’ – 10.5’</td>
<td>Poorly graded sand</td>
<td>83</td>
<td>379</td>
<td>10</td>
</tr>
<tr>
<td>BH-205 S1 @ 6’ – 7.5’</td>
<td>Poorly graded sand</td>
<td>89</td>
<td>267</td>
<td>3</td>
</tr>
<tr>
<td>BH-246 S1 @ 6’ – 7.5’</td>
<td>Gravel sand silt mixture</td>
<td>112</td>
<td>263</td>
<td>2</td>
</tr>
<tr>
<td>BH-268 S1 @ 5’ – 6.5’</td>
<td>Poorly graded sand</td>
<td>85</td>
<td>291</td>
<td>4</td>
</tr>
<tr>
<td>BH-269 S1 @ 5’ – 6.5’</td>
<td>Silt inorganic</td>
<td>56</td>
<td>365</td>
<td>23</td>
</tr>
<tr>
<td>BH-204 S1 @ 0-4' (Bulk Sample)</td>
<td>Silty sand</td>
<td>64</td>
<td>179</td>
<td>11</td>
</tr>
</tbody>
</table>

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

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

*Geotherm USA*

Nimesh Patel
THERMAL DRYOUT CURVES

Native Soil

- BH-68 S1 @ 6' - 7.5'
- BH-69 S1 @ 4' - 5.5'
- BH-71 S1 @ 4' - 5.5'
- BH-101 S1 @ 5.5' - 7'
- BH-105 S1 @ 5.5' - 7'
- BH-108 S1 @ 9.5' - 11'

THERMAL RESISTIVITY (°C·cm/W)

MOISTURE CONTENT (% DRY WEIGHT)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

October 2016

Figure 1
THERMAL DRYOUT CURVES

Native Soil

- BH-118 S1 @ 9.5' - 11'
- BH-134 S1 @ 4.5' - 6'
- BH-155 S1 @ 4' - 5.5'
- BH-165 S1 @ 4' - 5.5'
- BH-188 S1 @ 9.5' - 11'
- BH-199 S1 @ 9' - 10.5'

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

October 2016
THERMAL DRYOUT CURVES

Native Soil

- BH-205 S1 @ 6' - 7.5'
- BH-246 S1 @ 6' - 7.5'
- BH-268 S1 5' - 6.5'
- BH-269 S1 @ 5' - 6.5'
- BH-204 S1 @ 0-4' (bulk)

Thermal Resistivity (°C·cm/W)

Moisture Content (% Dry Weight)

Quanta Subsurface
Thermal Analysis of Native Soil
Northern Pass Trenchless Investigation

October 2016
October 20, 2016

Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Native Soil and Rock Core
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on two (2) tube samples of native soil and three (3) rock core samples received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the samples were tested ‘as-received’. A series of thermal resistivity measurements were made in stages with moisture content ranging from the ‘as-received’ to the totally dry condition. The tests were conducted in accordance with the IEEE standard 442. The results are tabulated below and the thermal dryout curves are presented in **Figures 1**. Due to the low moisture content of the rock core samples (surface moisture of less than 1%), it was not possible to draw the thermal dryout graphs.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-112 @ 9.6’ – 10.5’</td>
<td>Rock Core</td>
<td>36</td>
<td>73</td>
<td>&lt;1</td>
</tr>
<tr>
<td>BH-272 @ 4.65’ – 5.75’</td>
<td>Rock Core</td>
<td>36</td>
<td>74</td>
<td>&lt;1</td>
</tr>
<tr>
<td>BH-120 @ 11.2’</td>
<td>Rock Core</td>
<td>49</td>
<td>69</td>
<td>&lt;1</td>
</tr>
<tr>
<td>BH-160 @ 6.5’ SPT1 S1</td>
<td>SW-SM</td>
<td>133</td>
<td>345</td>
<td>5</td>
</tr>
<tr>
<td>BH-267 @ 5’ – 6.5’</td>
<td>SP</td>
<td>73</td>
<td>262</td>
<td>14</td>
</tr>
</tbody>
</table>
**Comments:** The thermal characteristic depicted in the dryout curves apply for the soils at their respective test dry density.

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

*Geotherm USA*

[Signature]

Nimesh Patel
November 9, 2016

Quanta Subsurface
4308 N. Barker Road
Spokane Valley, WA 99027
Attn: Zach Wright

Re: Thermal Analysis of Rock Core Sample
Northern Pass Trenchless Investigation - New Hampshire (Project No. 201-16-NH)

The following is the report of thermal dryout characterization tests conducted on one (1) rock-core sample received at our laboratory.

**Thermal Resistivity Tests:** For thermal dryout characterization the sample was tested ‘as-is’. A series of thermal resistivity measurements were made in stages with moisture content ranging from the ‘as-received’ to the totally dry condition with results tabulated below. The tests were conducted in accordance with the IEEE standard 442. Due to the low moisture content (surface moisture of less than 1%), it was not possible to draw the thermal dryout graph.

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

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description (Quanta)</th>
<th>Thermal Resistivity (°C-cm/W)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (lb/ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH-185 @ 11.8’ – 12.64’</td>
<td>Rock Core</td>
<td>36</td>
<td>62</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

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

*Geotherm USA*

Nimesh Patel
ATTACHMENT C

Dry Density Test Results
Report of Gradation
ASTM C-117 & C-136

Project Name: VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES
Project Number: 16-0600
Lab ID: 1277M
Date Received: 6/27/2016
Date Completed: 6/29/2016
Tested By: RILEY MOYER
Client: QUANTA SUBSURFACE

Material Source: BH-274 (0-4')

<table>
<thead>
<tr>
<th>STANDARD DESIGNATION (mm/µm)</th>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
<td>94</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
<td>87</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
<td>85</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
<td>80</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
<td>78</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
<td>71</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
<td>62</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
<td>53</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
<td>44</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
<td>34</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
<td>20.8</td>
</tr>
</tbody>
</table>

21.8% Gravel
57.4% Sand
20.8% Fines

Comments: Sheet
### ASTM C-117 & C-136

#### Report of Gradation

<table>
<thead>
<tr>
<th>STANDARD DESIGNATION (mm/µm)</th>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
<td>89</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
<td>83</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
<td>76</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
<td>76</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
<td>73</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
<td>71</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
<td>67</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
<td>61</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
<td>55</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
<td>49</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
<td>43</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
<td>32.9</td>
</tr>
</tbody>
</table>

#### Comments:

Sheet
### Report of Gradation

**ASTM C-117 & C-136**

**Project Name:** VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES  
**Client:** QUANTA SUBSURFACE  
**Material Source:** BH-278 (0-4')

**Project Number:** 16-0600  
**Lab ID:** 1279M  
**Date Received:** 6/27/2016  
**Date Completed:** 6/29/2016  
**Tested By:** RILEY MOYER

<table>
<thead>
<tr>
<th>STANDARD DESIGNATION (mm/µm)</th>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
<td>90</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
<td>61</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
<td>47</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
<td>44</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
<td>41</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
<td>40 60.5% Gravel</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
<td>35</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
<td>28</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
<td>20 33.6% Sand</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
<td>15</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
<td>10</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
<td>5.9 5.9% Fines</td>
</tr>
</tbody>
</table>

**Comments:**

![Gradation Curve Diagram]
Material Source: BH-285 (0-4')

<table>
<thead>
<tr>
<th>STANDARD DESIGNATION (mm/µm)</th>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
<td>95</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
<td>93</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
<td>90</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
<td>88</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
<td>87 13.1% Gravel</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
<td>82</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
<td>73</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
<td>64 53.3% Sand</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
<td>58</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
<td>49</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
<td>33.6 33.6% Fines</td>
</tr>
</tbody>
</table>

**Comments:**

Sheet
### Report of Gradation

**ASTM C-117 & C-136**

**Project Name**: VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES

**Lab ID**: 1281M

**Project Number**: 16-0600

**Tested By**: MARK BENNETT

**Date Completed**: 6/29/2016

**Date Received**: 6/27/2016

**Material Source**: BH-287 (0-4’)

**Client**: QUANTA SUBSURFACE

### Standards

<table>
<thead>
<tr>
<th>DESIGNATION (mm/µm)</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm 6”</td>
<td>100</td>
</tr>
<tr>
<td>100 mm 4”</td>
<td>100</td>
</tr>
<tr>
<td>75 mm 3”</td>
<td>100</td>
</tr>
<tr>
<td>50 mm 2”</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm 1-1/2”</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm 1”</td>
<td>100</td>
</tr>
<tr>
<td>19.0 mm 3/4”</td>
<td>100</td>
</tr>
<tr>
<td>12.5 mm 1/2”</td>
<td>97</td>
</tr>
<tr>
<td>9.5 mm 3/8”</td>
<td>95</td>
</tr>
<tr>
<td>6.3 mm 1/4”</td>
<td>93</td>
</tr>
<tr>
<td>4.75 mm No. 4</td>
<td>92 7.6% Gravel</td>
</tr>
<tr>
<td>2.00 mm No. 10</td>
<td>87</td>
</tr>
<tr>
<td>850 um No. 20</td>
<td>75</td>
</tr>
<tr>
<td>425 um No. 40</td>
<td>57 81.3% Sand</td>
</tr>
<tr>
<td>250 um No. 60</td>
<td>42</td>
</tr>
<tr>
<td>150 um No. 100</td>
<td>26</td>
</tr>
<tr>
<td>75 um No. 200</td>
<td>11.1 11.1% Fines</td>
</tr>
</tbody>
</table>

### Comments:

- Sheet
### Report of Gradation

ASTM C-117 & C-136

<table>
<thead>
<tr>
<th>STANDARD DESIGNATION (mm/µm)</th>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
<td>99</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
<td>99</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
<td>98</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
<td>98</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
<td>95</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
<td>86</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
<td>75</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
<td>68</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
<td>64</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
<td>57.2</td>
</tr>
</tbody>
</table>

**Comments:**

Sheet
<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
</tr>
</tbody>
</table>

Notes:
- 6.8% Gravel
- 75.7% Sand
- 17.5% Fines

Comments: Sheet
<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>88</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>87</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>100</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>86</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>85</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>79</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>63</td>
</tr>
<tr>
<td>850 um</td>
<td>41</td>
</tr>
<tr>
<td>425 um</td>
<td>24</td>
</tr>
<tr>
<td>250 um</td>
<td>14</td>
</tr>
<tr>
<td>150 um</td>
<td>7</td>
</tr>
<tr>
<td>75 um</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Report of Gradation
ASTM C-117 & C-136

Client: QUANTA SUBSURFACE

Material Source: BH 264, 0-4 FOOT DEPTH

Comments:
### Report of Gradation

**ASTM C-117 & C-136**

**Project Name**: VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES

**Client**: QUANTA SUBSURFACE

**Material Source**: BH 265, 0-4 FOOT DEPTH

**Project Number**: 16-0600

**Lab ID**: 1298M

**Date Received**: 7/6/2016

**Date Completed**: 7/14/2016

**Tested By**: MARK BENNETT

### Gradation Test Results

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>100</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>100</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>100</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>100</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>100</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
</tr>
<tr>
<td>3&quot;</td>
<td></td>
</tr>
<tr>
<td>2&quot;</td>
<td></td>
</tr>
<tr>
<td>1&quot;</td>
<td></td>
</tr>
<tr>
<td>1/2&quot;</td>
<td></td>
</tr>
<tr>
<td>1/4&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**
- 0.2% Gravel
- 81.3% Sand
- 18.5% Fines

---

[Graph showing gradation test results]
**Report of Gradation**

ASTM C-117 & C-136

---

**Project Name**  
VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES

---

**Client**  
QUANTA SUBSURFACE

---

**Material Source**  
BH 271, 0-4 FOOT DEPTH

---

## ASTM C-117 & C-136

### Standard Designation (mm/µm)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Amount Passing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
</tr>
</tbody>
</table>

- **53.9% Gravel**
- **42.3% Sand**
- **3.8% Fines**

---

**Comments:**
### Report of Gradation

**ASTM C-117 & C-136**

**Project Name:** VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES

**Client:** QUANTA SUBSURFACE

**Material Source:** BH 273, 0-4 FOOT DEPTH

**Project Number:** 16-0600

**Lab ID:** 1300M

**Date Received:** 7/6/2016

**Date Completed:** 7/14/2016

**Tested By:** MARK BENNETT

<table>
<thead>
<tr>
<th>STANDARD DESIGNATION (mm/µm)</th>
<th>SIEVE SIZE</th>
<th>AMOUNT PASSING (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm</td>
<td>6&quot;</td>
<td>100</td>
</tr>
<tr>
<td>100 mm</td>
<td>4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>75 mm</td>
<td>3&quot;</td>
<td>100</td>
</tr>
<tr>
<td>50 mm</td>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>38.1 mm</td>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>25.0 mm</td>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>19.0 mm</td>
<td>3/4&quot;</td>
<td>100</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>1/2&quot;</td>
<td>94</td>
</tr>
<tr>
<td>9.5 mm</td>
<td>3/8&quot;</td>
<td>91</td>
</tr>
<tr>
<td>6.3 mm</td>
<td>1/4&quot;</td>
<td>87</td>
</tr>
<tr>
<td>4.75 mm</td>
<td>No. 4</td>
<td>83, 16.8% Gravel</td>
</tr>
<tr>
<td>2.00 mm</td>
<td>No. 10</td>
<td>74</td>
</tr>
<tr>
<td>850 um</td>
<td>No. 20</td>
<td>64</td>
</tr>
<tr>
<td>425 um</td>
<td>No. 40</td>
<td>54, 65.7% Sand</td>
</tr>
<tr>
<td>250 um</td>
<td>No. 60</td>
<td>43</td>
</tr>
<tr>
<td>150 um</td>
<td>No. 100</td>
<td>31</td>
</tr>
<tr>
<td>75 um</td>
<td>No. 200</td>
<td>17.5, 17.5% Fines</td>
</tr>
</tbody>
</table>

**Comments:**

Sheet
Report of Moisture-Density

Method: ASTM D-698 STANDARD
Procedure: B

Maximum Dry Density (pcf): 117.4
Optimum Moisture Content (%): 12.5
Percent Oversized: 6.7%

Corrected Dry Density (pcf): 119.4
Corrected Moisture Content (%): 11.8

Moisture-Density Relationship Curve

Dry Density (pcf)

Moisture Content (%)
Report of Moisture-Density

Method: ASTM D-698 STANDARD
Procedure: B

Project Name: VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES
Project Number: 16-0600
Lab ID: 1396M
Date Received: 8/12/2016
Date Completed: 8/15/2016
Tested By: ANDREW MICHAUD

Client: QUANTA SUBSURFACE

Material Type: SANDY GRAVEL W/ TRACE SILT
Material Source: BH-271

Maximum Dry Density (pcf): 120
Optimum Moisture Content (%): 10
Percent Oversized: 24.8%

Corrected Dry Density (pcf): 127.5
Corrected Moisture Content (%): 8.0

Moisture-Density Relationship Curve

Comments

S.W.COLE ENGINEERING, INC.
13 Delta Drive, Unit 8, Londonderry, NH 03053-2329 • Tel (603) 716-2111 • Fax (603) 716-2112 • www.swcole.com
Project Name: VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES

Client: QUANTA SUBSURFACE

Material Type: SILTY SAND W/ SOME GRAVEL

Material Source: BH-285

Project Number: 16-0600

Lab ID: 1397M

Date Received: 8/12/2016

Date Completed: 8/15/2016

Tested By: ANDREW MICHAUD

Method: ASTM D-698 STANDARD

Procedure: B

Report of Moisture-Density

Maximum Dry Density (pcf): 122.3
Optimum Moisture Content (%): 7.9
Percent Oversized: 24.1%

Corrected Dry Density (pcf): 129.2
Corrected Moisture Content (%): 6.5

Comments

13 Delta Drive, Unit 8, Londonderry, NH 03053-2329 • Tel (603) 716-2111 • Fax (603) 716-2112 • www.swcole.com
Report of Moisture-Density

Method ASTM D-698 STANDARD Procedure B

Project Name VARIOUS NH - NORTHERN PASS TRANSMISSION LINE - LABORATORY TESTING SERVICES
Project Number 16-0600
Lab ID 1398M
Date Received 8/12/2016
Date Completed 8/15/2016
Tested By ANDREW MICHAUD

Client QUANTA SUBSURFACE
Material Type SAND W/ TRACE SILT AND GRAVEL
Material Source BH-287

Moisture-Density Relationship Curve

Maximum Dry Density (pcf) 120.5
Optimum Moisture Content (%) 10.5
Percent Oversized 21.1%

Corrected Dry Density (pcf) 126.7
Corrected Moisture Content (%) 8.7

Comments

13 Delta Drive, Unit 8, Londonderry, NH 03053-2329 • Tel (603) 716-2111 • Fax (603) 716-2112 • www.swcole.com