REPORT

MID-CURRITUCK BRIDGE PROJECT
WBS Element: 34470.1.TA1
STIP No. R-2576

2019 GEOTECHNICAL INVESTIGATIONS TO SUPPORT HYDRAULIC DESIGN AND PERMITTING

Submitted to:

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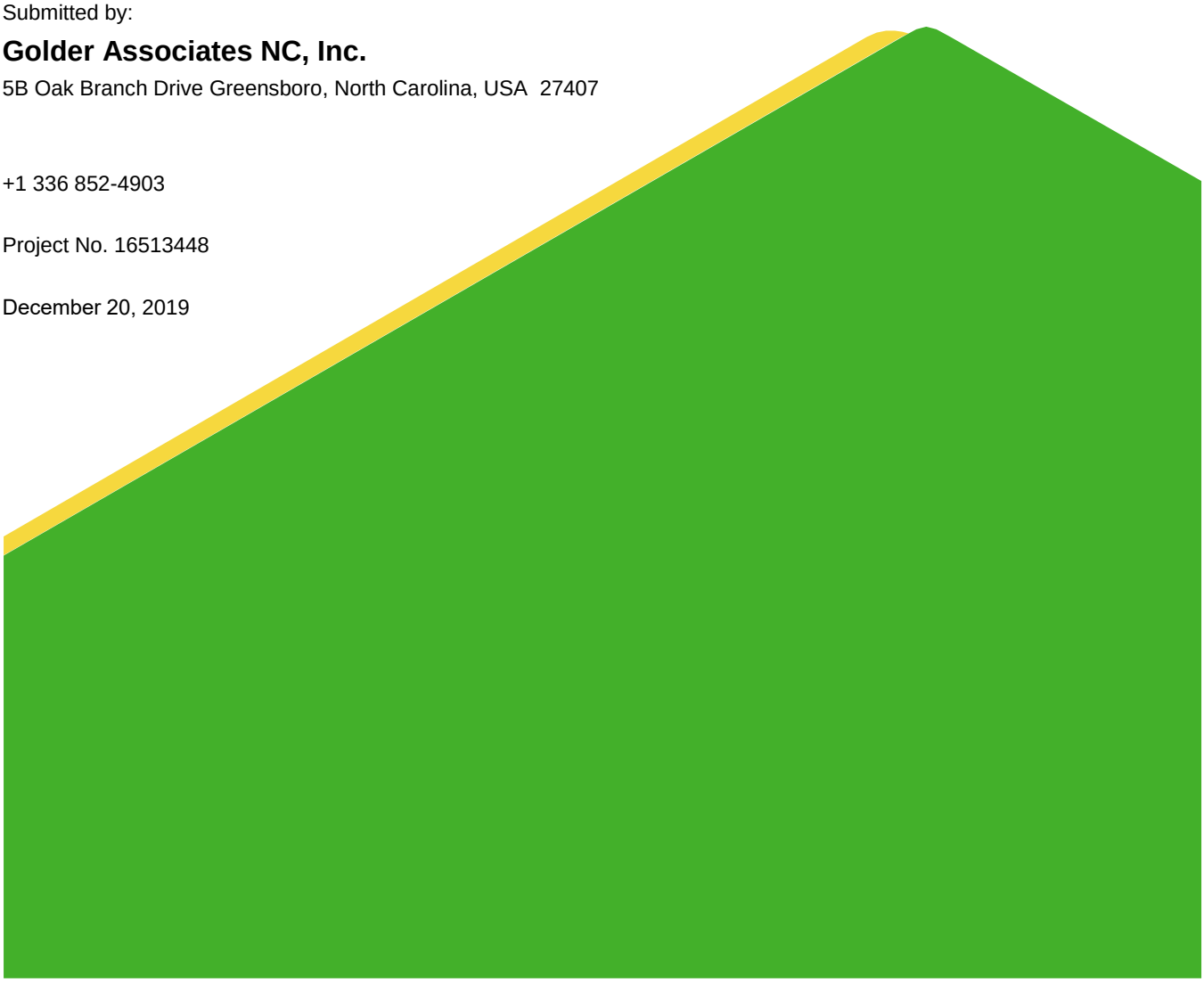
Project No. 16513448

December 20, 2019



Distribution List

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1.0 BACKGROUND

At the request of H.W. Lochner (Lochner), Golder Associates NC, Inc. (Golder) has prepared this report to summarize the geotechnical field investigations completed by Golder between July 8, 2019 – August 8, 2019 to support the hydraulic design and permitting of the Mid-Currituck Bridge State Transportation Improvement Program (STIP) No. R-2576. Per the *Record of Decision* (ROD) issued on March 6, 2019 by Federal Highway Administration (FHWA), the Mid-Currituck Bridge project will consist of a 4.7 mile-long, two lane toll bridge across the Currituck Sound between the communities of Aydlett (mainland) and Corolla (Outer Banks), an interchange between US-158 and the mainland approach road to the bridge, a bridge across Maple Swamp as part of the mainland approach road, and limited improvements to existing NC-12 and US-158. Golder understands that the geotechnical data collected during this field investigation will be used by Wetherill Engineering (a member of the Lochner team) to develop the hydraulic designs on this project which are required for permitting.

2.0 UTILITY CLEARANCE & HEALTH AND SAFETY

Prior to drilling activities, Golder conducted a site visit with Mid-Atlantic Drilling to scout and mark the drilling locations, identify potential hazards, and inform property owners of the upcoming scope of work. If questioned, Golder provided the *Right of Entry* letter provided by the North Carolina Department of Transportation (NC DOT). During this site visit the owner of 4985, 4987, and 4995 Caratoke Highway denied access to their property. In response, the boring locations originally proposed to be on these properties were relocated to alternate locations on adjacent properties. Several other boring locations were also relocated to locations which were easier to access with the drill rig and presented inconvenience to the landowners. Each alternate location was located using a hand-held global position senor (GPS) with sub-meter accuracy. The alternate locations were later discussed and approved or abandoned by the project team including Lochner and Wetherill Engineering.

Following the initial site visit, Golder contacted NC 811 in accordance with State law to ensure that all public utility would be marked prior to commencing the field investigation. In addition, Golder contracted a private utility locating company (i.e., GPRS) to locate the Outer Banks project area where private utilities associated with a pump house used to supply irrigation water to a neighboring property were known to exist. The private locate was conducted on June 24, 2019. While on-site GPRS was accompanied by a Golder representative and all boring locations within the Outer Banks project area were located for private (and public) utilities. Simultaneously, Golder collected the positive response results supplied by NC 811 and followed up to ensure that all public utilities were also marked prior to drilling.

A project-specific and site-specific health and safety plan was completed by Golder to ensure that hazards specific to this project and these locations were identified. In the health and safety plan Golder included contact information, emergency procedures, directions to the nearest hospital, and a risk register. The risk register was used to quantify the potential hazards identified. These hazards were then eliminated or mitigated via the use of standard work procedures (SWPs), administrative or engineering controls, or via personal protective equipment (PPE).

3.0 FIELD INVESTIGATION SUMMARY

The following sections summarize the field investigations which were performed beginning July 8, 2019 and were completed on August 8, 2019. The results have been summarized by location and are separated into the three (3) distinct project areas which include:

- Outer Banks Project Area;

- Aydlett Project Area;
- And, US-158 Project Area.

3.1 Outer Banks Project Area

In the project scope, the Outer Banks project area includes geotechnical investigations associated with the hydraulic design and permitting associated with the barrier island bridge landing and limited improvements to NC-12 in Corolla, NC. Golder and its drilling subcontractor Mid-Atlantic Drilling completed the geotechnical field activities in this project area between July 8 and July 17, 2019. These activities included:

- Installation and completion of three (3) piezometers [including piezometers 39-L2, 40-Alt-L2, and 41-Alt-L2 on the North Carolina Department of Transportation (NC DOT) property which is the site of the bridge landing];
- The completion of twelve (12) shallow borings (including borings 39-L2, 40-L2, 41-L2, 53-Y5, 52-Y5, 51-Y5, 50-Alt-Y4, 48-Y4, 47-Y4, 47-Y4, 44-Y4, 45-Alt-Y4, and 42-Y4) and accompanying constant head infiltration tests.

3.1.1 General Observations

As Mid-Atlantic Drilling completed the piezometer installation and constant head infiltration tests, a Golder geologist provided oversight and recorded information including lithology, blow counts, soil types and conditions, groundwater levels, evidence of seasonal high groundwater elevations (based on soil science and texture indicators), infiltration data, and any other pertinent general field observations. The field observations are summarized on the borings logs include in *Appendix A*. A map showing the location of each boring is included for reference as *Figure 1*. In general, the lithology at location was similar and the grain size throughout all borings fairly homogenous and consisted of fine sand. As, presented, seasonal high groundwater was estimated based off the measured water level and soil conditions [including oxygenation/reduction features (mottles), laminations, and other potential textural indicators]. A summary of these estimations is included in *Table 1*.

For reference, we have included publicly available surface water elevation data (provided by the USGS) from the eastern side of the Currituck Sound in Corolla, NC as *Appendix B*. The graph in *Appendix B* displays the gage height (in elevation above mean sea level) for the last year. In general, there appears to be limited tidal influence in the area (on average ~ 0.5'). Because of this there is likely limited tidal influence on groundwater elevations as well.

3.1.2 Piezometer Installation

The piezometer installations were accomplished via the use of a CME 45 C track-mounted drill rig utilizing 3 ¼ - inch inside diameter (ID) hollow-stem augers (HSA). Continuous sampling was performed as each boring was advanced utilizing a 24-inch split spoon and standard penetration test (SPT) techniques. At each piezometer location when the water table was encounter an attempt was made to advance the boring an additional five (5) feet prior to installing 2-inch PVC slotted pipe and a riser of appropriate size into the ground. Due to flowing sands inside the augers each piezometer was washed into the boring through the augers in an attempt to reach the prescribed depth. During the installation process a natural sand pack was formed around each piezometer. Additional sand was added as a filter pack, if needed. Following the filter pack installation, a filter pack seal was installed. A minimum of two (2) feet bentonite chips were used to seal each boring. Following installation of the seal the bentonite chips were hydrated and allowed to rest a minimum of 1 hour prior to completing each

piezometer will a steel casing and 1' x 1' x 4" concrete pad. The completed monitoring well was then equipped with a well tag and locked in accordance with Title 15A of the North Carolina Administrative Code (NCAC) Subchapter 2C Section .0100 Well Construction Standards (15A NCAC 2C .0100). The groundwater elevations collected from the piezometers as well as from each borehole in the Outer Banks project area are summarized on *Table 1*.

3.1.3 Infiltration Test Results

After installation of a piezometer or following the completion of an initial boring utilizing HSA to determine depth to water, the drill rig was offset approximately five (5) feet. A new boring was advanced at the offset location using $^{11}/_{16}$-inch ID Geoprobe rods and Geoprobe groundwater sampler. The sampler and rods were advanced using the hydraulic pressure of the drill rig to the prescribed depth or to within approximately two (2) feet of the groundwater surface. Once installed, an additional drill rod was used to raise the outer casing Geoprobe groundwater sampler exposing an 18-inch screen on the submerged groundwater sampler. Once the screen was exposed the constant head infiltration testing was performed.

To start the test water was applied into the rods and groundwater sampler in an attempt to fill the rods. A water meter and a stop watch were utilized during the process to record the amount of water and the elapsed time. After a constant head was achieved in the rods (i.e., the rods were full), the infiltration test was initiated. The flow rate into the rods was adjusted to maintain a constant head throughout the test. The volume of water added to the rods was then recorded from the water meter at 1 minute, 5 minutes, and 10 minutes intervals. This data was then complied and used to calculate the infiltration rate and hydraulic conductivity for the tested depth at each location. A summary of the infiltration test results is attached as *Table 2*.

At two (2) locations 45-Alt-Y4 and 42-Y4 a constant head could not be achieved as water could not be added quickly enough to the rods. In this case the initial volume and elapsed time were recorded to obtain an estimated minimum infiltration rate, which is estimated to be a conservative lower bound of the ground infiltration capacity over the tested interval.

Following the completion of infiltration testing, the results were analyzed utilizing the equation derived by Glover (1953) and a calculation for hydraulic conductivity was completed:

$$K = \frac{2Q}{rC(T_u+h-L_a)} \text{ and } C = \frac{(2\pi h)/r}{sinh^{-1}\left(\frac{h}{r}\right)-1}$$

Where K = hydraulic conductivity, Q = flow rate, r = radius, C = Glovers coefficient, T_u = distance from the top of the water column to the top of the water table, h = height of the water column inside the rods (constant head), L_a = distance from the bottom of the rods to the top of the water table. The results of this analysis are also included on *Table 2*.

3.2 Aydlett (Mainland) Bridge Landing Project Area

The Aydlett project area includes the mainland bridge landing for the Mid-Currituck Bridge and the approach bridge landing across Maple Swamp located to the west of Aydlett. Golder and its drilling subcontractor Mid-Atlantic Drilling completed the geotechnical field activities to support hydraulic design and permitting in this project area between July 18 and July 19, 2019. These activities included:

- Installation and completion of three (3) piezometers (including piezometers 31-L, 33-L, and 35-L);

- The completion of six (6) shallow borings (including borings 31-L, 32-L, 33-L, 34-L, 35-L, and 36-L) and accompanying constant head infiltration tests.

3.2.1 General Observations

As Mid-Atlantic Drilling completed the piezometer installation and constant head infiltration tests, a Golder geologist provided oversight and recorded information including lithology, blow counts, soil types and conditions, groundwater levels, evidence of seasonal high groundwater elevations (based on soil science and texture indicators), infiltration data, and any other pertinent general field observations. The field observations are summarized on the boring logs included as *Appendix A*. A map showing the locations of each boring is included as *Figure 2*. As presented, seasonal high was estimated based off the measured water level and soil conditions [including oxygenation/reduction features (mottles), laminations, and other potential textural indicators]. A summary of these estimations from the Aydlett project area are included in *Table 3*.

3.2.2 Piezometer Installation

In similar fashion to the Outer Banks project area, the piezometer installations were accomplished via the use of a CME 45 C track-mounted drill rig utilizing 3 ¼ -inch ID HSAs. Continuous sampling was performed as each boring was advanced utilizing a 24-inch split spoon and utilizing SPT techniques. At each piezometer location when the water table was encounter an attempt was made to advance the boring an additional five (5) feet prior to installing 2-inch PVC slotted pipe and a riser of appropriate size into the ground. Due to flowing sands inside the augers each piezometer was washed into the boring through the augers in an attempt to reach the prescribed depth. During the installation process a natural sand pack was formed around each piezometer. Additional sand was added as a filter pack, if needed. Following the filter pack installation, a filter pack seal was installed. A minimum of two (2) feet bentonite chips were used to seal each boring. Following installation of the seal the bentonite chips were hydrated and allowed to rest a minimum of 1 hour prior to completing each piezometer will a steel casing and 1’ x 1’ x 4” concrete pad. The completed monitoring well was then equipped with a well tag and locked in accordance with 15A NCAC 2C .0100. The groundwater elevations collected from the piezometers as well as from each borehole in the Aydlett project area are summarized on *Table 3*.

3.2.3 Infiltration Test Results

After installation of a piezometer or following the completion of an initial boring utilizing HSAs to determine depth to water, the drill rig was offset approximately five (5) feet. A new boring was advanced at the offset location using $^{11}/_{16}$-inch ID Geoprobe rods and Geoprobe groundwater sampler. The sampler and rods were advanced using the hydraulic pressure of the drill rig to the prescribed depth or to within approximately two (2) feet of the groundwater surface. Once installed, an additional drill rod was used to raise the outer casing Geoprobe groundwater sampler exposing an 18-inch screen on the submerged groundwater sampler. Once the screen was exposed the constant head infiltration testing was performed.

To start the test water was applied into the rods and groundwater sampler in an attempt to fill the rods. A water meter and a stop watch were utilized during the process to record the amount of water and the elapsed time. After a constant head was achieved in the rods (i.e., the rods were full), the infiltration test was initiated. The flow rate into the rods was adjusted to maintain a constant head throughout the test. The volume of water added to the rods was then recorded from the water meter at 1 minute, 5 minutes, and 10 minutes intervals. This data was then complied and used to calculate the infiltration rate and hydraulic conductivity for the tested depth at each location. A summary of the infiltration test results from each area are attached as *Table 4*.

Following the completion of infiltration testing, the results were analyzed utilizing the equation presented in Section 2.1.3. The results of this analysis are also included on *Table 4*.

3.3 US-158 Project Area

The US-158 project area includes geotechnical investigations associated with the hydraulic design and permitting associated the US-158 interchange and limited improvements to US-158 as associated with the Mid-Currituck Bridge Project. Golder and its drilling subcontractor Mid-Atlantic Drilling completed the geotechnical field activities associated with the US-158 project area between July 22 and July 26, 2019. These activities included:

- Installation and completion of four (4) piezometers (including piezometers 23-Alt-Y1A, 8-Y, 18-RPA, and 1-Alt-Y);
- And, the completion of seventeen (17) shallow borings (including boreholes 23-Alt-Y1A, 10-Alt-Y, 22-Y1A, 9-Y, 13-YNB, 12-YNB, 8-Y, 18-RPA, 14-RPD, 15-RPD, 29-Alt-RPD, 16-Alt-RPD, 17-Alt-RPD, 28-Alt-RPD, 5-Alt-Y, 27-Alt-Y2A, and 1-Alt-Y) and accompanying constant head infiltration tests.

In addition, eight (8) borehole locations (i.e., 7-Y, 6-Y, 19-Alt-RPA, 20-Alt-RPA, 26-Alt-Y2, 4-Y, 3-Y, and 2-Y) could not be accessed with the drill rig during the initial mobilization as the borings were located in active agricultural fields. Four (4) of the borehole locations were located on the Markert property and four (4) of the borehole locations were located Wright property both of which are located along US-158. Both fields were planted with soybeans. After discussion, it was determined that accessing these locations with the drill rig would impact and cause damage to the crops; therefore, the decision was made to access these locations and perform the prescribed infiltration testing by hand via the use of a hand auger and a fabricated permeameter. These borehole locations were completed between August 6 and August 8, 2019. As presented, these activities included:

- The completion of eight (8) shallow borings utilizing a hand auger (including boreholes 7-Y, 6-Y, 19-Alt-RPA, 20-Alt-RPA, 26-Alt-Y2, 4-Y, 3-Y, and 2-Y) and accompanying constant head infiltration tests utilizing a fabricated permeameter.

3.3.1 General Observations

As Mid-Atlantic Drilling completed the piezometer installation and constant head infiltration tests, a Golder scientist provided oversight and recorded information including lithology, blow counts, soil types and conditions, groundwater levels, evidence of seasonal high groundwater elevations (based on soil science and texture indicators), infiltration data, and any other pertinent general field observations. The field observations are summarized on the boring logs included in *Appendix A*. A map showing the location of each boring is included for reference as *Figure 3*. As presented, seasonal high was estimated based off the measured water level and soil conditions [including oxygenation/reduction features (mottles), laminations, and other potential textural indicators]. A summary of these estimations from the US-158 project area are included in *Table 5* and *Table 7* (for the hand augered locations).

3.3.2 Piezometer Installation

In similar fashion to the Outer Banks and Aydlett project areas, the piezometer installations were accomplished via the use of a CME 45 C track-mounted drill rig utilizing 3 ¼ -inch ID HSAs. Continuous sampling was performed as each boring was advanced utilizing a 24-inch split spoon and utilizing SPT techniques. At each piezometer location when the water table was encounter an attempt was made to advance the boring an

additional five (5) feet prior to installing 2-inch PVC slotted pipe and a riser of appropriate size into the ground. Due to flowing sands inside the augers each piezometer was washed into the boring through the augers in an attempt to reach the prescribed depth. During the installation process a natural sand pack was formed around each piezometer. Additional sand was added as a filter pack, if needed. Following the filter pack installation, a filter pack seal was installed. A minimum of two (2) feet bentonite chips were used to seal each boring. Following installation of the seal the bentonite chips were hydrated and allowed to rest a minimum of 1 hour prior to completing each piezometer will a steel casing and 1' x 1' x 4" concrete pad. The completed monitoring well was then equipped with a well tag and locked in accordance with 15A NCAC 2C .0100. The groundwater elevations collected from the piezometers as well as from each borehole in the US-158 project area are summarized on *Table 5*.

3.3.3 Infiltration Test Results

After installation of a piezometer or following the completion of an initial boring utilizing HSAs to determine depth to water, the drill rig was offset approximately five (5) feet. A new boring was advanced at the offset location using $^{11}/_{16}$-inch ID Geoprobe rods and Geoprobe groundwater sampler. The sampler and rods were advanced using the hydraulic pressure of the drill rig to the prescribed depth or to within approximately two (2) feet of the groundwater surface. Once installed, an additional drill rod was used to raise the outer casing Geoprobe groundwater sampler exposing an 18-inch screen on the submerged groundwater sampler. Once the screen was exposed the constant head infiltration testing was performed.

To start the test water was applied into the rods and groundwater sampler in an attempt to fill the rods. A water meter and a stop watch were utilized during the process to record the amount of water and the elapsed time. After a constant head was achieved in the rods (i.e., the rods were full), the infiltration test was initiated. The flow rate into the rods was adjusted to maintain a constant head throughout the test. The volume of water added to the rods was then recorded from the water meter at 1 minute, 5 minutes, and 10 minutes intervals. This data was then complied and used to calculate the infiltration rate and hydraulic conductivity for the tested depth at each location. A summary of the infiltration test results from each area are attached as *Table 6*.

Following the completion of infiltration testing, the results were analyzed utilizing the equation presented in Section 2.1.3. The results of this analysis are also included on *Table 6*.

3.3.4 Hand Auger Borehole and Infiltration Test Results

Following the completion of an initial boring utilizing a hand auger to determine depth to water, the drill crew offset approximately five (5) feet. A new boring was advanced at the offset location using $^{11}/_{16}$-inch ID Geoprobe rods and Geoprobe groundwater sampler. The sampler and rods were advanced by hand using a sledge hammer to the prescribed depth or to within approximately two (2) feet of the groundwater surface. Once installed, an additional drill rod was used to raise the outer casing Geoprobe groundwater sampler exposing an 18-inch screen on the submerged groundwater sampler. Once the screen was exposed the constant head infiltration testing was performed.

To start the test water was applied into the rods and groundwater sampler in an attempt to fill the rods. A water meter and a stop watch were utilized during the process to record the amount of water and the elapsed time. After a constant head was achieved in the rods (i.e., the rods were full), the infiltration test was initiated. The flow rate into the rods was adjusted to maintain a constant head throughout the test. The volume of water added to the rods was then recorded from the water meter at 1 minute, 5 minutes, and 10 minutes intervals. This data was

then complied and used to calculate the infiltration rate and hydraulic conductivity for the tested depth at each location. A summary of the infiltration test results from each area are attached as *Table 8*.

Following the completion of infiltration testing, the results were analyzed using the equation presented in Section 2.1.3. The results of this analysis are also included on *Table 8*.

4.0 CONCLUSION

Following the completion of field investigation, NC DOT was contacted to provide assistance surveying the completed borehole locations. The NC DOT survey included elevation data for each borehole location which was incorporated into the tables, is summarized in *Table 9*, and is provided in this report as *Appendix C*. In addition, several soil samples were submitted to Geotechnics soil laboratory in Raleigh, NC for sieve analysis to verify grain size and compare to the lithology recorded during the completion of the field investigation. The results of the soil test results are summarized in *Table 10* and provided in this report as *Appendix D.*

Golder appreciates the opportunity to assist Lochner with this project. If any additional information is required or if you have any questions, please contact the undersigned.

Signature Page

Sincerely,

Golder Associates NC, Inc.

Benjamin Draper, PG, PMP
Senior Project Geologist

Gregory Hebeler, PHD, PE
Principal and Practice Leader

BD/GH/bd:

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TABLES

Table 1
Outer Banks Project Area - Current Water Levels and Estimation of Seasonal High Groundwater
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location:	Date:	Time:	Surveyed Ground Surface Elevations (ft amsl):	Observed Water Level (ft-bgs):	Estimated Seasonal High (ft-bgs):	Estimated Delta Between Observed WL and Estimated Seasonal High WL (ft):	Observed Groundwater Elevations (ft amsl):	Estimated Seasonal High Groundwater Elevations (ft amsl):
39-L2 (Piezometer)	07/09/19	15:56	4.07	3.49	3.00	0.49	0.58	1.07
40-Alt-L2 (Piezometer)	07/09/19	16:45	6.55	3.53	3.00	0.53	3.02	3.55
41-Alt-L2 (Piezometer)	07/10/19	15:25	11.85	8.18	7.00	1.18	3.67	4.85
53-Y5	07/11/19	14:20	12.91	7.10	6.50	0.60	5.81	6.41
52-Y5	07/12/19	10:15	14.49	7.50	5.50	2.00	6.99	8.99
51-Y5	07/12/19	8:35	11.36	5.30	4.00	1.30	6.06	7.36
50-Alt-Y4	07/12/19	10:37	16.40	9.50	8.00	1.50	6.9	8.40
48-Y4	07/16/19	9:25	10.02	4.00	3.50	0.50	6.02	6.52
47-Y4	07/16/19	11:15	9.27	4.00	3.00	1.00	5.27	6.27
45-Alt-Y4	07/17/19	11:51	18.54	13.54	12.50	1.04	5	6.04
44-Y4	07/16/19	13:42	16.83	11.00	8.00	3.00	5.83	8.83
42-Y4	07/17/19	14:53	15.20	8.00	6.00	2.00	7.2	9.20
				Geomean (Delta in Current Water Level vs. Estimated Seasonal High):		**1.07**		

Notes:
1.) Ground surface elevations were surveyed by NC DOT on 08/15-16/2019.
2.) Estimated seasonal high water level was estimated by field observations and recorded lithology. These estimations are considered approximate.
3.) ft amsl = feet above mean sea level
4.) ft-bgs = feet below ground surface
5.) WL = water level
6.) (Piezometer) denotes that a piezometer was installed at this location.

Table 2
Outer Banks Project Area - Infiltration (Constant Head) Test Results
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location ID:	Proposed Depth (ft bgs):	Depth to GW (bgs):	Test Depth (ft bgs):	Depth from Test to GW (ft):	Screen Length (ft):	Length of Rods (ags):	Length of Rods (bgs):	Length of Rods (ft):	Volume of Rods (gal):	Volume to Fill Rods (gal):	Time to Fill Rods (sec):	Time to Fill Rods (min):	$Q_{Initial}$ (gal/min):	Volume (gal) @ 1 (min):	Rate (gal/min) @ 1 (min):	Vollume (gal) @ 5 (min):	Rate (gal/min) @ 5 (min):	Vollume (gal) @ 10 (min):	Rate (gal/min) @ 10 (min):	Geomean of Constant Head Test (gal/min)	Calculated Hydraulic Conductivity (in/hr):
39-L2	2.0	3.49	0.5-2.0	1.49	1.50	3.9	2.0	5.9	0.38	0.50	70	1.17	0.43	0.63	0.63	3.00	0.60	7.31	0.73	0.65	1.44
40-Alt-L2	5.0	3.53	1.5-3.0	0.53	1.50	3.3	3.0	6.3	0.41	5.75	600	10.00	0.58	1.13	1.13	5.00	1.00	10.38	1.04	1.05	2.24
41-Alt-L2	5.0	8.18	3.5-5.0	3.18	1.50	1.0	5.0	6.0	0.39	1.47	68	1.13	1.30	1.38	1.38	5.25	1.05	9.74	0.97	1.12	2.11
53-Y5	11.0	7.10	3.5-5.0	2.10	1.50	1.0	5.0	6.0	0.39	2.24	98	1.63	1.37	1.11	1.11	4.24	0.85	7.76	0.78	0.90	1.84
52-Y5	12.0	7.50	3.5-5.0	2.50	1.50	1.0	5.0	6.0	0.39	0.87	50	0.83	1.04	0.60	0.60	2.18	0.44	4.48	0.45	0.49	0.97
51-Y5	10.0	5.30	3.5-5.0	0.30	1.50	3.1	3.0	6.1	0.39	4.71	239	3.98	1.18	1.15	1.15	4.89	0.98	8.99	0.90	1.00	2.32
50-Alt-Y4	11.0	9.50	5.5-7.0	2.50	1.50	3.1	7.0	10.1	0.65	23.89	373	6.22	3.84	8.72	8.72	45.84	9.17	89.41	8.94	8.94	7.13
48-Y4	6.0	4.00	1.0-2.5	1.50	1.50	3.8	2.5	6.3	0.41	0.61	27	0.45	1.36	0.75	0.75	2.7	0.54	5.0	0.50	0.59	1.16
47-Y4	6.0	4.00	1.0-2.5	1.50	1.50	2.5	3.8	6.3	0.41	2.66	46	0.77	3.47	0.76	0.76	3.1	0.63	5.9	0.59	0.66	1.29
45-Alt-Y4	12.0	13.54	9.5-11.0	2.54	1.50	3.1	11.0	14.1	0.91	75.00	712	11.87	6.32	-	-	-	-	-	-	6.32	2.77
44-Y4 (1)	14.0	11.00	7.5-9.0	2.00	1.50	9.0	1.1	10.1	0.65	153.19	2374	39.57	3.87	5.30	5.30	28.0	5.60	59.9	5.99	5.62	4.59
44-Y4 (1)	14.0	11.00	0.5-2.0	9.00	1.50	4.1	2.0	6.1	0.39	4.28	66	1.10	3.89	0.81	0.81	4.1	0.81	7.8	0.78	0.80	1.04
42-Y4	12.0	8.00	4.5-6.0	2.00	1.50	4.0	6.0	10.0	0.64	75.01	920	15.33	4.89	-	-	-	-	-	-	4.89	4.07

Notes:
1.) Infiltration tests for 45-Alt-Y4 and 42-Y4 could not be completed as the rods could not be filled to perform a constant head test. The initial fill rate was recorded.
2.) GW = groundwater
3.) bgs = below ground surface
4.) ags = above ground surface
5.) Proposed depths (Column 2) for the infiltration tests were provided by Wetherill Engineering in an email dated 07/07/2019.

Table 3
Aydlett Project Area - Current Water Levels and Estimation of Seasonal High Groundwater
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location:	Date:	Time:	Surveyed Ground Surface Elevations (ft amsl):	Observed Water Level (ft-bgs):	Estimated Seasonal High (ft-bgs):	Estimated Delta Between Observed WL and Estimated Seasonal High WL (ft):	Observed Groundwater Elevations (ft amsl):	Estimated Seasonal High Groundwater Elevations (ft amsl):
31-L (Piezometer)	07/22/19	16:15	12.74	4.80	2.50	2.30	7.94	10.24
32-L	07/18/19	11:21	13.24	5.50	3.00	2.50	7.74	10.24
33-L (Piezometer)	07/22/19	16:30	16.56	6.27	4.00	2.27	10.29	12.56
34-L	07/18/19	14:55	16.52	5.50	3.50	2.00	11.02	13.02
35-L (Piezometer)	07/22/19	16:45	17.75	7.80	5.75	2.05	9.95	12.00
36-L	07/18/19	16:15	16.99	5.00	4.00	1.00	11.99	12.99
					Geomean (Delta in Current Water Level vs. Estimated Seasonal High):	**1.94**		

Notes:
1.) Ground surface elevations were surveyed by NC DOT on 08/15-16/2019.
2.) Estimated seasonal high water level was estimated by field observations and recorded lithology. These estimations are considered approximate.
3.) ft amsl = feet above mean sea level
4.) ft-bgs = feet below ground surface
5.) WL = water level
6.) (Piezometer) denotes that a piezometer was installed at this location.

Table 4
Aydlett Project Area - Infiltration (Constant Head) Test Results
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location ID:	Proposed Depth (ft bgs):	Observed Depth to GW (bgs):	Test Depth (ft bgs):	Depth from Test to GW (ft):	Screen Length (ft):	Length of Rods (ags):	Length of Rods (bgs):	Length of Rods (ft):	Volume of Rods (gal):	Volume to Fill Rods (gal):	Time to Fill Rods (sec):	$Q_{initial}$ (gal/min):	Volume (gal) @ 1 (min):	Rate (gal/min) @ 1 (min):	Vollume (gal) @ 5 (min):	Rate (gal/min) @ 5 (min):	Vollume (gal) @ 10 (min):	Rate (gal/min) @ 10 (min):	Geomean of Constant Head Test (gal/min):	Calculated Hydraulic Conductivity (in/hr):
31-L	12.0	5.54	3.0	2.54	1.5-3.0	3.1	3.0	6.1	0.39	0.39	15	1.56	0.22	0.22	0.39	0.08	0.71	0.07	0.11	0.21
32-L	13.0	5.50	3.0	2.50	1.5-3.0	3.1	3.0	6.1	0.39	0.39	35	0.67	0.04	0.04	0.12	0.02	0.19	0.02	0.03	0.05
33-L	14.0	5.50	3.0	2.50	1.5-3.0	3.1	3.0	6.1	0.39	0.39	18	1.30	0.42	0.42	0.96	0.19	2.01	0.20	0.25	0.49
34-L	14.0	5.50	3.0	2.50	1.5-3.0	3.1	3.0	6.1	0.39	0.39	35	0.67	0.21	0.21	0.39	0.08	0.64	0.06	0.10	0.20
35-L	14.0	6.50	4.0	2.50	2.0-4.0	2.1	4.0	6.1	0.39	0.58	19	1.83	0.53	0.53	2.48	0.50	4.77	0.48	0.50	0.96
36-L	14.0	5.00	3.0	2.00	1.5-3.0	3.1	3.0	6.1	0.39	0.39	13	1.80	0.44	0.44	1.99	0.40	3.71	0.37	0.40	0.81

Notes:
1.) GW = groundwater
2.) bgs = below ground surface
3.) ags = above ground surface
4.) Proposed depths (Column 2) for the infiltration tests were provided by Wetherill Engineering in an email dated 07/07/2019.

Table 5
US-158 Project Area - Current Water Levels and Estimation of Seasonal High Groundwater
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location:	Date:	Time:	Estimated Ground Surface Elevations (ft amsl):	Observed Water Level (ft-bgs):	Estimated Seasonal High (ft-bgs):	Estimated Delta Between Observed WL and Estimated Seasonal High WL (ft):	Observed Groundwater Elevations (ft amsl):	Estimated Seasonal High Groundwater Elevations (ft amsl):
23-Alt-Y1A (Piezometer)	07/26/19	8:10	8.57	6.94	4.00	2.94	1.63	4.57
22-Alt-Y1A	07/23/19	12:50	9.05	5.50	4.00	1.50	3.55	5.05
10-Alt-Y	07/24/19	8:30	5.08	3.10	0.50	2.60	1.98	4.58
9-Y	07/24/19	9:20	8.04	4.50	2.00	2.50	3.54	6.04
13-YNB	07/24/19	10:20	7.93	3.10	2.00	1.10	4.83	5.93
12-YNB	07/24/19	11:15	11.85	4.00	2.00	2.00	7.85	9.85
8-Y (Piezometer)	07/26/19	8:00	10.24	3.05	2.00	1.05	7.19	8.24
16-Alt-RPD	07/24/19	15:00	10.44	4.00	2.00	2.00	6.44	8.44
15-RPD	07/24/19	15:35	11.81	6.00	4.00	2.00	5.81	7.81
29-Alt-RPD	07/24/19	16:15	11.83	6.00	4.00	2.00	5.83	7.83
14-RPD	07/24/19	17:00	11.01	4.50	2.50	2.00	6.51	8.51
18-RPA (Piezometer)	07/26/19	7:50	12.12	6.66	4.00	2.66	5.46	8.12
5-Alt-Y	07/25/19	9:15	7.76	3.00	1.00	2.00	4.76	6.76
27-Alt-Y2A	07/25/19	10:00	10.41	3.50	2.00	1.50	6.91	8.41
28-Alt-RPD	07/25/19	10:55	8.83	4.00	2.00	2.00	4.83	6.83
17-Alt-RPD	07/25/19	11:35	12.56	5.00	3.00	2.00	7.56	9.56
1-Alt-Y (Piezometer)	07/26/19	7:40	11.07	3.50	2.00	1.50	7.57	9.07
				Geomean (Delta in Current Water Level vs. Estimated Seasonal High):		**1.89**		

Notes:
1.) Ground surface elevations were surveyed by NC DOT on 08/15-16/2019.
2.) Estimated seasonal high water level was estimated by field observations and recorded lithology. These estimations are considered approximate.
3.) ft amsl = feet above mean sea level
4.) ft-bgs = feet below ground surface
5.) WL = water level
6.) (Piezometer) denotes that a piezometer was installed at this location.

Table 6
US-158 Project Area - Infiltration (Constant Head) Test Results
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location ID:	Proposed Depth (ft bgs):	Observed Depth to GW (bgs):	Test Depth (ft bgs):	Depth from Test to GW (ft):	Screen Length (ft):	Length of Rods (ags):	Length of Rods (bgs):	Length of Rods (ft):	Volume of Rods (gal):	Volume to Fill Rods (gal):	Time to Fill Rods (sec):	$Q_{initial}$ (gal/min):	Volume (gal) @ 1 (min):	Rate (gal/min) @ 1 (min):	Vollume (gal) @ 5 (min):	Rate (gal/min) @ 5 (min):	Vollume (gal) @ 10 (min):	Rate (gal/min) @ 10 (min):	Geomean of Constant Head Test (gal/min):	Calculated Hydraulic Conductivity (in/hr):
23-Alt-Y1A	8.0	7.0	6.0	1.0	4.5-6.0	4.0	6.0	10.0	0.64	0.64	38	1.01	0.66	0.66	2.87	0.57	5.28	0.53	0.58	0.51
22-Alt-Y1A	8.0	5.0	3.0	2.0	1.5-3.0	3.1	3.0	6.1	0.39	0.44	14	1.89	0.44	0.44	1.46	0.29	2.48	0.25	0.32	0.64
10-Alt-Y	2.5	3.5	2.5	1.0	1.0-2.5	2.5	3.6	6.1	0.39	0.39	10	2.34	0.11	0.11	0.14	0.03	0.19	0.02	0.04	0.08
9-Y	2.5	5.4	4.0	1.4	2.5-4.0	1.2	4.0	5.2	0.33	0.33	13	1.52	0.28	0.28	0.41	0.08	0.50	0.05	0.10	0.29
13-YNB	3.5	4.0	2.0	2.0	0.5-2.0	4.1	2.0	6.1	0.39	0.39	10	2.34	0.22	0.22	0.31	0.06	0.45	0.05	0.08	0.17
12-YNB	4.0	4.0	3.0	1.0	1.5-3.0	3.1	3.0	6.1	0.39	0.39	31	0.75	0.12	0.12	0.28	0.06	0.45	0.05	0.07	0.15
8-Y	5.0	3.0	3.0	0.0	1.5-3.0	3.1	3.0	6.1	0.39	0.39	19	1.23	0.13	0.13	0.19	0.04	0.23	0.02	0.05	0.12
16-Alt-RPD	6.5	4.0	3.0	1.0	1.5-3.0	3.1	3.0	6.1	0.39	0.39	16	1.46	0.45	0.45	0.92	0.18	1.27	0.13	0.22	0.48
15-RPD	6.5	6.0	5.0	1.0	4.5-6.0	1.0	6.0	7.0	0.45	0.45	13	2.08	0.24	0.24	0.52	0.10	0.75	0.08	0.12	0.21
29-Alt-RPD	10.0	6.0	5.0	1.0	3.5-5.0	1.0	5.0	6.0	0.39	0.74	30	1.48	0.52	0.52	2.50	0.50	4.74	0.47	0.50	1.12
14-RPD	9.0	4.5	4.0	0.5	2.5-4.0	2.1	4.0	6.1	0.39	0.45	15	1.80	0.61	0.61	2.13	0.43	4.07	0.41	0.47	1.07
18-RPA	6.0	6.0	5.0	1.0	3.5-5.0	1.0	5.0	6.0	0.39	0.74	30	1.48	0.52	0.52	2.50	0.50	4.74	0.47	0.50	1.12
5-Alt-Y	5.5	3.0	2.5	0.5	1.0-2.5	3.6	2.5	6.1	0.39	0.39	19	1.23	0.18	0.18	0.45	0.09	0.81	0.08	0.11	0.25
27-Alt-Y2A	9.0	3.5	2.5	1.0	1.0-2.5	3.6	2.5	6.1	0.39	0.41	25	0.98	0.11	0.11	0.2	0.05	0.3	0.03	0.06	0.12
28-Alt-RPD	7.5	4.0	3.0	1.0	1.5-3.0	3.1	3.0	6.1	0.39	0.56	34	0.99	0.01	0.01	0.1	0.01	0.1	0.01	0.01	0.03
17-Alt-RPD	5.5	5.0	3.5	1.5	2.0-3.5	2.6	3.5	6.1	0.39	0.44	14	1.89	0.58	0.58	1.4	0.29	2.4	0.24	0.34	0.71
1-Alt-Y	6.5	3.2	2.5	0.7	1.0-2.5	3.6	2.5	6.1	0.39	0.39	17	1.38	0.12	0.12	0.2	0.03	0.2	0.02	0.04	0.09

Notes:
1.) GW = groundwater
2.) bgs = below ground surface
3.) ags = above ground surface
4.) Proposed depths (Column 2) for the infiltration tests were provided by Wetherill Engineering in an email dated 07/07/2019.

Table 7
US-158 Project Area - Hand Auger Locations - Current Water Levels and Estimation of Seasonal High Groundwater
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location:	Date:	Time:	Survyed Ground Surface Elevations (ft amsl):	Observed Water Level (ft-bgs):	Estimated Seasonal High (ft-bgs):	Estimated Delta Between Observed WL and Estimated Seasonal High WL (ft):	Observed Groundwater Elevations (ft amsl):	Estimated Seasonal High Groundwater Elevations (ft amsl):
26-Alt-Y2	08/06/19	14:30	11.95	4.50	4.00	0.50	7.45	7.95
2-Y	08/06/19	15:55	10.63	4.50	2.61	1.89	6.13	8.02
3-Y	08/07/19	8:15	11.87	5.00	4.00	1.00	6.87	7.87
4-Y	08/07/19	9:30	9.90	4.00	2.00	2.00	5.90	7.90
20-Alt-RPA	08/07/19	10:55	11.68	4.20	4.00	0.20	7.48	7.68
19-Alt-RPA	08/07/19	12:45	9.63	3.62	2.00	1.62	6.01	7.63
6-Y	08/07/19	13:55	10.21	3.71	2.00	1.71	6.50	8.21
7-Y	08/07/19	15:00	10.45	3.51	2.00	1.51	6.94	8.45
			Geomean (Delta in Current Water Level vs. Estimated Seasonal High):			**1.06**		

Notes:
1.) Ground surface elevations were surveyed by NC DOT on 08/15-16/2019.
2.) Estimated seasonal high water level was estimated by field observations and recorded lithology. These estimations are considered approximate.
3.) The geomean of the previous borings in US-158 project area (listed on Table 5) was used for the estimated delta between the observed water level and the estimated seasonal high water level for boring 2-Y.

Table 8
US-158 Project Area - Hand Auger Locations - Current Water Levels and Estimation of Seasonal High Groundwater
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

Location ID:	Proposed Depth (ft bgs):	Observed Depth to GW (bgs):	Test Depth (ft bgs):	Depth from Test to GW (ft):	Screen Length (ft):	Length of Rods (ags):	Length of Rods (bgs):	Length of Rods (ft):	Volume of Rods (gal):	Volume to Fill Rods (gal):	Time to Fill Rods (sec):	$Q_{initial}$ (gal/min):	Volume (gal) @ 1 (min):	Rate (gal/min) @ 1 (min):	Vollume (gal) @ 5 (min):	Rate (gal/min) @ 5 (min):	Vollume (gal) @ 10 (min):	Rate (gal/min) @ 10 (min):	Geomean of Constant Head Test (gal/min):	Calculated Hydraulic Conductivity (in/hr):
26-Alt-Y2	10.0	4.5	3.0	1.5	1.5-3.0	3.1	3.0	6.1	0.39	0.39	20	1.17	0.39	0.39	1.06	0.21	1.75	0.18	0.24	0.51
2-Y	5.5	4.5	3.0	1.5	1.5-3.0	3.1	3.0	6.1	0.39	0.39	38	0.62	0.01	0.01	0.03	0.01	0.07	0.01	0.01	0.02
3-Y	5.5	5.0	3.0	2.0	1.5-3.0	3.1	3.0	6.1	0.39	0.52	22	1.42	0.33	0.33	1.26	0.25	2.13	0.21	0.26	0.52
4-Y	5.5	4.0	3.0	1.0	1.5-3.0	3.1	3.0	6.1	0.39	0.39	35	0.67	0.04	0.04	0.07	0.01	0.15	0.02	0.02	0.04
20-Alt-RPA	6.0	4.0	3.0	1.0	1.5-3.0	3.1	3.0	6.1	0.39	0.40	19	1.26	0.23	0.23	0.69	0.14	1.34	0.13	0.16	0.35
19-Alt-RPA	5.0	3.6	3.0	0.6	1.5-3.0	3.1	3.0	6.1	0.39	0.41	26	0.95	0.03	0.03	0.07	0.01	0.12	0.01	0.02	0.04
6-Y	5.0	3.7	3.0	0.7	1.5-3.0	3.1	3.0	6.1	0.39	0.39	35	0.67	0.02	0.02	0.08	0.02	0.15	0.02	0.02	0.04
7-Y	5.0	3.5	3.0	0.5	1.5-3.0	3.1	3.0	6.1	0.39	0.39	29	0.81	0.31	0.31	0.96	0.19	1.74	0.17	0.22	0.49

Notes:
1.) GW = groundwater
2.) bgs = below ground surface
3.) ags = above ground surface
4.) Proposed depths (Column 2) for the infiltration tests were provided by Wetherill Engineering in an email dated 07/07/2019.

Table 9
Summary of Boring Location Information
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

	Boring ID	Northing (ft)	Easting (ft)	Ground Surface Elevation (ft)	Date Drilled	Piezometer Completion
Outer Banks Project Area	39-L2	961549.51	2934794.64	4.07	07/09/19	Yes
	40-Alt-L2	961587.75	2934936.30	6.55	07/09/19	Yes
	41-Alt-L2	961723.95	2935088.89	11.85	07/10/19	Yes
	53-Y5	962804.72	2934787.66	12.91	07/11/19	No
	52-Y5	962467.55	2934835.67	14.49	07/11/19	No
	51-Y5	962199.64	2935009.86	11.36	07/12/19	No
	50-Alt-Y4	961727.48	2935507.27	16.40	07/12/19	No
	48-Y4	961268.62	2935568.14	10.02	07/16/19	No
	47-Y4	960823.46	2935530.51	9.27	07/16/19	No
	44-Y4	960343.15	2935971.21	16.83	07/16/19	No
	45-Alt-Y4	960253.35	2935951.89	18.54	07/17/19	No
	42-Y4	959879.73	2936169.02	15.20	07/17/19	No
Aydlett Project Area	31-L	954058.60	2909643.76	12.74	07/18/19	Yes
	32-L	954124.44	2909601.44	13.24	07/18/19	No
	33-L	954297.75	2910073.75	16.56	07/18/19	Yes
	34-L	954211.80	2910098.69	16.52	07/18/19	No
	35-L	954350.18	2910582.33	17.75	07/19/19	Yes
	36-L	954490.44	2910536.27	16.99	07/19/19	No
US-158 Project Area	23-Alt-Y1A	954522.41	2899723.08	8.57	07/23/19	Yes
	22-Alt-Y1A	953961.59	2900021.82	9.05	07/23/19	No
	10-Alt-Y	954028.11	2899421.89	5.08	07/24/19	No
	9-Y	953660.94	2899621.86	8.04	07/24/19	No
	13-YNB	953345.13	2899781.78	7.93	07/24/19	No
	12-YNB	953011.80	2900052.78	11.85	07/24/19	No
	8-Y	952809.91	2900110.65	10.24	07/24/19	Yes
	16-Alt-RPD	950790.92	2901322.35	10.44	07/24/19	No
	15-RPD	951021.19	2901404.67	11.81	07/24/19	No
	29-Alt-RPD	950909.25	2901492.60	11.83	07/24/19	No
	14-RPD	951136.03	2901606.98	11.01	07/24/19	No
	18-RPA	951294.28	2901411.64	12.12	07/25/19	Yes
	5-Alt-Y	949921.78	2901443.15	7.76	07/25/19	No
	27-Alt-Y2A	950108.27	2902118.93	10.41	07/25/19	No
	28-Alt-RPD	950577.98	2901855.87	8.83	07/25/19	No
	17-Alt-RPD	950417.42	2901424.07	12.56	07/25/19	No
	1-Alt-Y	948142.89	2902486.74	11.07	07/25/19	Yes
US-158 Project Area (Hand Auger Locations)	26-Alt-Y2	949761.06	2902194.16	11.95	08/06/19	No
	2-Y	948507.04	2902153.73	10.63	08/06/19	No
	3-Y	948898.92	2901878.32	11.87	08/07/19	No
	4-Y	949337.69	2901659.51	9.90	08/07/19	No
	20-Alt-RPA	951921.72	2901010.68	11.68	08/07/19	No
	19-Alt-RPA	951783.83	2900732.39	9.63	08/07/19	No
	6-Y	952144.28	2900511.90	10.21	08/07/19	No
	7-Y	952435.10	2900326.83	10.45	08/07/19	No

Notes:
1.) Coordinates shown are in NC State Plane NAD 1983 feet.

Table 10
Summary of Soil Testing Results
Mid-Currituck Bridge Project - R-2576 - 2019 Geotechnical Investigations to Support Hydraulic Design and Permitting

	Boring ID	Sample Interval (ft bgs)	Gravel (%)	Sand (%)	Silt/Clay (%)	USCS Classification
Outer Banks Project Area	39-L2	0.0 - 2.0	0.0%	99.6%	0.4%	SP, Poorly Graded Sand
	40-Alt-L2	2.0 - 4.0	0.0%	99.5%	0.6%	SP, Poorly Graded Sand
	41-Alt-L2	4.0 - 6.0	0.0%	99.5%	0.5%	SP, Poorly Graded Sand
	53-Y5	4.0 - 6.0	0.0%	99.5%	0.5%	SP, Poorly Graded Sand
	50-Alt-Y4	6.0 - 8.0	0.0%	99.9%	0.1%	SP, Poorly Graded Sand
	47-Y4	0.0 - 2.0	0.1%	98.6%	1.3%	SP, Poorly Graded Sand
	42-Y4	0.0 - 2.0	0.1%	99.5%	0.4%	SP, Poorly Graded Sand
		Min	0.0%	98.6%	0.1%	
		Max	0.1%	99.9%	1.3%	
		Average	0.0%	99.4%	0.5%	
		Geomean	N/A	99.4%	0.5%	
Aydlett Project Area	31-L	2.0 - 4.0	0.0%	86.9%	13.1%	SM, Silty Sand
	33-L	2.0 - 4.0	0.0%	83.7%	16.3%	SM, Silty Sand
	35-L	2.0 - 4.0	0.0%	80.6%	19.4%	SM, Silty Sand
		Min	0.0%	80.6%	13.1%	
		Max	0.0%	86.9%	19.4%	
		Average	0.0%	83.7%	16.3%	
		Geomean	N/A	83.7%	16.1%	
US-158 Project Area	23-Alt-Y1A	4.0 - 6.0	0.0%	97.9%	2.1%	SP, Poorly Graded Sand
	9-Y	2.0 - 4.0	0.0%	92.1%	7.9%	SP-SM, Poorly Graded Sand with Silt
	8-Y	2.0 - 4.0	0.0%	95.2%	4.8%	SP, Poorly Graded Sand
	18-RPA	0.0 - 2.0	0.0%	73.2%	26.8%	SM, Silty Sand
	18-RPA	2.0 - 4.0	0.0%	92.6%	7.4%	SP-SM, Poorly Graded Sand with Silt
	5-Alt-Y	0.0 - 2.0	0.0%	82.7%	17.3%	SM, Silty Sand
	28-Alt-RPD	0.0 - 2.0	0.0%	81.4%	18.6%	SM, Silty Sand
	28-Alt-RPD	2.0 - 4.0	0.0%	77.4%	22.6%	SM, Silty Sand
	1-Alt-Y	0.0 - 2.0	0.0%	80.1%	19.9%	SM, Silty Sand
	1-Alt-Y	2.0 - 4.0	0.0%	94.6%	5.4%	SP-SM, Poorly Graded Sand with Silt
		Min	0.0%	73.2%	2.1%	
		Max	0.0%	97.9%	26.8%	
		Average	0.0%	86.7%	13.3%	
		Geomean	N/A	86.3%	10.2%	

Notes:
1.) ft bgs = feet below ground surface
2.) Gravel = Does not pass #4 sieve
3.) Sand = Passes #4 but does not pass #200 sieve
4.) Silt/Clay = Passes through the #200 sieve

FIGURES

53-Y5
2934787.661
962804.719

52-Y5
2934835.672
962467.553

51-Y5
2935009.857
962199.636

SAND DUNE ADJACENT TO ROAD

41-ALT-L2
2935088.891
961723.951

50-ALT-Y4
2935507.273
961727.48

40-ALT-L2
2934936.303
961587.746

39-L2
2934794.64
961549.513

DENSE VEGETATION

48-Y4
2935568.14
961268.62

47-Y4
2935530.51
960823.456

44-Y4
2935971.213
960343.145

45-ALT-Y4
2935951.894
960253.353

42-Y4
2936169.023
959879.73

0 200 400 800 Feet

KEY MAP

LEGEND

BORING LOCATIONS (SURVEYED BY NC DOT)

NOTES

1. LOCATIONS SHOWN WERE SURVEYED BY NC DOT ON 08/15-16/2019.

REFERENCE

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

CLIENT
H W LOCHNER

PROJECT
MID-CURRITUCK BRIDGE PROJECT
WBS ELEMENT: 34470.1TA1
STIP NO. R-2576

TITLE
OUTER BANKS PROJECT AREA - BORING LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-09-11
PREPARED	BD
DESIGN	BD
REVIEW	GH
APPROVED	GH

PROJECT No.	PHASE	Rev.	FIGURE
1653448	05	0	1

KEY MAP

LEGEND

⊕ BORING LOCATIONS (SURVEYED BY NC DOT)

NOTES

1. LOCATIONS SHOWN WERE SURVEYED BY NC DOT ON 08/15-16/2019.
2. AERIAL IMAGE FROM 01-31-2016.

REFERENCE

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

CLIENT
H W LOCHNER

PROJECT
MID-CURRITUCK BRIDGE PROJECT
WBS ELEMENT: 34470.1TA1
STIP NO. R-2576

TITLE
AYDLETT PROJECT AREA - BORING LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-09-11
PREPARED	BD
DESIGN	BD
REVIEW	GH
APPROVED	GH

PROJECT No.	PHASE	Rev.	FIGURE
1653448	05	0	2

KEY MAP

LEGEND

⊕ BORING LOCATIONS (SURVEYED BY NC DOT)

NOTES

1. LOCATIONS SHOWN WERE SURVEYED BY NC DOT ON 08/15-16/2019.
2. AERIAL IMAGE FROM 01/31/2016.

REFERENCE

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY

CLIENT
H W LOCHNER

PROJECT
MID-CURRITUCK BRIDGE PROJECT
WBS ELEMENT: 34470.1TA1
STIP NO. R-2576

TITLE
US-158 PROJECT AREA - BORING LOCATIONS

CONSULTANT

GOLDER

YYYY-MM-DD	2019-09-11
PREPARED	BD
DESIGN	BD
REVIEW	GH
APPROVED	GH

PROJECT No.	PHASE	Rev.	FIGURE
1653448	05	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM: ANSI B
0
1 in

APPENDIX A

BORING LOGS

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 39-L2	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.5
COLLAR ELEV. 4.1 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 961,547	**EASTING** 2,934,790	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/09/19	**COMP. DATE** 07/09/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
5											
	4.1	0.0								4.1 GROUND SURFACE	0.0
			1	1	1					**COASTAL PLAIN**	
										3.7 TOPSOIL - organics	0.4
										COASTAL PLAIN	
							SS-1	M		(SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4) to yellowish brown (10 YR 5/4), non-cohesive, very loose, moist	
	2.1	2.0				2					
			2	2	2						
							SS-2	M		1.1	3.0
										COASTAL PLAIN	
										(SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) matrix to brownish yellow (10 YR 6/8) oxy/reduction features,	
0	0.1	4.0								0.1 non-cohesive, loose, moist	4.0
			1	3	5	4				**COASTAL PLAIN**	
										-0.4 (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) matrix to brownish yellow (10 YR 6/8) oxy/reduction features, non-cohesive, loose, wet	4.5
							SS-3	W		**COASTAL PLAIN**	
										(SP) SAND, fine sand, poorly graded, dark gray (10 YR 4/1) to dark yellowish brown (10 YR 4/6), non-cohesive, loose, wet	
						8				-1.9	6.0
										COASTAL PLAIN	
										No sample recovered, flowing sands	
-5										-5.9	10.0
										Boring Terminated at Elevation -5.9 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 40-Alt-L2	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.5
COLLAR ELEV. 6.5 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 961,592	**EASTING** 2,934,942	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/09/19	**COMP. DATE** 07/09/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
10										
	6.5	0.0								6.5 GROUND SURFACE 0.0
			2	3	4		SS-1	M		**COASTAL PLAIN** (SP) SAND, fine sand, some organics, poorly graded, brown (10 YR 5/3), non-cohesive, loose, moist
5										
	4.5	2.0	3	5	5	7	SS-2	M		4.0 2.5 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, moist 3.0 3.5
	2.5	4.0	2	3	5	10	SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2), non-cohesive, compact, wet 0.5 6.0
0						8				**COASTAL PLAIN** No sample recovered, flowing sands -3.5 10.0
										Boring Terminated at Elevation -3.5 ft

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 41-Alt-L2	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 8.2
COLLAR ELEV. 11.8 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 961,730	**EASTING** 2,935,096	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/10/19	**COMP. DATE** 07/10/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
15										
	11.8	0.0								11.8 GROUND SURFACE 0.0
			1	1	3	4	SS-1	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, very loose, moist
10	9.8	2.0	4	2	2	4	SS-2	M		9.3 2.5 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/6) matrix and red (2.5 YR 5/6) oxy/reduction features, non-cohesive, loose, moist
	7.8	4.0	1	2	1	3	SS-3	D		7.8 4.0 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, very loose, moist
	5.8	6.0	1	2	1	3	SS-4	W		6.3 5.5 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, very loose, dry 5.8 6.0 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, very loose, moist 4.8 7.0 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, very loose, wet 3.8 8.0
5	3.8	8.0	1	1	1	2	SS-5	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark gray (10 YR 4/1), non-cohesive, very loose, wet 1.8 10.0
										Boring Terminated at Elevation 1.8 ft

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 53-Y5	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 7.1
COLLAR ELEV. 12.9 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 962,803	**EASTING** 2,934,788	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/11/19	**COMP. DATE** 07/11/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
15										
	12.9	0.0								12.9 GROUND SURFACE 0.0
			1	2	4	6	SS-1	M		12.7 **COASTAL PLAIN** 0.3 TOPSOIL - Grass **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish borwn (10 YR 6/4), non-cohesive, loose, moist
	10.9	2.0								10.9 2.0
10			2	4	3	7	SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3), non-cohesive, loose, moist
	8.9	4.0								7.9 5.0
			1	2	4	6	SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3), non-cohesive, loose, moist
	6.9	6.0								6.4 6.5
			4	5	5	10	SS-4	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3) matrix with reddish yellow (10 YR 7/6) oxy/reduction features, non-cohesive, loose, moist
5	4.9	8.0								4.9 8.0
			2	4	5	9	SS-5	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/4), non-cohesive, loose, wet
										2.9 10.0
										Boring Terminated at Elevation 2.9 ft

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 52-Y5	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 7.5
COLLAR ELEV. 14.5 ft	**TOTAL DEPTH** 12.0 ft	**NORTHING** 962,475	**EASTING** 2,934,837	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/11/19	**COMP. DATE** 07/11/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	14.5	0.0								14.5 GROUND SURFACE	0.0
			1	2	5					14.2 **COASTAL PLAIN** TOPSOIL - Grass	0.3
							SS-1	D		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 7/3), non-cohesive, loose, dry	
	12.5	2.0	5	8	10	7				12.7	1.8
							SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, compact, dry	
										11.5	3.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3), non-cohesive, compact, dry	
										11.0	3.5
	10.5	4.0	2	3	2	18				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3), non-cohesive, compact, moist	
10										10.5	4.0
							SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3), faint laminations @ 5.5-6.0 ft, non-cohesive, loose, moist	
	8.5	6.0	1	2	2	5					
							SS-4	W		7.5	7.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3), non-cohesive, loose, wet	
	6.5	8.0	2	3	4	4					
							SS-5	W			
5											
	4.5	10.0	1	2	4	7				4.5	10.0
							SS-6	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3) matrix with brownish yellow (10 YR 6/8) oxy/reduction features), non-cohesive, loose, wet	
										2.7	11.8
						6				2.5 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very dark gray (10 YR 4/1), non-cohesive, loose, wet	12.0
										Boring Terminated at Elevation 2.5 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 51-Y5	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.3
COLLAR ELEV. 11.4 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 962,204	**EASTING** 2,935,021	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/12/19	**COMP. DATE** 07/12/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
15										
	11.4	0.0	1	2	4					11.4 GROUND SURFACE 0.0
										11.1 **COASTAL PLAIN** 0.3 TOPSOIL - Grass
10							SS-1	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3) non-cohesive, loose, moist
	9.4	2.0	3	4	5	6				
							SS-2	M		
	7.4	4.0	3	7	9	9				7.4 4.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/6) with oxy/reduction features, non-cohesive,
							SS-3	W		6.4 compact, wet 5.0
										COASTAL PLAIN
	5.4	6.0	5	5	5	16				5.9 (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2), non-cohesive, compact, wet 5.5
5										**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark gray (10 YR 4/1), non-cohesive, compact to loose, wet
							SS-4	W		
	3.4	8.0	4	4	5	10				
							SS-5	W		
						9				1.4 10.0
										Boring Terminated at Elevation 1.4 ft

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 50-Alt-Y4	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 9.5
COLLAR ELEV. 16.4 ft	**TOTAL DEPTH** 12.0 ft	**NORTHING** 961,719	**EASTING** 2,935,512	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/12/19	**COMP. DATE** 07/12/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
20										
	16.4	0.0								16.4 GROUND SURFACE 0.0
			WH	1	1					**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/6), non-cohesive, very loose, moist
15							SS-1	M		
	14.4	2.0								14.4 2.0
			2	1	1	2				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) matrix with yellowish brown (10 YR 5/6) oxy/reduction features, non-cohesive, very loose, moist
							SS-2	M		
	12.4	4.0								12.4 4.0
			1	1	1	2				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3), non-cohesive, very loose, moist
							SS-3	M		
	10.4	6.0								
10			1	1	1	2				
							SS-4	M		
	8.4	8.0								8.4 8.0
			1	1	2	2				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) with yellow (10 YR 7/8) oxy/reduction features, noncohesive, very loose, moist
							SS-5	W		6.9 9.5
	6.4	10.0								6.4 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2) matrix with oxy/reduction features, non-cohesive, very loose, wet 10.0
			2	1	3	3				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2), non-cohesive, very loose, wet
5							SS-6	W		
						4				4.4 12.0
										Boring Terminated at Elevation 4.4 ft

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 48-Y4	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 10.0 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 961,269	**EASTING** 2,935,568	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/16/19	**COMP. DATE** 07/16/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										
10	10.0	0.0								10.0 GROUND SURFACE 0.0
			1	1	5	6	SS-1	D		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, loose, dry — 9.0 / 1.0
	8.0	2.0	5	8	8		SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3) matrix with yellowish brown (10 YR 5/8) oxy/reduction features, non-cohesive, loose, dry — 8.5 / 1.5; 8.0 / 2.0
	6.0	4.0	2	5	5	16	SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 8/3) matrix with yellowish brown (10 YR 5/8) oxy/reduction features, non-cohesive, loose, moist — 7.8 / 2.2
5						10				**COASTAL PLAIN** (ML) SILT, ~2" silt layer, dark gray (10 YR 4/1), cohesive — 6.5 / 3.5
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 8/3) matrix with yellowish brown (10 YR 5/8) oxy/reduction features, non-cohesive, compact, moist — 6.0 / 4.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, light brownish gray (10 YR 6/8), laminations present, non-cohesive, compact, wet — 4.0 / 6.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, dark gray (10 YR 4/1), non-cohesive, compact, wet

*Could not sample past 6 ft due to flowing sands

Boring Terminated at Elevation 4.0 ft

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 47-Y4	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 9.3 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 960,825	**EASTING** 2,935,544	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/16/19	**COMP. DATE** 07/16/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
10												
	9.3	0.0								GROUND SURFACE	9.3	0.0
			1	1	3	4	SS-1	D		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, dry		
	7.3	2.0	10	10	5		SS-2	M			6.3	3.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/4), laminations present, non-cohesive, compact, moist	5.8	3.5
	5.3	4.0	3	3	5	15		▽			5.3	4.0
5										**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/3), laminations present, compact, moist		
							SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, loose, moist	3.8	5.5
	3.3	6.0	1	1	3	8				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3) matrix with yellow (10 YR 7/8) oxy/reduction features, non-cohesive, loose, wet	3.3	6.0
							SS-4	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2), non-cohesive, loose, wet		
						4					1.3	8.0
										Boring Terminated at Elevation 1.3 ft		

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 44-Y4	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 11.0
COLLAR ELEV. 16.8 ft	**TOTAL DEPTH** 12.0 ft	**NORTHING** 960,358	**EASTING** 2,935,977	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/16/19	**COMP. DATE** 07/16/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
	16.8	0.0								16.8 GROUND SURFACE	0.0
			2	2	3	5	SS-1	D		**COASTAL PLAIN** 16.3 TOPSOIL - Grass	0.5
										COASTAL PLAIN 15.8 (SP) SAND, fine sand, poorly graded, dark yellowish brown (10 YR 3/4), non-cohesive, loose, dry	1.0
15										**COASTAL PLAIN** 14.8 (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3), non-cohesive, loose, moist	2.0
	14.8	2.0	3	4	3		SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/4), non-cohesive, loose, moist	
	12.8	4.0	1	2	2	7	SS-3	M			
	10.8	6.0	2	2	2	4	SS-4	M			
10											
	8.8	8.0	2	2	3	4	SS-5	M		8.8 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/4), laminations (black) present, non-cohesive, loose moist	8.0
	6.8	10.0	2	2	3	5	SS-6	W		5.8 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 6/3), laminations (black) present, non-cohesive, loose, wet	11.0
5						5				4.8 Boring Terminated at Elevation 4.8 ft	12.0

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 45-Alt-Y4	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 13.5
COLLAR ELEV. 18.5 ft	**TOTAL DEPTH** 14.0 ft	**NORTHING** 960,464	**EASTING** 2,935,788	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/17/19	**COMP. DATE** 07/17/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										18.5 GROUND SURFACE	0.0
	18.5	0.0	1	2	3	5	SS-1	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 7/3), laminations (black) present at 1.75', non-cohesive, loose, moist	
	16.5	2.0	1	3	5		SS-2	M		15.5	3.0
	14.5	4.0	1	3	6	8	SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/6) matrix with oxy/reduction features @ 3.5', laminations (black) present, loose, moist	
	12.5	6.0	1	3	2	9	SS-4	M		12.5	6.0
	10.5	8.0	1	1	1	5	SS-5	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 5/6), laminations (black) present, non-cohesive, loose, moist	
	8.5	10.0	1	1	2	2	SS-6	M		10.5	8.0
	6.5	12.0	3	3	3	3	SS-7	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), laminations (black) present, loose, moist	
										8.5	10.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, very loose, moist	
										6.0	12.5
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, very dark grayish brown (10 YR 3/2) matrix with oxy/reduction features, non-cohesive, loose, wet	
						6				4.5	14.0
										Boring Terminated at Elevation 4.5 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 42-Y4	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 8.0
COLLAR ELEV. 15.2 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 959,882	**EASTING** 2,936,172	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/17/19	**COMP. DATE** 07/17/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
20										
	15.2	0.0								15.2 GROUND SURFACE 0.0
15			8	2	3		SS-1	D		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3) to yellowish brown (10 YR 5/8), non-cohesive, loose, dry
	13.2	2.0	4	4	8	5	SS-2	M		11.4 3.8
	11.2	4.0	3	3	4	12	SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3) to yellowish brown (10 YR 5/8), non-cohesive, laminations (black) present, compact, moist
10										9.2 6.0
	9.2	6.0	2	2	2	7	SS-4	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, loose, moist
	7.2	8.0	2	2	4	4	SS-5	W		7.2 8.0 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark brown (10 YR 3/3) matrix with oxy/reduction features @ 8' - 9', loose, wet
						6				5.2 10.0 Boring Terminated at Elevation 5.2 ft

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 31-L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.5
COLLAR ELEV. 12.7 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 954,061	**EASTING** 2,909,634	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/18/19	**COMP. DATE** 07/18/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	12.7	0.0								12.7 GROUND SURFACE	0.0
			1	4	3					**COASTAL PLAIN** TOPSOIL, woody fragments	
										12.2	0.5
							SS-1	M		**COASTAL PLAIN** (SW-SM) Silty SAND, fine to medium sand, well graded, dark grayish brown (10 YR 4/2), non-cohesive, loose, moist	
	10.7	2.0				7				10.7	2.0
			3	3	6					**COASTAL PLAIN** (SW-SM) Silty SAND, fine to medium sand, some clay, well graded, yellow (10 YR 7/6) matrix with oxy/reduction features, non-cohesive, loose, moist	
10							SS-2	M		10.2	2.5
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, pale brown (10 YR 6/3) matrix with oxy/reduction features, non-cohesive, loose, moist	
	8.7	4.0				9				8.7	4.0
			5	6	7					**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3) matrix with oxy/reduction features, non-cohesive, compact, wet	
							SS-3	W		7.2	5.5
	6.7	6.0				13				6.7	6.0
			8	10	11					**COASTAL PLAIN** (SP) SAND, fine to medium sand, well graded, brown (10 YR 5/3) matrix with oxy/reduction features, non-cohesive, compact, wet	
							SS-4	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, compact, wet	
5										4.7	8.0
						21				Boring Terminated at Elevation 4.7 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 32-L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.5
COLLAR ELEV. 13.2 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 954,136	**EASTING** 2,909,607	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/18/19	**COMP. DATE** 07/18/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	13.2	0.0								13.2 GROUND SURFACE	0.0
			2	3	5					**COASTAL PLAIN** TOPSOIL, woody fragments 12.7	0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some clay, poorly graded, pale brown (10 YR 6/3), non-cohesive, loose, moist 11.5	1.8
	11.2	2.0	3	3	8	8				**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some clay, poorly graded, dark yellowish brown (10 YR 4/4) matrix with oxy/reduction features @ 3-3.5', non-cohesive, loose, moist	
10							SS-2	M		9.7	3.5
	9.2	4.0	2	4	6	11				**COASTAL PLAIN** (SW) SAND, fine to medium sand, well graded, dark yellowish brown (10 YR 4/6), non-cohesive, compact, moist	
							SS-3	W		7.7	5.5
						10				**COASTAL PLAIN** 7.2 (SW) SAND, fine to medium, well graded, dark grayish brown (10 YR 4/2), compact, wet	6.0
										Boring Terminated at Elevation 7.2 ft	

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

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BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 33-L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.5
COLLAR ELEV. 16.6 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 954,226	**EASTING** 2,910,106	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/18/19	**COMP. DATE** 07/18/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
	16.6	0.0	2	3	3					16.6 GROUND SURFACE	0.0
										16.3 **COASTAL PLAIN** TOPSOIL, woody fragments	0.3
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, very dark grayish brown (10 YR 3/2), non-cohesive, loose, moist	
							SS-1	M		15.6	1.0
15										**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/4), non-cohesive, loose, moist	
	14.6	2.0	3	3	3	6					
							SS-2	M		13.1	3.5
										COASTAL PLAIN (SP) SAND, fine sand, poorly sorted, brown (10 YR 3/3) matrix with oxy/reduction features @ 4-4.5', non-cohesive, loose, moist	
	12.6	4.0	3	3	3	6					
							SS-3	W		11.1	5.5
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, dark grayish brown (10 YR 3/2), loose, wet	
						6				10.6	6.0
										Boring Terminated at Elevation 10.6 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 34-L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.5
COLLAR ELEV. 16.5 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 954,301	**EASTING** 2,910,078	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/18/19	**COMP. DATE** 07/18/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
	16.5	0.0								16.5 GROUND SURFACE	0.0
			1	2	2					16.3 **COASTAL PLAIN** TOPSOIL, woody/fibrous organics	0.3
							SS-1			**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, dark brown (10 YR 3/3), non-cohesive, very loose, dry	
15										15.0	1.5
	14.5	2.0	2	2	3	4				**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, pale brown (10 YR 6/3) matrix with oxy/reduction features @ 3.5-5.5', non-cohesive, loose, moist	
							SS-2				
	12.5	4.0	2	2	4	5				12.5	4.0
							SS-3	▽		**COASTAL PLAIN** (SP-SM) Silty SAND, fine to medium sand, well graded, some clay, light gray (10 YR 7/1) and yellow (10 YR 7/8), non-cohesive, loose, moist	
										11.5	5.0
										COASTAL PLAIN (SW) SAND, fine to medium sand, well graded, brown (10 YR 6/3) matrix with oxy/reduction features, non-cohesive, loose, wet	
						6				10.5	6.0
										Boring Terminated at Elevation 10.5 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 35-L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 6.5
COLLAR ELEV. 17.8 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 954,363	**EASTING** 2,910,587	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/19/19	**COMP. DATE** 07/19/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
	17.8	0.0								17.8 GROUND SURFACE	0.0
			1	1	3		SS-1			**COASTAL PLAIN** (SP-SM) Silty SAND, fine to medium sand, well graded, dark brown (10 YR 3/3), non-cohesive, very loose, moist	
	15.8	2.0	5	5	4	4	SS-2			16.8 **COASTAL PLAIN** (SP-SM) Silty SAND, fine to medium sand, well graded, pale brown (10 YR 6/3), loose, moist	1.0
15										14.8	3.0
	13.8	4.0	3	4	2	9	SS-3			**COASTAL PLAIN** (SP-SM) Silty SAND, fine to medium sand, well graded, brownish yellow (10 YR 6/8), non-cohesive, loose, moist	
	11.8	6.0	2	5	6	6	SS-4	▽		12.8 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/8) matrix with oxy/reduction features @ 5.75', some block laminations, non-cohesive, loose, moist	5.0
10										11.8 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3) matrix with oxy/reduction features, non-cohesive, compact, wet	6.0
						11				9.8	8.0
										Boring Terminated at Elevation 9.8 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Joyner, Catelyn	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 36-L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.0
COLLAR ELEV. 17.0 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 954,496	**EASTING** 2,910,542	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/19/19	**COMP. DATE** 07/19/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
20											
	17.0	0.0	2	2	2					17.0 GROUND SURFACE	0.0
										16.7 **COASTAL PLAIN** TOPSOIL, woody mulch	0.3
							SS-1			**COASTAL PLAIN** (SW-SM) Silty SAND, fine to medium sand, well graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, moist	
										15.5	1.5
15	15.0	2.0	3	3	3	4				**COASTAL PLAIN** (SW-SM) Silty SAND, fine to medium sand, well graded, brownish yellow (10 YR 6/6), non-cohesive, loose, moist	
							SS-2			14.5	2.5
										COASTAL PLAIN (SW-SM) Silty SAND, fine to medium sand, well graded, yellowish brown (10 YR 5/8), non-cohesive, loose, moist	
	13.0	4.0	2	2	3	6				13.0	4.0
							SS-3	▽		**COASTAL PLAIN** (SW-SM) Silty SAND, fine to medium sand, well graded, yellowish brown (10 YR 5/8) matrix with oxy/reduction features, non-cohesive, loose, moist	
										12.0	5.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, brown (10 YR 4/3) matrix with oxy reduction features, non-cohesive, loose, wet	
						5				11.0	6.0
										Boring Terminated at Elevation 11.0 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 23-Alt-Y1A	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 8.0
COLLAR ELEV. 8.6 ft	**TOTAL DEPTH** 12.0 ft	**NORTHING** 954,524	**EASTING** 2,899,727	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/23/19	**COMP. DATE** 07/23/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
	8.6	0.0								8.6 GROUND SURFACE	0.0
			1	1	4					**COASTAL PLAIN** TOPSOIL, organics	
										8.1	0.5
							SS-1	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/6), non-cohesive, loose, moist	
	6.6	2.0								6.6	2.0
			2	2	4	5				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/8) matrix with yellow (10 YR 7/6) oxy/reduction features @ 4', non-cohesive, loose, moist	
							SS-2	M			
5											
	4.6	4.0								4.6	4.0
			2	4	7	6				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/8), non-cohesive, loose, moist	
							SS-3	W			
	2.6	6.0								2.6	6.0
			4	2	1	11				**COASTAL PLAIN** No recovery, flowing sands in augers	
							SS-4	W			
						3		▽			
0											
										-3.4	12.0
										Boring Terminated at Elevation -3.4 ft	

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 22-Alt-Y1A	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.5
COLLAR ELEV. 9.0 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 953,955	**EASTING** 2,900,030	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/23/19	**COMP. DATE** 07/23/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
	9.0	0.0								9.0 GROUND SURFACE	0.0
			2	2	3					**COASTAL PLAIN** TOPSOIL, organics	
										8.5	0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, some clay, fine sand, poorly graded, dark yellowish brown (10 YR 4/6), non-cohesive, loose, moist	
	7.0	2.0								7.0	2.0
			2	2	3	5				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/8), non-cohesive, loose, moist	
							SS-2	M			
5	5.0	4.0								5.0	4.0
			2	5	5	5				**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 8/3), non-cohesive, loose, wet	
							SS-3	W			
	3.0	6.0								3.0	6.0
			4	4	5	10				**COASTAL PLAIN** No recovery	
							SS-4	W			
						9				1.0	8.0
										Boring Terminated at Elevation 1.0 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 10-Alt-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.5
COLLAR ELEV. 5.1 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 954,032	**EASTING** 2,899,427	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10											
5	5.1	0.0								5.1 GROUND SURFACE	0.0
			2	5	5					**COASTAL PLAIN**	
										4.6 TOPSOIL, organics	0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2), non-cohesive, loose, moist	
	3.1	2.0								3.1	2.0
			3	1	1	10				**COASTAL PLAIN**	
							SS-2	M		(SP-SM) Silty SAND, fine sand, poorly graded, dark grayish brown (10 YR 4/2) matrix with pale brown (10 YR 6/3) oxy/reduction features @ 3-4', non-cohesive, very loose, moist	
	1.1	4.0								1.1	4.0
			2	3	6	2				**COASTAL PLAIN**	
0							SS-3	W		(SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/3), non-cohesive, loose, wet	
						9				-0.9	6.0
										Boring Terminated at Elevation -0.9 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 9-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.4
COLLAR ELEV. 8.0 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 953,695	**EASTING** 2,899,592	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10										ELEV. (ft) DEPTH (ft)
	8.0	0.0								8.0 GROUND SURFACE 0.0
			2	2	3					**COASTAL PLAIN** TOPSOIL, organics
										7.3 0.8
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, moist
	6.0	2.0				5				6.0 2.0
			2	2	1					**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some fines, poorly graded, yellow (10 YR 7/6) matrix with brownish yellow (10 YR 6/8) oxy/reduction features, very loose, moist
5							SS-2	M		
	4.0	4.0								4.0 4.0
			1	2	7					**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, wet
						3	SS-3	W		
	2.0	6.0								2.0 6.0
			2	3	4					**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, wet
						9	SS-4	W		
						7				0.0 8.0
										Boring Terminated at Elevation 0.0 ft

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 13-YNB	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.1
COLLAR ELEV. 7.9 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 953,339	**EASTING** 2,899,821	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
10												
	7.9	0.0								GROUND SURFACE	7.9	0.0
			2	2	4					**COASTAL PLAIN** TOPSOIL, organics	7.4	0.5
						6	SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, moist	5.9	2.0
	5.9	2.0	4	6	6							
5							SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 7/4) matrix with brownish yellow (10 YR 6/8) oxy/reduction features @ 4', non-cohesive, compact, moist	3.9	4.0
	3.9	4.0				12						
			4	5	6		SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, compact, wet	1.9	6.0
						11				Boring Terminated at Elevation 1.9 ft		

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 12-YNB	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 11.9 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 953,024	**EASTING** 2,900,053	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										
	11.9	0.0								11.9 GROUND SURFACE 0.0
			2	2	2					**COASTAL PLAIN** TOPSOIL, organics 11.4 0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, brownish yellow (10 YR 6/6), non-cohesive, loose, moist
10	9.9	2.0	1	2	1	4				9.9 2.0
							SS-2	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, brown (10 YR 5/3) matrix with yellowish brown (10 YR 5/8) oxy/reduction features, non-cohesive, very loose, moist
	7.9	4.0	1	2	1	3		▽		7.9 4.0
							SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellow (10 YR 8/6), non-cohesive, very loose, wet
						3				5.9 6.0
										Boring Terminated at Elevation 5.9 ft

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BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 8-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.1
COLLAR ELEV. 10.2 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 952,790	**EASTING** 2,900,126	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	10.2	0.0								10.2 GROUND SURFACE	0.0
10			2	2	1					9.7 **COASTAL PLAIN** TOPSOIL, organics	0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/6) , non-cohesive, very loose, moist	
	8.2	2.0	2	2	2	3				8.2	2.0
							SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/6), non-cohesive, loose, moist	
	6.2	4.0	2	1	1	4				6.2	4.0
5							SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, grayish brown (10 YR 5/2), non-cohesive, very loose, wet	
						2				4.2	6.0
										COASTAL PLAIN No sample, flowing sands in augers	
										0.2	10.0
										Boring Terminated at Elevation 0.2 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 16-Alt-RPD	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 10.4 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 950,796	**EASTING** 2,901,329	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	10.4	0.0	2	3	3					10.4 GROUND SURFACE	0.0
10										9.9 **COASTAL PLAIN** TOPSOIL, organics	0.5
							SS-1	D		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, dark yellowish brown (10 YR 4/6), non-cohesive, loose, dry	
	8.4	2.0	2	3	3	6				8.4	2.0
							SS-2	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/6) matrix with yellowish brown (10 YR 5/8) oxy/reduction features, non-cohesive, moist	
	6.4	4.0	3	6	6	6		▽		6.4	4.0
5							SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/6), non-cohesive, wet	
						12				4.4	6.0
										Boring Terminated at Elevation 4.4 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 15-RPD	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 6.0
COLLAR ELEV. 11.8 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 951,030	**EASTING** 2,901,403	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	11.8	0.0								11.8 GROUND SURFACE	0.0
			1	1	1					**COASTAL PLAIN** TOPSOIL, organics	
										11.3	0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/8), non-cohesive, very loose, mosit	
10										9.8	2.0
	9.8	2.0	1	2	3	2				**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, brownish yellow (10 YR 6/8), non-cohesive, very loose, mosit	
							SS-2	M			
	7.8	4.0	2	6	6	5				7.8	4.0
							SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellow (10 YR 7/6), non-cohesive, compact, moist	
	5.8	6.0	4	6	11	12		▽		5.8	6.0
5							SS-4	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light gray (10 YR 7/2), non-cohesive, compact, wet	
										3.8	8.0
						17				Boring Terminated at Elevation 3.8 ft	

NCDOT BORE SINGLE MID-CURRITUCK-BRIDGE-INFILTRATION_GINT.GPJ NC_DOT.GDT 9/11/19

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 29-Alt-RPD	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 6.0
COLLAR ELEV. 11.8 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 950,911	**EASTING** 2,901,499	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										ELEV. (ft) DEPTH (ft)
	11.8	0.0								11.8 GROUND SURFACE 0.0
			1	1	2					**COASTAL PLAIN** TOPSOIL, organics 11.3 0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/6), non-cohesive, very loose, moist 9.8 2.0
10	9.8	2.0	2	3	3	3				
							SS-2	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/8), non-cohesive, loose, moist 7.8 4.0
	7.8	4.0	2	4	6	6				
							SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, moist 5.8 6.0
	5.8	6.0	2	2	7	10				
5							SS-4	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, wet 3.8 8.0
						9				Boring Terminated at Elevation 3.8 ft

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 14-RPD	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.5
COLLAR ELEV. 11.0 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 951,149	**EASTING** 2,901,611	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/24/19	**COMP. DATE** 07/24/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
15										ELEV. (ft) DEPTH (ft)
	11.0	0.0								11.0 GROUND SURFACE 0.0
			2	1	2					**COASTAL PLAIN** TOPSOIL, organics 10.5 0.5
10							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/4), non-cohesive, very loose, moist
	9.0	2.0								9.0 2.0
			2	2	3	3	SS-2	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/8), non-cohesive, loose, moist
	7.0	4.0								7.0 4.0
			2	4	2	5	SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, wet
						6				5.0 6.0
										Boring Terminated at Elevation 5.0 ft

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 18-RPA	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.3
COLLAR ELEV. 12.1 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 951,305	**EASTING** 2,901,413	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
15										
	12.1	0.0								12.1 GROUND SURFACE 0.0
			1	1	1	2	SS-1	M		**COASTAL PLAIN** 11.6 TOPSOIL, organics 0.5
										COASTAL PLAIN (SP-SC) Clayey SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/6), non-cohesive, very loose, moist
10	10.1	2.0								10.1 2.0
			4	4	4	8	SS-2	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, trace clay, poorly graded, strong brown (7.5 YR 5/8), non-cohesive, loose, moist 9.1 3.0
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, trace clay, poorly graded, yellow (10 YR 8/6), non-cohesive, loose, moist
	8.1	4.0								8.1 4.0
			2	2	2	4	SS-3	M		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light gray (10 YR 7/2), non-cohesive, loose, moist
	6.1	6.0								6.1 6.0
5			4	4	4	8	SS-4	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 7/3), non-cohesive, loose, wet
										4.1 8.0
										Boring Terminated at Elevation 4.1 ft

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 5-Alt-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.0
COLLAR ELEV. 7.8 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 949,938	**EASTING** 2,901,450	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
10										ELEV. (ft) DEPTH (ft)
	7.8	0.0								7.8 GROUND SURFACE 0.0
			2	2	2					**COASTAL PLAIN**
										7.3 TOPSOIL, organics 0.5
							SS-1	D		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some clay, very dark gray (10 YR 3/1), non-cohesive, loose, moist
	5.8	2.0				4				5.8 2.0
			2	2	3					**COASTAL PLAIN**
5							SS-2	W		(SM) Silty SAND, fine sand, poorly graded, very dark gray (10 YR 3/1), non-cohesive, loose, wet (description taken from auger cuttings - no recovery from split spoon)
	3.8	4.0				5				
			2	2	7		SS-3	W		
						9				1.8 6.0
										Boring Terminated at Elevation 1.8 ft

NCDOT GEOTECHNICAL ENGINEERING UNIT
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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 27-Alt-Y2A	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.5
COLLAR ELEV. 10.4 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 950,124	**EASTING** 2,902,146	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
15										
	10.4	0.0								10.4 GROUND SURFACE 0.0
10			3	3	2					**COASTAL PLAIN** TOPSOIL, organics 9.9 0.5
							SS-1	D		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some clay, very dark gray (10 YR 3/1), non-cohesive, loose, moist 8.4 2.0
	8.4	2.0	1	1	1	5				
							SS-2	W		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, light brownish gray (10 YR 6/2), non-cohesive, very loose, wet
	6.4	4.0	1	1	4	2				
5							SS-3	W		4.4 6.0
						5				Boring Terminated at Elevation 4.4 ft

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 28-Alt-RPD	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 8.8 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 950,582	**EASTING** 2,901,860	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
10										
	8.8	0.0								8.8 GROUND SURFACE 0.0
			6	9	13					**COASTAL PLAIN**
										8.3 TOPSOIL, organics 0.5
							SS-1	D		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, very dark grayish brown (10 YR 3/2), non-cohesive, compact, dry
	6.8	2.0								6.8 2.0
			3	3	3	22				**COASTAL PLAIN** (SP-SC) Clayey SAND, fine sand, poorly graded, grayish brown (10 YR 5/2), non-cohesive, loose, moist
							SS-2	M		
5										
	4.8	4.0						▽		4.8 4.0
			1	6	6	6				**COASTAL PLAIN** (SP-SC) Clayey SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/4), non-cohesive, loose, moist
							SS-3	W		
						12				2.8 6.0
										Boring Terminated at Elevation 2.8 ft

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BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 17-Alt-RPD	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.0
COLLAR ELEV. 12.6 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 950,422	**EASTING** 2,901,428	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
	12.6	0.0								12.6 GROUND SURFACE	0.0
			1	2	3					12.1 **COASTAL PLAIN** TOPSOIL, organic	0.5
							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/6), non-cohesive, loose, moist	
	10.6	2.0				5				10.6	2.0
			4	6	2						
10							SS-2	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some clay, poorly graded, dark yellowish brown (10 YR 4/6) matrix with yellowish brown (10 YR 5/8) oxy/reduction features, non-cohesive, loose, moist	
	8.6	4.0				8				8.6	4.0
			4	4	3					**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, wet @ 5'	
							SS-3	W			
	6.6	6.0				7				6.6	6.0
			4	6	10					**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, wet	
							SS-4	W			
5										4.6	8.0
						16				Boring Terminated at Elevation 4.6 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 1-Alt-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.2
COLLAR ELEV. 11.1 ft	**TOTAL DEPTH** 10.0 ft	**NORTHING** 948,118	**EASTING** 2,902,448	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE MAD CME 45C		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Meigs, Ryan	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
15										
	11.1	0.0								11.1 GROUND SURFACE 0.0
			2	2	2					**COASTAL PLAIN** TOPSOIL, organics 10.6 0.5
10							SS-1	M		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/8), non-cohesive, loose, moist
	9.1	2.0	2	1	2	4				9.1 2.0
							SS-2	W		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, some fines, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, very loose, wet @ 3.5'
	7.1	4.0	1	1	1	3				7.1 4.0
							SS-3	W		**COASTAL PLAIN** (SP) SAND, fine sand, some clay, poorly graded, light yellowish brown (10 YR 5/4), non-cohesive, very loose, wet
5						2				5.1 6.0
										COASTAL PLAIN No recovery, flowing sands
										1.1 10.0
										Boring Terminated at Elevation 1.1 ft

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 26-ALT-Y2	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.5
COLLAR ELEV. 12.0 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 949,756	**EASTING** 2,902,207	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/06/19	**COMP. DATE** 08/06/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15										12.0 GROUND SURFACE	0.0
										COASTAL PLAIN TOPSOIL, organics 11.5	0.5
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, browish yellow (10 YR 6/8), non-cohesive, loose, dry	
10										10.0	2.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, yellowish (10 YR 7/8), non-cohesive, loose, moist	
										8.0	4.0
								▽		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 7/3), non-cohesive, loose, wet @ 4.5' bgs	
										7.0	5.0
										Boring Terminated at Elevation 7.0 ft	

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BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 2-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.5
COLLAR ELEV. 10.6 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 948,511	**EASTING** 2,902,147	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/06/19	**COMP. DATE** 08/06/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
										10.6 GROUND SURFACE	0.0
										COASTAL PLAIN TOPSOIL, organic 10.1	0.5
10										**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, loose, dry 8.6	2.0
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, pale brown (10 YR 6/3), non-cohesive, loose, moist 6.6	4.0
								▽		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, pale brown (10 YR 6/3), non-cohesive, loose, wet @ 4.5' bgs 5.6	5.0
										Boring Terminated at Elevation 5.6 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 3-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.0
COLLAR ELEV. 11.9 ft	**TOTAL DEPTH** 6.0 ft	**NORTHING** 948,933	**EASTING** 2,901,886	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/07/19	**COMP. DATE** 08/07/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15										11.9 GROUND SURFACE	0.0
										11.4 **COASTAL PLAIN** TOPSOIL, organic	0.5
										9.9 **COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, dark yellowish brown (10 YR 4/4), non-cohesive, loose, dry	2.0
10										7.9 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brownish yellow (10 YR 6/8), non-cohesive, loose, moist	4.0
								▽		5.9 **COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, very pale brown (10 YR 6/2), non-cohesive, loose, wet @ 5' bgs	6.0
										Boring Terminated at Elevation 5.9 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 4-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 9.9 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 949,376	**EASTING** 2,901,668	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/07/19	**COMP. DATE** 08/07/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10										9.9 GROUND SURFACE	0.0
										COASTAL PLAIN TOPSOIL, organic 9.4	0.5
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, moist 7.9	2.0
								▽		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, moist 5.9	4.0
5										**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/4), non-cohesive, loose, wet 4.9	5.0
										Boring Terminated at Elevation 4.9 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 20-ALT-RPA	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 4.0
COLLAR ELEV. 11.7 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 951,941	**EASTING** 2,901,033	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/07/19	**COMP. DATE** 08/07/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15										11.7 GROUND SURFACE	0.0
										COASTAL PLAIN TOPSOIL, organic 11.2	0.5
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/6), non-cohesive, loose, dry 9.7	2.0
10										**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, brown (10 YR 5/3), non-cohesive, loose, moist 7.7	4.0
								▽		**COASTAL PLAIN** (SP) SAND, fine sand, poorly graded, pale brown (10 YR 6/2), non-cohesive, loose, wet 6.7	5.0
										Boring Terminated at Elevation 6.7 ft	

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WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 19-ALT-RPA	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.6
COLLAR ELEV. 9.6 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 951,663	**EASTING** 2,900,752	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/07/19	**COMP. DATE** 08/07/19		**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
10										9.6 GROUND SURFACE	0.0
										COASTAL PLAIN TOPSOIL, organic 9.1	0.5
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, dry 7.6	2.0
								▽		**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4), non-cohesive, loose, moist 5.6	4.0
5										**COASTAL PLAIN** (SP-SM) Silty SAND, fine sand, poorly graded, very dark greyish brown (10 YR 8/2), non-cohesive, loose, wet 4.6	5.0
										Boring Terminated at Elevation 4.6 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren	
SITE DESCRIPTION Mid-Currituck Bridge				**GROUND WTR (ft)**
BORING NO. 6-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.7
COLLAR ELEV. 10.2 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 952,150	**EASTING** 2,900,517	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger		**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/07/19	**COMP. DATE** 08/07/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
										10.2 GROUND SURFACE	0.0
10										**COASTAL PLAIN** TOPSOIL, organics 9.7	0.5
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, yellowish brown (10 YR 5/6), non-cohesive, loose, moist 8.2	2.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, light brownish grey (10 YR 6/2), non-cohesive, loose, moist 6.2	4.0
										COASTAL PLAIN (SP) SAND, fine sand, poorly graded, light brownish grey (10 YR 6/2), non-cohesive, loose, wet 5.2	5.0
										Boring Terminated at Elevation 5.2 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

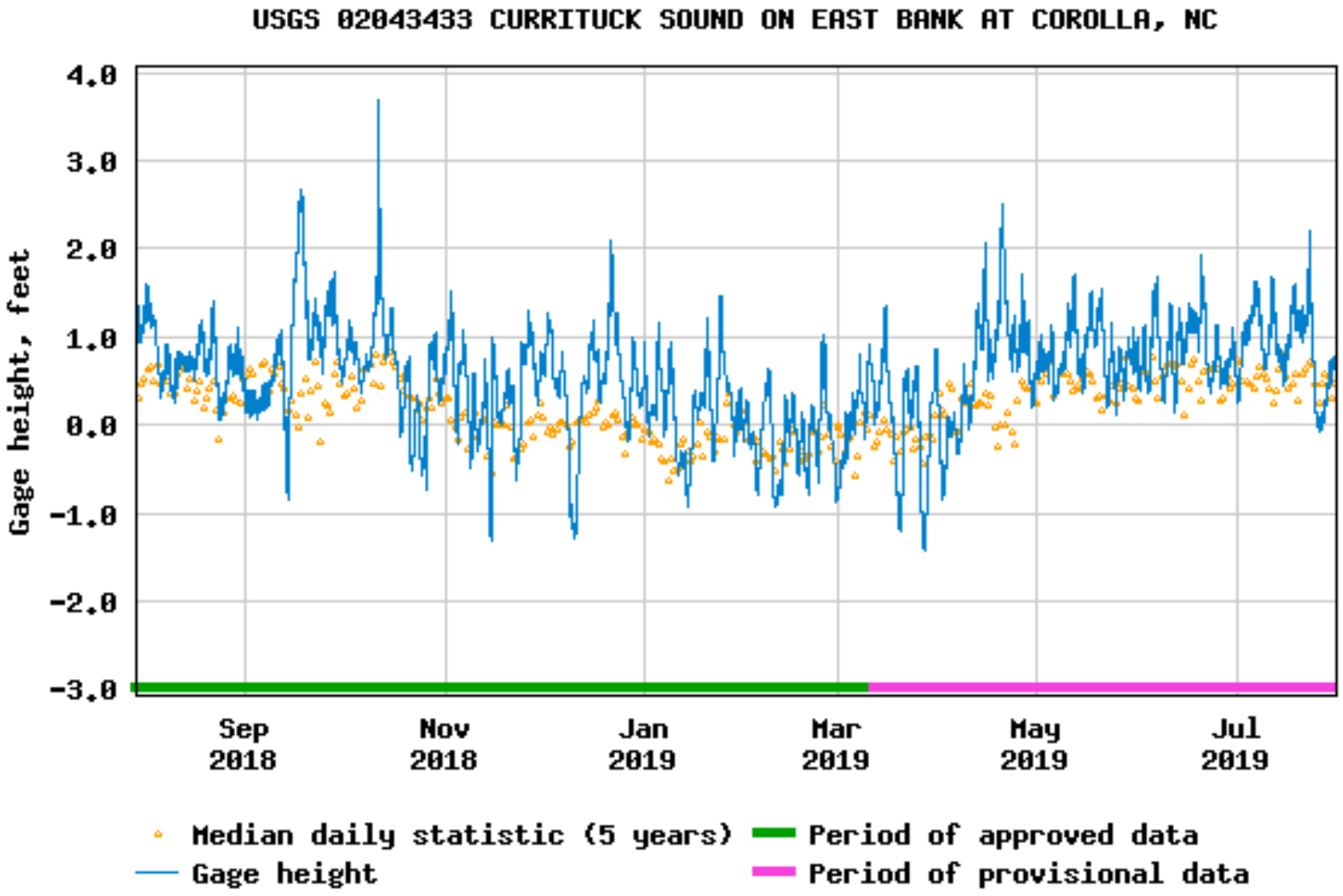
WBS 34470.1.TA1	**TIP** R-2576	**COUNTY** Currituck	**GEOLOGIST** Cox, Darren
SITE DESCRIPTION Mid-Currituck Bridge			**GROUND WTR (ft)**
BORING NO. 7-Y	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 3.5
COLLAR ELEV. 10.4 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 952,405	**EASTING** 2,900,360	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE Hand Auger		**DRILL METHOD** Hand Auger	**HAMMER TYPE** N/A
DRILLER Meigs, Ryan	**START DATE** 08/07/19	**COMP. DATE** 08/07/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
15											
										10.4 GROUND SURFACE	0.0
10										**COASTAL PLAIN** TOPSOIL, organics 9.9	0.5
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/8), non-cohesive, loose, dry 8.4	2.0
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, yellowish brown (10 YR 5/8), non-cohesive, loose, moist 6.4	4.0
										COASTAL PLAIN (SP-SM) Silty SAND, fine sand, poorly graded, light yellowish brown (10 YR 6/4) matrix with yellow (10 YR 7/8) oxy/reduction features, non-cohesive, loose, wet 5.4	5.0
										Boring Terminated at Elevation 5.4 ft	

APPENDIX B

Summary of Currituck Sound Gage Heights – East Bank at Corolla, NC (USGS)

Appendix B: Summary of Currituck Sound Gage Heights – East Bank at Corolla, NC (USGS)



Reference: https://waterdata.usgs.gov/usa/nwis/uv?02043433

APPENDIX C

NC DOT Survey Data

Test Hole	L&S Point #	Northing (FT.)	Easting (FT.)	Elevation (FT.)	Located On Site	Northing (Provided By Golder)	Easting (Provided I	Column1	Column2
12-YNB	2	953011.8010	2900052.7760	11.851	Located Hole	953023.7230	2900053.4510	-11.9220	-0.6750
13-YNB	3	953345.1300	2899781.7820	7.931	Located Hole	953338.9310	2899821.1400	6.1990	-39.3580
9-Y	4	953660.9390	2899621.8580	8.041	Located Hole	953694.5260	2899592.0700	-33.5870	29.7880
16-ALT-RPD	5	950790.9170	2901322.3480	10.441	Located Hole	950795.9040	2901329.1980	-4.9870	-6.8500
5-ALT-Y	6	949921.7830	2901443.1480	7.759	Located Hole	949938.4610	2901449.6070	-16.6780	-6.4590
36-L	7	954490.4370	2910536.2650	16.992	Located Hole	954496.3080	2910542.3480	-5.8710	-6.0830
35-L	8	954350.1770	2910582.3260	17.751	Metal Casing	954362.9250	2910586.9690	-12.7480	-4.6430
34-L	9	954211.7960	2910098.6900	16.517		954301.2290	2910078.4930	-89.4330	20.1970
33-L	10	954297.7490	2910073.7500	16.56		954225.6510	2910105.5730	72.0980	-31.8230
32-L	11	954124.4370	2909601.4420	13.236		954136.4770	2909606.9090	-12.0400	-5.4670
31-L	12	954058.5970	2909643.7560	12.744		954060.9000	2909634.0180	-2.3030	9.7380
51-Y5	13	962199.6360	2935009.8570	11.362	Stake and Nail	962204.4600	2935021.1850	-4.8240	-11.3280
41-ALT-L2	14	961723.9510	2935088.8910	11.845	Metal Casing	961730.3550	2935096.2670	-6.4040	-7.3760
40-ALT-L2	15	961587.7460	2934936.3030	6.545	Metal Casing	961592.1020	2934942.2230	-4.3560	-5.9200
53-Y5	16	962804.7190	2934787.6610	12.912	Stake and Nail	962802.8620	2934788.4740	1.8570	-0.8130
52-Y5	17	962467.5530	2934835.6720	14.493	Stake and Nail	962475.0870	2934837.1770	-7.5340	-1.5050
50-ALT-Y4	18	961727.4800	2935507.2730	16.401	Located Hole	961719.0280	2935512.0170	8.4520	-4.7440
~~46-ALT-Y4~~	~~19~~	~~960458.1500~~	~~2935779.3680~~	~~14.202~~	~~Stake and Nail~~	~~960464.1500~~	~~2935787.7130~~	~~-6.0000~~	~~-8.3450~~
44-Y4	20	960343.1450	2935971.2130	16.834	Stake and Nail	960357.7500	2935977.3310	-14.6050	-6.1180
45-ALT-Y4	21	960253.3530	2935951.8940	18.543	Located Hole	960254.3760	2935959.8980	-1.0230	-8.0040
~~43-ALT-Y4~~	~~22~~	~~959841.7230~~	~~2936116.5670~~	~~15.433~~	~~Nail at White Flag~~	~~959846.9600~~	~~2936122.9340~~	~~-5.2370~~	~~-6.3670~~
42-Y4	23	959879.7300	2936169.0230	15.199	Stake and Nail	959881.8200	2936172.4180	-2.0900	-3.3950
39-L2	24	961549.5130	2934794.6400	4.069	Metal Casing	961546.7520	2934790.4410	2.7610	4.1990
47-Y4	25	960823.4560	2935530.5100	9.27	White Flag	960824.6750	2935544.2070	-1.2190	-13.6970
~~49-ALT-Y4~~	~~26~~	~~961298.0640~~	~~2935488.9210~~	~~8.985~~	~~Stake and Nail~~	~~961304.8960~~	~~2935496.6930~~	~~-6.8320~~	~~-7.7720~~
48-Y4	27	961268.6200	2935568.1400	10.018	Was Told To Use Appox. Coords.	961268.7190	2935568.2090	-0.0990	-0.0690
28-ALT-RPD	28	950577.9750	2901855.8740	8.832	White Flag	950582.3950	2901860.3400	-4.4200	-4.4660
14-RPD	29	951136.0280	2901606.9840	11.006	White Flag	951148.6400	2901611.0970	-12.6120	-4.1130
18-RPA	30	951294.2780	2901411.6350	12.121	Metal Casing	951305.0910	2901412.8890	-10.8130	-1.2540
29-ALT-RPD	31	950909.2470	2901492.6020	11.826	White Flag	950910.6990	2901499.0950	-1.4520	-6.4930
15-RPD	32	951021.1940	2901404.6720	11.807	White Flag	951029.6810	2901403.3730	-8.4870	1.2990
17-ALT-RPD	33	950417.4170	2901424.0670	12.561	White Flag	950422.3210	2901428.3590	-4.9040	-4.2920
1-ALT-Y	34	948142.8940	2902486.7350	11.069	Metal Casing	948117.6260	2902448.1540	25.2680	38.5810
3-Y	35	948898.9170	2901878.3160	11.866	White Flag	948932.5590	2901886.3480	-33.6420	-8.0320
2-Y	36	948507.0380	2902153.7310	10.631	White Flag	948511.2180	2902146.7210	-4.1800	7.0100
4-Y	37	949337.6880	2901659.5060	9.895	White Flag	949375.9970	2901668.0120	-38.3090	-8.5060
26-ALT-Y2	38	949761.0590	2902194.1560	11.953	White Flag	949755.7110	2902207.3620	5.3480	-13.2060
27-ALT-Y2A	39	950108.2700	2902118.9320	10.411	White Flag	950124.3320	2902146.4590	-16.0620	-27.5270
19-ALT-RPA	40	951783.8270	2900732.3890	9.626	White Flag	951662.5800	2900751.5960	121.2470	-19.2070
20-ALT-RPA	41	951921.7220	2901010.6820	11.678	White Ribbon Tied To Grass	951940.7800	2901032.7810	-19.0580	-22.0990
6-Y	42	952144.2830	2900511.8970	10.213	White Flag	952150.0950	2900516.5910	-5.8120	-4.6940
7-Y	43	952435.1030	2900326.8250	10.445	White Flag	952405.1010	2900360.3370	30.0020	-33.5120
8-Y	44	952809.9090	2900110.6460	10.235	Metal Casing	952789.7380	2900125.8800	20.1710	-15.2340
10-ALT-Y	45	954028.1090	2899421.8920	5.075	White Flag	954031.7710	2899426.6340	-3.6620	-4.7420
23-ALT-Y1A	46	954522.4090	2899723.0790	8.57	Metal Casing	954523.9860	2899727.4930	-1.5770	-4.4140
22-Y1A	47	953961.5910	2900021.8190	9.048	Sand Near White Ribbon Tied To A	953981.0700	2899963.2300	-19.4790	58.5890

Note:

*Strike through locations were orginally marked but not drilled. Borehole 46-Alt-Y4 was not drilled due to it's close proximity to utilities. Borehole 45-Alt-Y4 was complete to provide additional data in this area. Borehole 49-Alt Y4 and borehole 43-Alt-Y4 were omitted as another borings was performed on the opposite side of NC-12.

APPENDIX D

Soil Testing Results

August 16, 2019

Project No. R-2019-229-001

Mr. Benjamin Draper
Golder Associates NC, Inc.
Greensboro, NC

bdraper@golder.com

Transmittal
Laboratory Test Results
Lochner - 1653448

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
Geotechnics, Inc.

Michael P. Smith
Regional Manager

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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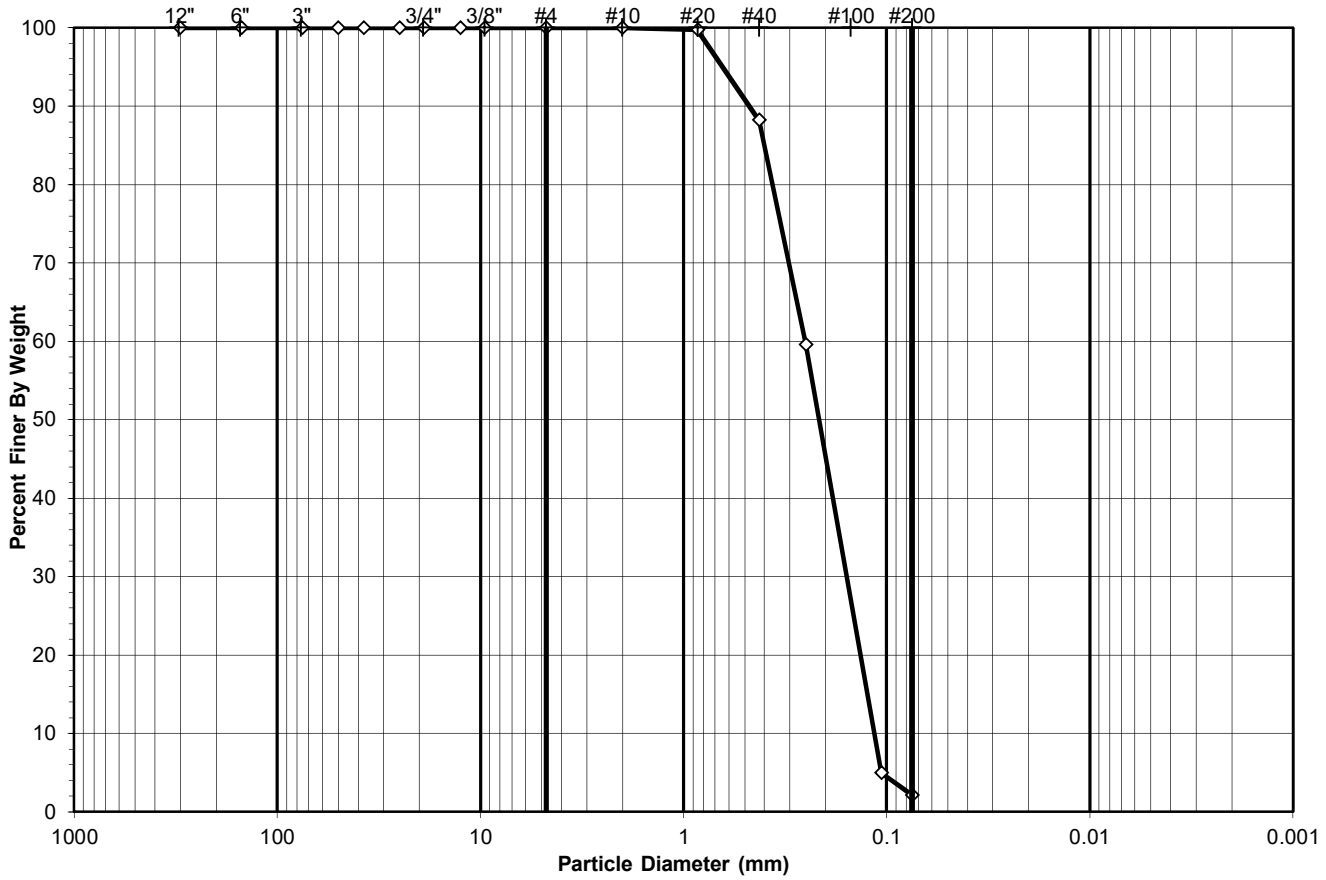
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	28-Alt-Y1A
Client Reference:	Lochner - 1653448	Depth (ft):	4.0-6.0
Project No.:	R-2019-229-001	Sample No.:	1
Lab ID:	R-2019-229-001-001	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	97.90
Finer Than #200	*Silt & Clay*	2.10

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.25

D30 = 0.16 **CC = 0.85**

D10 = 0.11 **CU = 2.20**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	28-Alt-Y1A
Client Reference:	Lochner - 1653448	Depth (ft):	4.0-6.0
Project No.:	R-2019-229-001	Sample No.:	1
Lab ID:	R-2019-229-001-001	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	834	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1166.90	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	1067.70	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	260.20	Weight of Tare (g):	NA
Weight of Water (g):	99.20	Weight of Water (g):	NA
Weight of Dry Soil (g):	807.50	Weight of Dry Soil (g):	NA
Moisture Content (%):	**12.3**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23500	Weight of the Dry Sample (g):	807.50
Dry Weight of - 3/4" Sample (g):	20928.9	Weight of Minus #200 Material (g):	16.97
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	790.53
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	20928.9		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	2.03	(**)	0.25	0.25	99.75	**99.75**
#40	0.425	92.90		11.50	11.76	88.24	**88.24**
#60	0.250	231.26		28.64	40.40	59.60	**59.60**
#140	0.106	441.10		54.63	95.02	4.98	**4.98**
#200	0.075	23.24		2.88	97.90	2.10	**2.10**
Pan	-	16.97		2.10	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By RF Date 8/15/2019 Checked By EL Date 8/16/2019

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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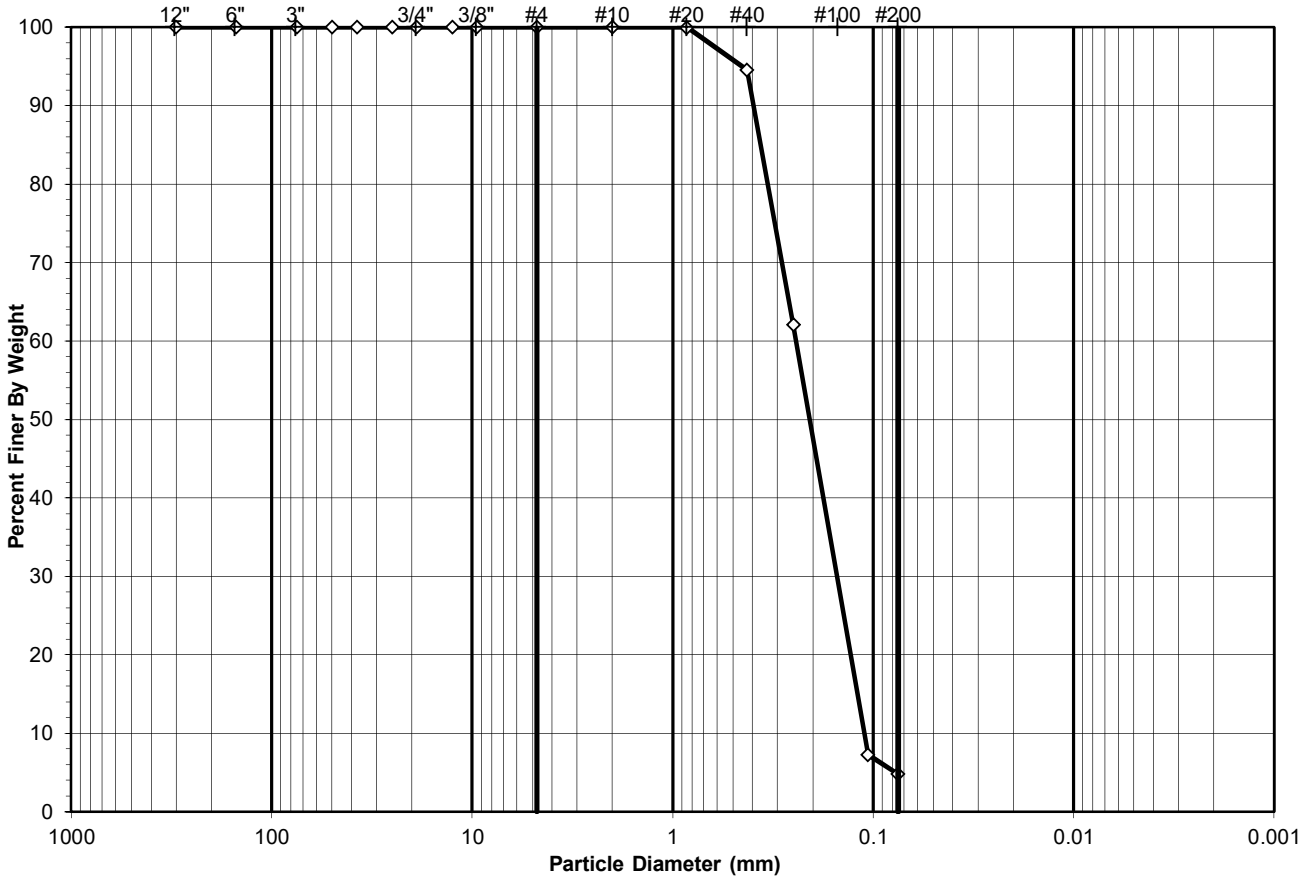
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	8Y
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	2
Lab ID:	R-2019-229-001-002	Soil Color:	Orange

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	95.22
Finer Than #200	*Silt & Clay*	4.78

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.24

D30 = 0.15 **CC = 0.86**

D10 = 0.11 **CU = 2.19**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	8Y
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	2
Lab ID:	R-2019-229-001-002	Soil Color:	Orange

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	840	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1040.78	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	886.21	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	265.26	Weight of Tare (g):	NA
Weight of Water (g):	154.57	Weight of Water (g):	NA
Weight of Dry Soil (g):	620.95	Weight of Dry Soil (g):	NA
Moisture Content (%):	**24.9**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23500	Weight of the Dry Sample (g):	620.95
Dry Weight of - 3/4" Sample (g)	18816.2	Weight of Minus #200 Material (g):	29.66
Wet Weight of +3/4" Sample (g)	0.00	Weight of Plus #200 Material (g):	591.29
Dry Weight of + 3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g):	18816.2		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.27	(**)	0.04	0.04	99.96	**99.96**
#40	0.425	33.85		5.45	5.49	94.51	**94.51**
#60	0.250	201.47		32.45	37.94	62.06	**62.06**
#140	0.106	340.24		54.79	92.73	7.27	**7.27**
#200	0.075	15.46		2.49	95.22	4.78	**4.78**
Pan	-	29.66		4.78	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/16/19 Checked By MPS Date 8/16/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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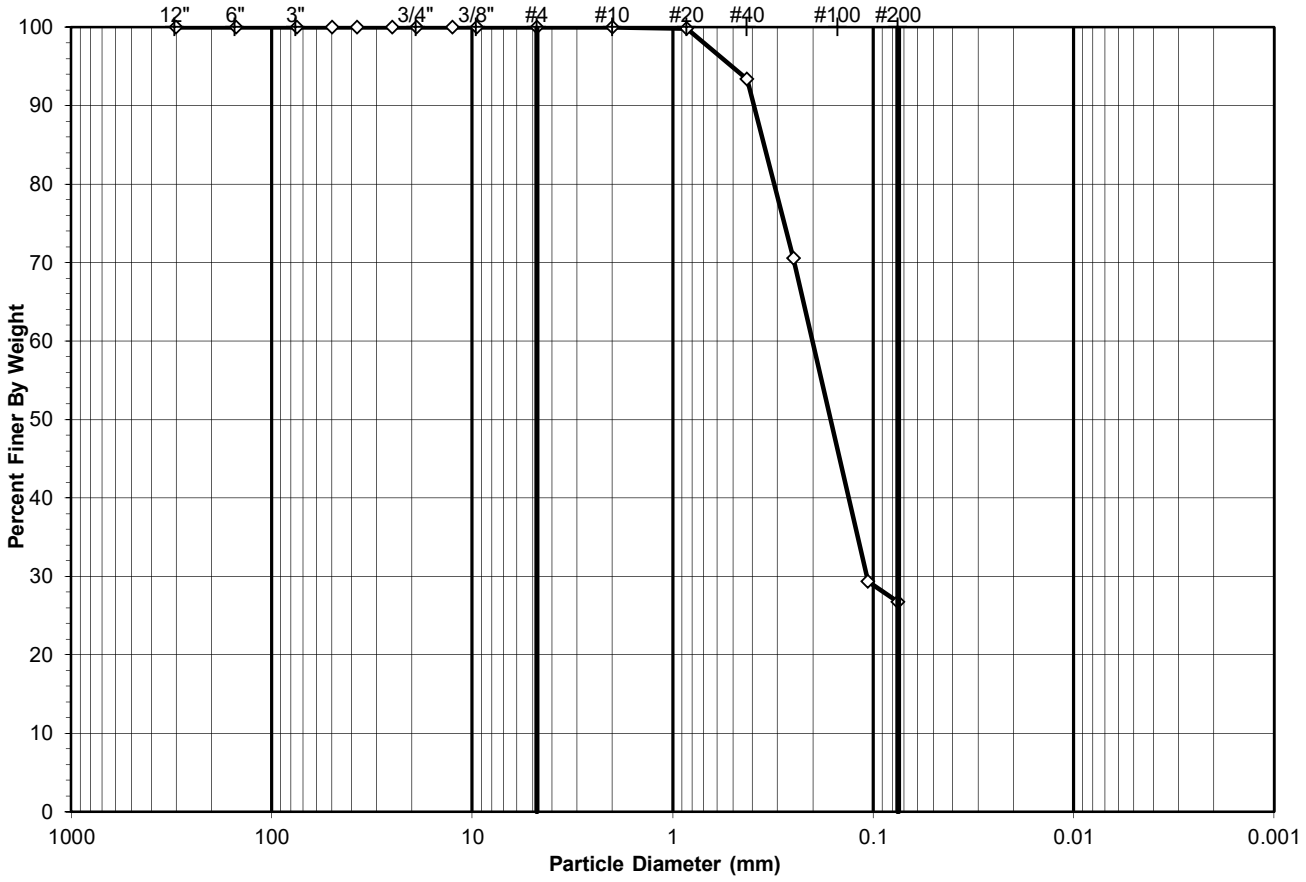
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	18-RPA
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	3
Lab ID:	R-2019-229-001-003	Soil Color:	Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	73.24
Finer Than #200	*Silt & Clay*	26.76

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	18-RPA
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	3
Lab ID:	R-2019-229-001-003	Soil Color:	Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	842	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	749.76	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	692.37	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	256.68	Weight of Tare (g):	NA
Weight of Water (g):	57.39	Weight of Water (g):	NA
Weight of Dry Soil (g):	435.69	Weight of Dry Soil (g):	NA
Moisture Content (%):	**13.2**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23500	Weight of the Dry Sample (g):	435.69
Dry Weight of - 3/4" Sample (g)	20764.8	Weight of Minus #200 Material (g):	116.57
Wet Weight of +3/4" Sample (g)	0.00	Weight of Plus #200 Material (g):	319.12
Dry Weight of + 3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g):	20764.8		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.73	(**)	0.17	0.17	99.83	**99.83**
#40	0.425	28.06		6.44	6.61	93.39	**93.39**
#60	0.250	99.40		22.81	29.42	70.58	**70.58**
#140	0.106	179.65		41.23	70.66	29.34	**29.34**
#200	0.075	11.28		2.59	73.24	26.76	**26.76**
Pan	-	116.57		26.76	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/16/19 Checked By MPS Date 8/16/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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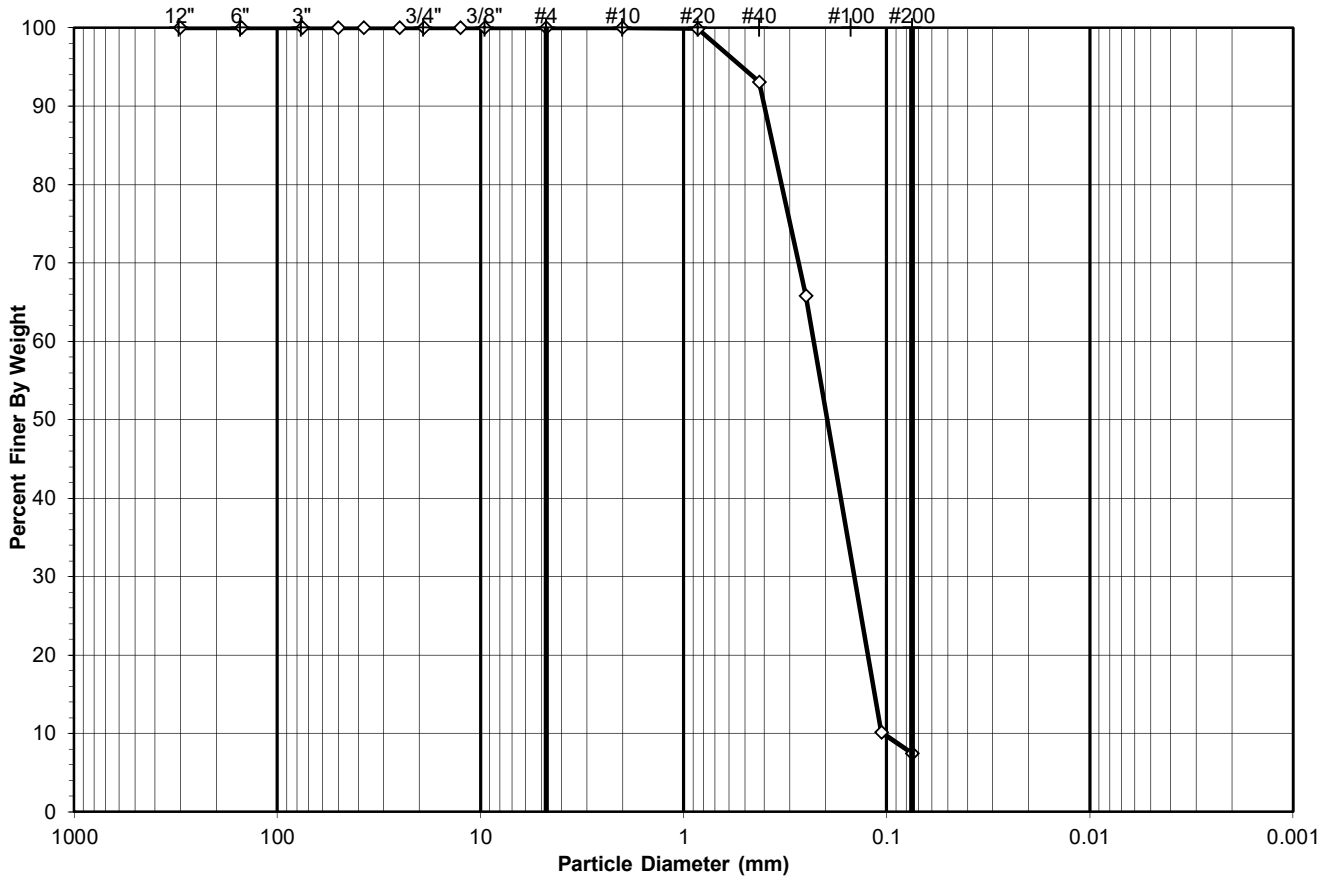
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	18-RPA
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	4
Lab ID:	R-2019-229-001-004	Soil Color:	Orange

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	92.56
Finer Than #200	*Silt & Clay*	7.44

USCS Symbol:
sp-sm, ASSUMED

USCS Classification:
POORLY GRADED SAND WITH SILT

D60 = 0.23

D30 = 0.14 **CC = 0.87**

D10 = 0.10 **CU = 2.18**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	18-RPA
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	4
Lab ID:	R-2019-229-001-004	Soil Color:	Orange

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	839	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	986.90	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	934.26	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	259.20	Weight of Tare (g):	NA
Weight of Water (g):	52.64	Weight of Water (g):	NA
Weight of Dry Soil (g):	675.06	Weight of Dry Soil (g):	NA
Moisture Content (%):	**7.8**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23500	Weight of the Dry Sample (g):	675.06
Dry Weight of - 3/4" Sample (g):	21800.1	Weight of Minus #200 Material (g):	50.20
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	624.86
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	21800.1		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.93	(**)	0.14	0.14	99.86	**99.86**
#40	0.425	45.74		6.78	6.91	93.09	**93.09**
#60	0.250	184.17		27.28	34.20	65.80	**65.80**
#140	0.106	376.06		55.71	89.90	10.10	**10.10**
#200	0.075	17.96		2.66	92.56	7.44	**7.44**
Pan	-	50.20		7.44	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By RF Date 8/15/2019 Checked By EL Date 8/16/2019

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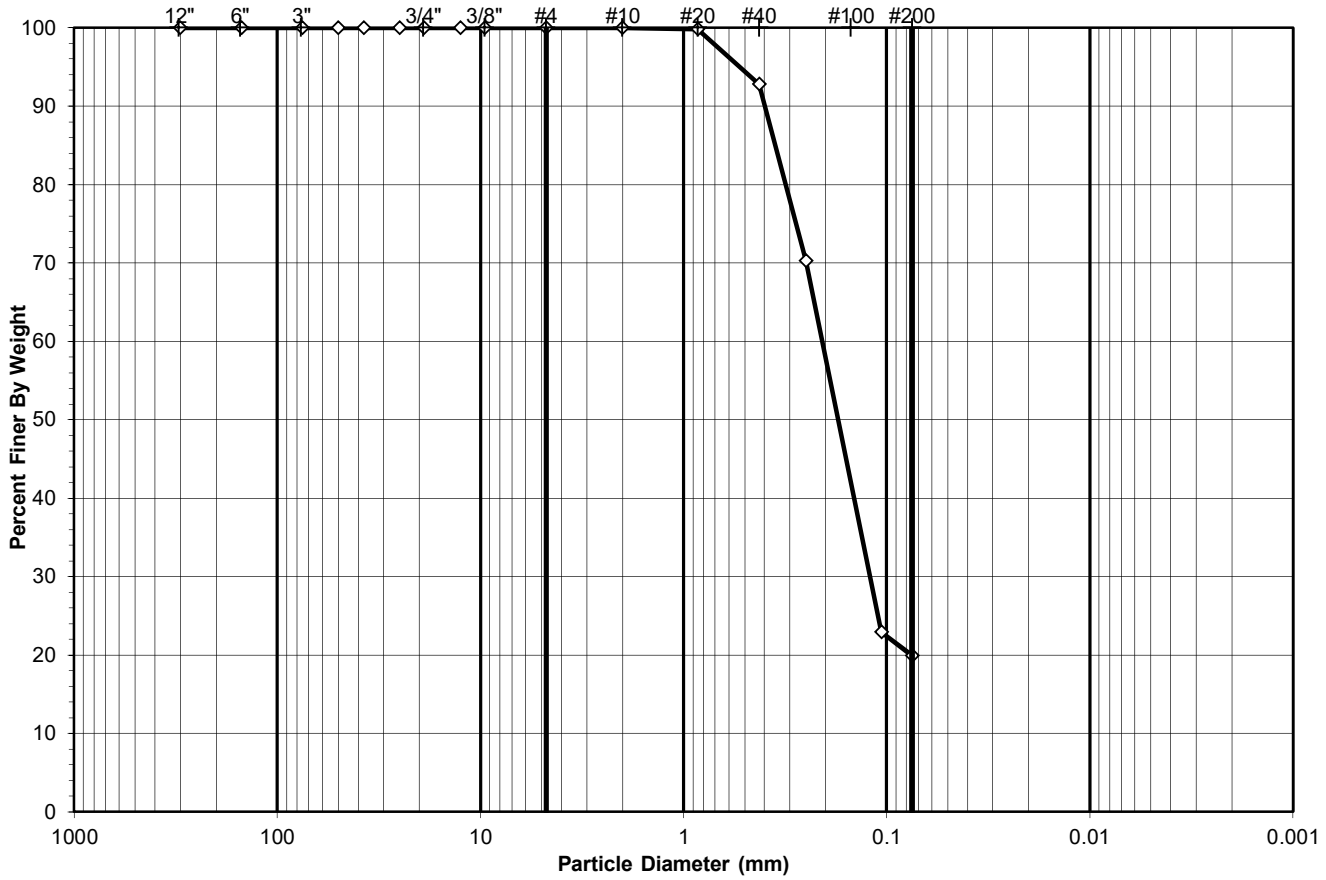
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	1-Alt-Y
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	5
Lab ID:	R-2019-229-001-005	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	80.11
Finer Than #200	*Silt & Clay*	19.89

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	1-Alt-Y
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	5
Lab ID:	R-2019-229-001-005	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	841	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	700.28	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	659.32	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	260.28	Weight of Tare (g):	NA
Weight of Water (g):	40.96	Weight of Water (g):	NA
Weight of Dry Soil (g):	399.04	Weight of Dry Soil (g):	NA
Moisture Content (%):	**10.3**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	399.04
Dry Weight of - 3/4" Sample (g):	21353.2	Weight of Minus #200 Material (g):	79.38
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	319.66
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	21353.2		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.77	(**)	0.19	0.19	99.81	**99.81**
#40	0.425	28.01		7.02	7.21	92.79	**92.79**
#60	0.250	89.78		22.50	29.71	70.29	**70.29**
#140	0.106	188.94		47.35	77.06	22.94	**22.94**
#200	0.075	12.16		3.05	80.11	19.89	**19.89**
Pan	-	79.38		19.89	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/16/2019 Checked By GEM Date 8/16/2019

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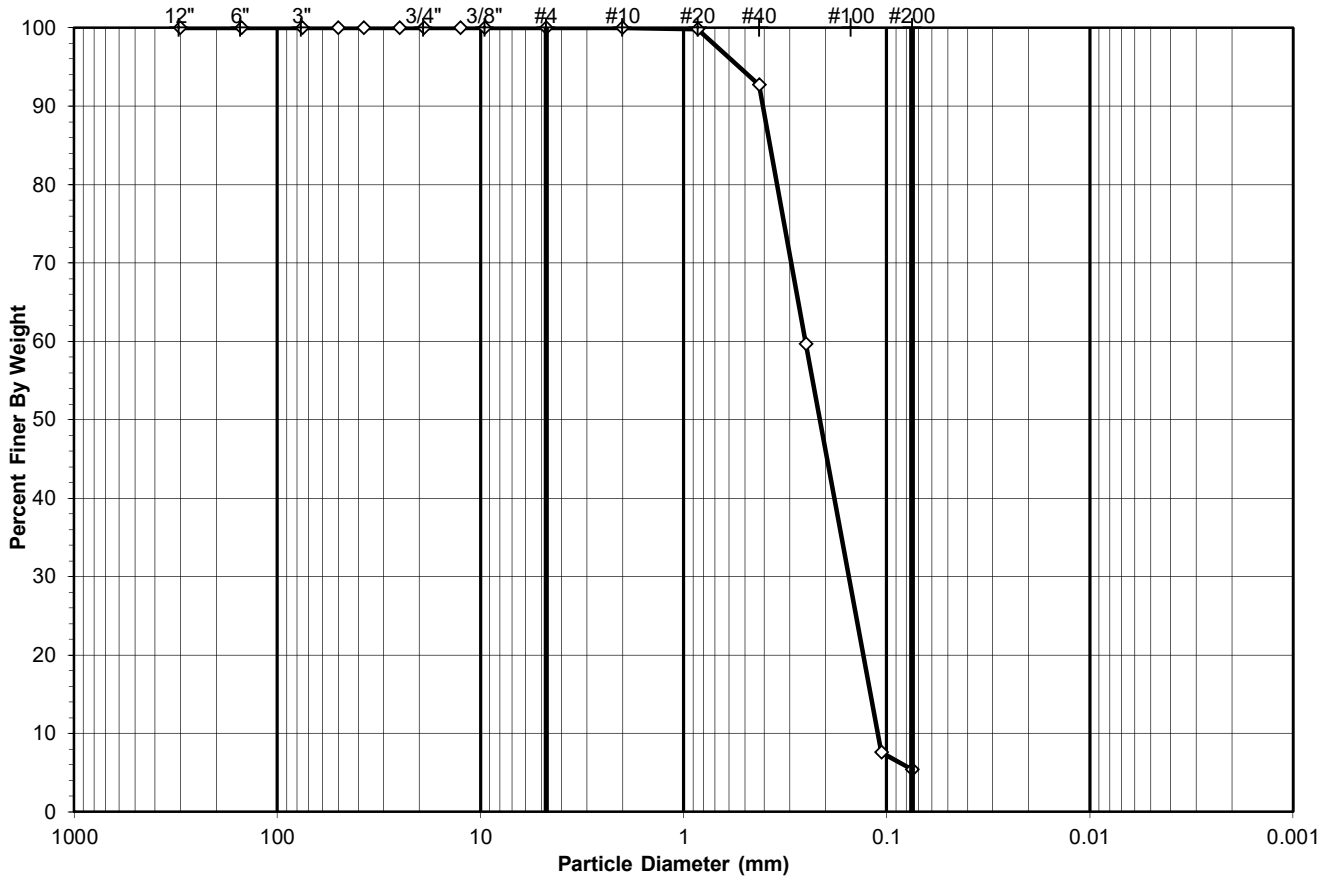
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	1-Alt-Y
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	6
Lab ID:	R-2019-229-001-006	Soil Color:	Gray

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	94.61
Finer Than #200	*Silt & Clay*	5.39

USCS Symbol:
sp-sm, ASSUMED

USCS Classification:
POORLY GRADED SAND WITH SILT

D60 = 0.25

D30 = 0.15 **CC = 0.85**

D10 = 0.11 **CU = 2.28**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	1-Alt-Y
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	6
Lab ID:	R-2019-229-001-006	Soil Color:	Gray

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	838	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1002.84	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	863.07	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	263.15	Weight of Tare (g):	NA
Weight of Water (g):	139.77	Weight of Water (g):	NA
Weight of Dry Soil (g):	599.92	Weight of Dry Soil (g):	NA
Moisture Content (%):	**23.3**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	599.92
Dry Weight of - 3/4" Sample (g):	19096.0	Weight of Minus #200 Material (g):	32.35
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	567.57
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	19096.0		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	1.13	(**)	0.19	0.19	99.81	**99.81**
#40	0.425	42.46		7.08	7.27	92.73	**92.73**
#60	0.250	198.14		33.03	40.29	59.71	**59.71**
#140	0.106	312.78		52.14	92.43	7.57	**7.57**
#200	0.075	13.06		2.18	94.61	5.39	**5.39**
Pan	-	32.35		5.39	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/16/19 Checked By GEM Date 8/13/19

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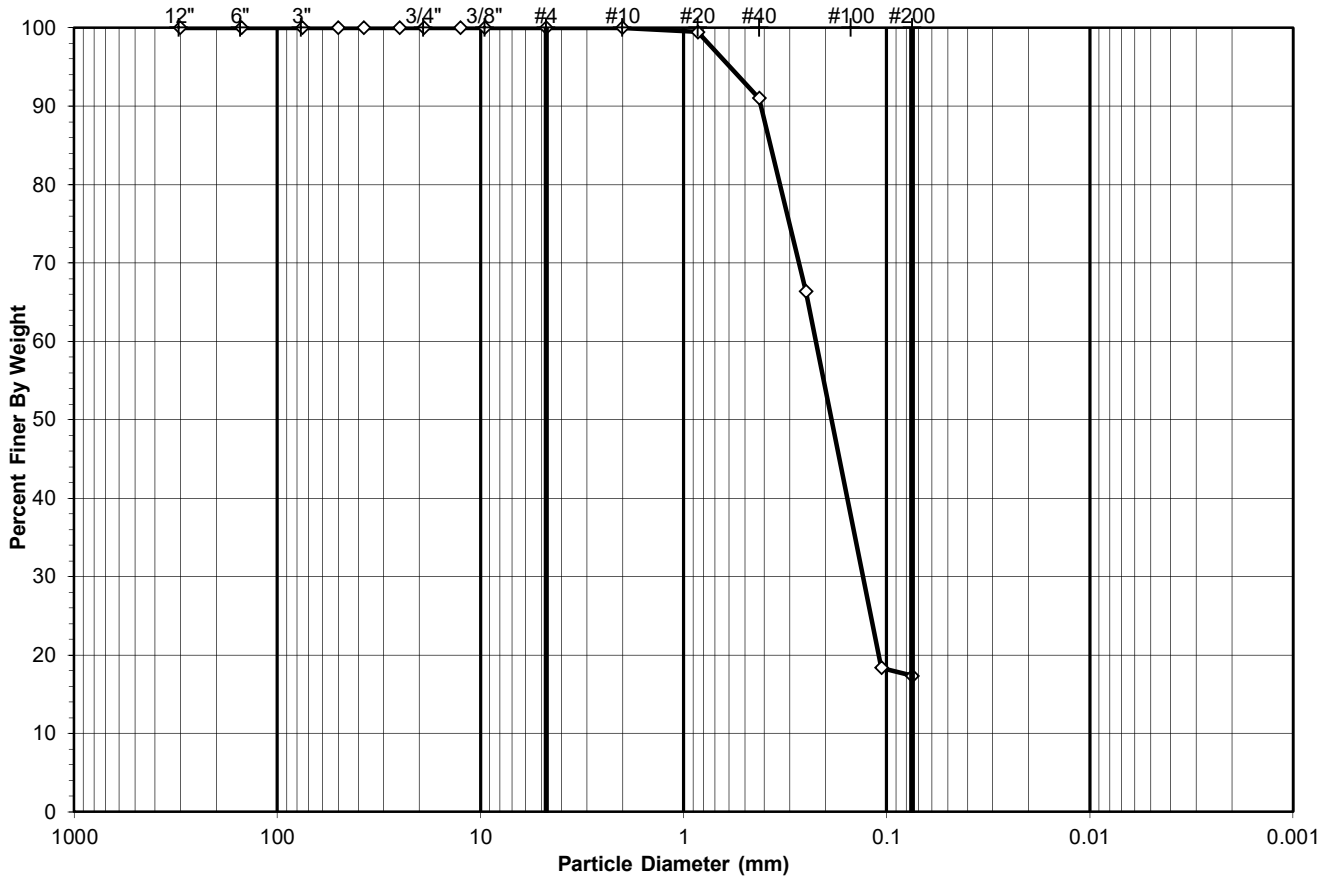
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	5-Alt-Y
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	7
Lab ID:	R-2019-229-001-007	Soil Color:	Gray

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	82.69
Finer Than #200	*Silt & Clay*	17.31

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	5-Alt-Y
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	7
Lab ID:	R-2019-229-001-007	Soil Color:	Gray

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	832	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	922.46	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	816.76	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	259.51	Weight of Tare (g):	NA
Weight of Water (g):	105.70	Weight of Water (g):	NA
Weight of Dry Soil (g):	557.25	Weight of Dry Soil (g):	NA
Moisture Content (%):	**19.0**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	557.25
Dry Weight of - 3/4" Sample (g):	19791.0	Weight of Minus #200 Material (g):	96.48
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	460.77
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	19791.0		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.09		0.02	0.02	99.98	**99.98**
#20	0.85	2.96	(**)	0.53	0.55	99.45	**99.45**
#40	0.425	47.08		8.45	9.00	91.00	**91.00**
#60	0.250	137.16		24.61	33.61	66.39	**66.39**
#140	0.106	267.71		48.04	81.65	18.35	**18.35**
#200	0.075	5.77		1.04	82.69	17.31	**17.31**
Pan	-	96.48		17.31	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

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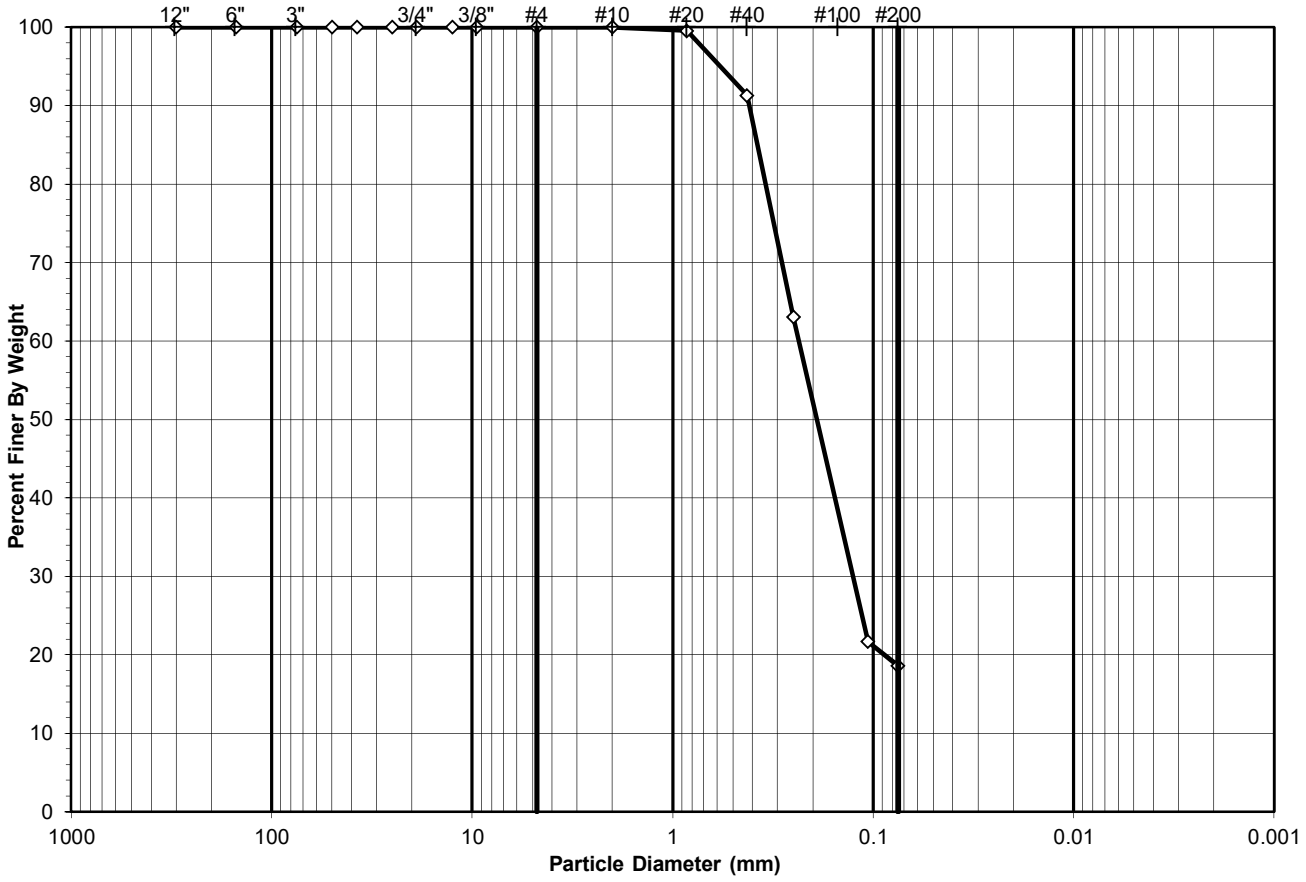
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	28-Alt-RPD
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	8
Lab ID:	R-2019-229-001-008	Soil Color:	Gray

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	81.39
Finer Than #200	*Silt & Clay*	18.61

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	28-Alt-RPD
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-001	Sample No.:	8
Lab ID:	R-2019-229-001-008	Soil Color:	Gray

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	830	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	757.98	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	716.87	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	259.86	Weight of Tare (g):	NA
Weight of Water (g):	41.11	Weight of Water (g):	NA
Weight of Dry Soil (g):	457.01	Weight of Dry Soil (g):	NA
Moisture Content (%):	**9.0**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23500	Weight of the Dry Sample (g):	457.01
Dry Weight of - 3/4" Sample (g)	21560.5	Weight of Minus #200 Material (g):	85.06
Wet Weight of +3/4" Sample (g)	0.00	Weight of Plus #200 Material (g):	371.95
Dry Weight of + 3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g):	21560.5		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.11		0.02	0.02	99.98	**99.98**
#20	0.85	1.98	(**)	0.43	0.46	99.54	**99.54**
#40	0.425	37.72		8.25	8.71	91.29	**91.29**
#60	0.250	128.88		28.20	36.91	63.09	**63.09**
#140	0.106	189.24		41.41	78.32	21.68	**21.68**
#200	0.075	14.02		3.07	81.39	18.61	**18.61**
Pan	-	85.06		18.61	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/16/19 Checked By MPS Date 8/16/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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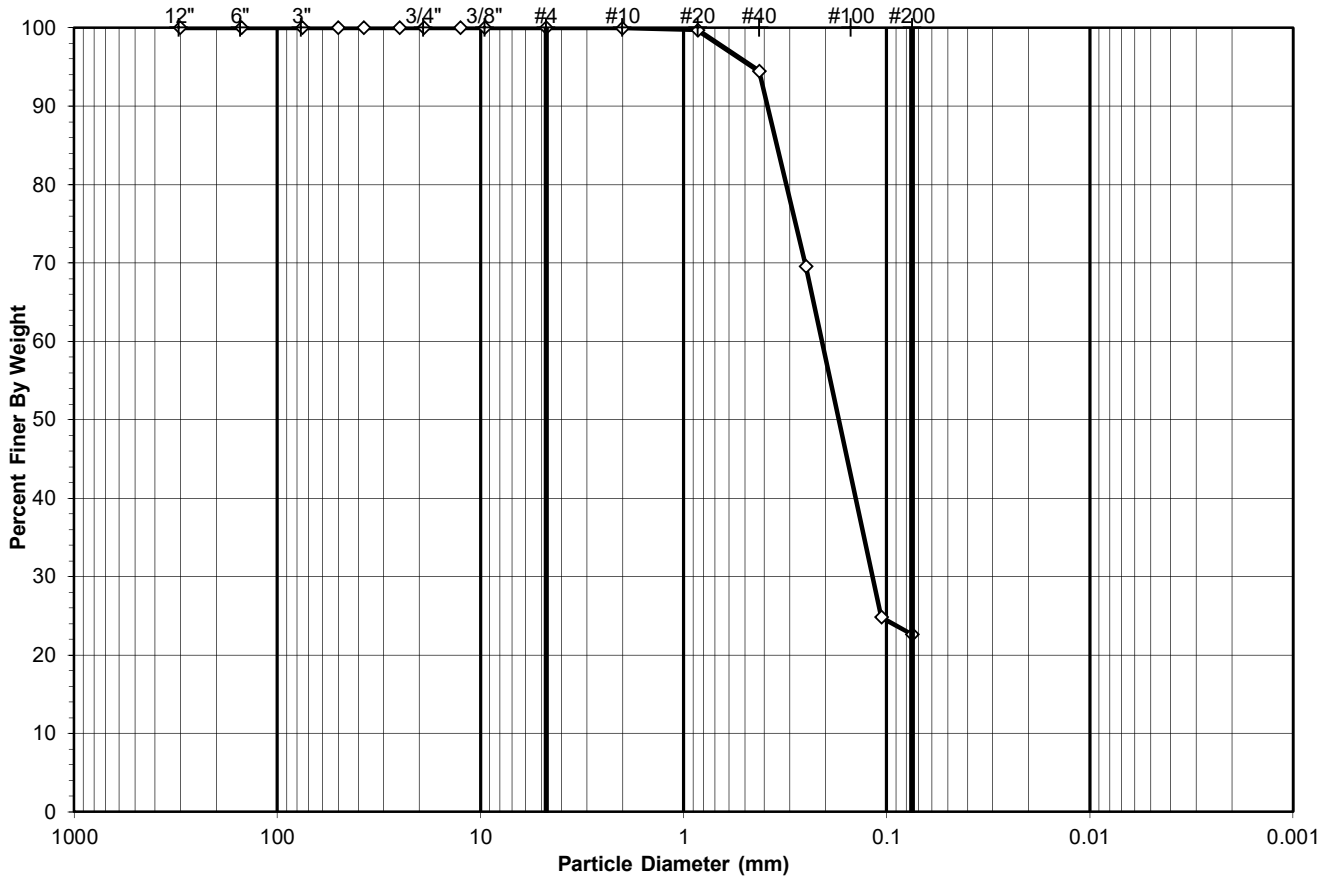
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	28-Alt-RPD
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	9
Lab ID:	R-2019-229-001-009	Soil Color:	Gray

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.02
#4 To #200	*Sand*	77.38
Finer Than #200	*Silt & Clay*	22.59

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	28-Alt-RPD
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	9
Lab ID:	R-2019-229-001-009	Soil Color:	Gray

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	AF-06	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1514.97	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	1328.15	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	229.88	Weight of Tare (g):	NA
Weight of Water (g):	186.82	Weight of Water (g):	NA
Weight of Dry Soil (g):	1098.27	Weight of Dry Soil (g):	NA
Moisture Content (%):	**17.0**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23500	Weight of the Dry Sample (g):	1098.27
Dry Weight of - 3/4" Sample (g):	20083.7	Weight of Minus #200 Material (g):	248.14
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	850.13
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	20083.7		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.26		0.02	0.02	99.98	**99.98**
#10	2.00	0.57		0.05	0.08	99.92	**99.92**
#20	0.85	2.69	(**)	0.24	0.32	99.68	**99.68**
#40	0.425	57.43		5.23	5.55	94.45	**94.45**
#60	0.250	273.13		24.87	30.42	69.58	**69.58**
#140	0.106	491.87		44.79	75.20	24.80	**24.80**
#200	0.075	24.18		2.20	77.41	22.59	**22.59**
Pan	-	248.14		22.59	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/15/2019 Checked By MPS Date 8/16/2019

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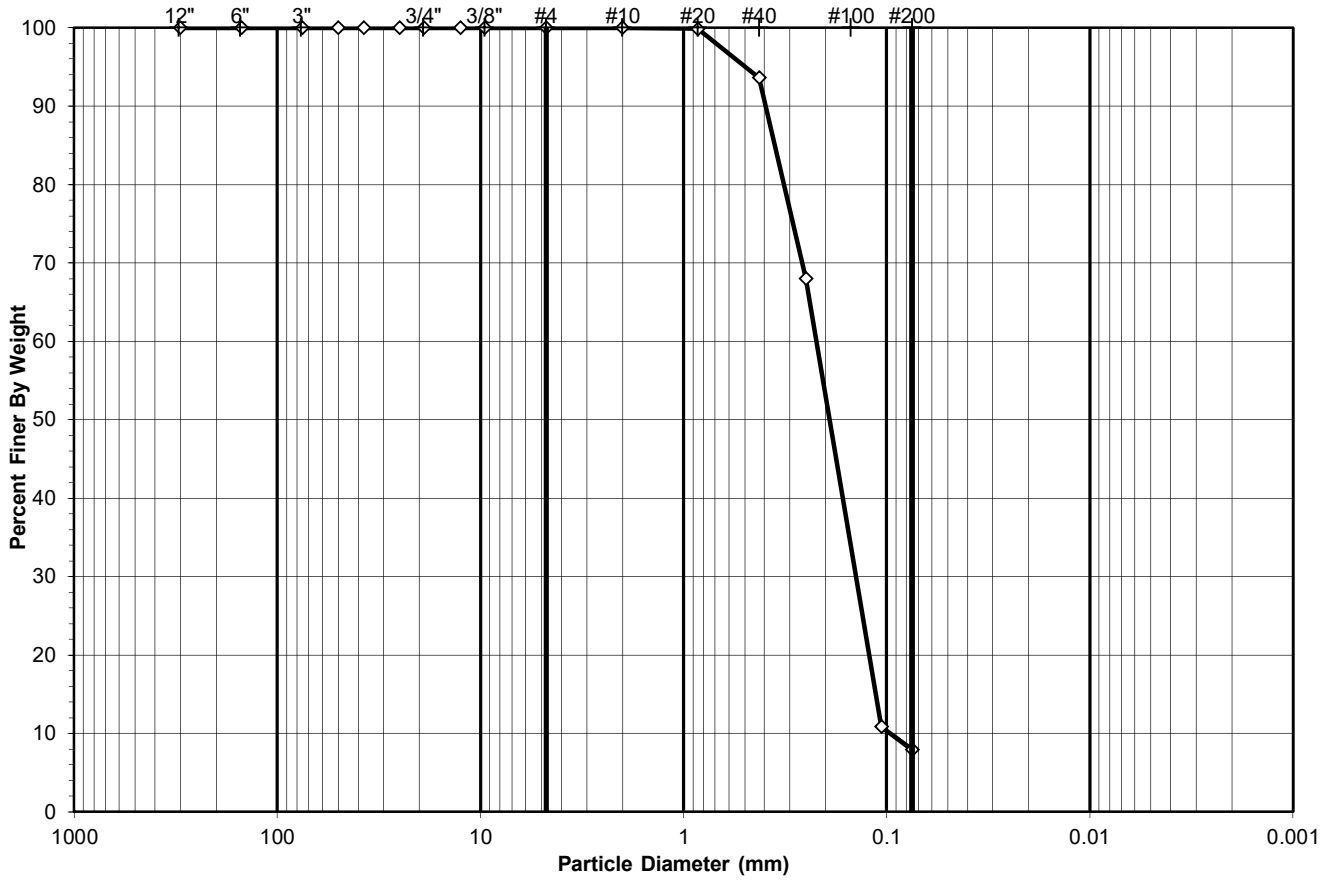
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	9Y
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	10
Lab ID:	R-2019-229-001-010	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	92.08
Finer Than #200	*Silt & Clay*	7.92

USCS Symbol:
sp-sm, ASSUMED

USCS Classification:
POORLY GRADED SAND WITH SILT

D60 = 0.22
D30 = 0.14 **CC = 0.94**
D10 = 0.10 **CU = 2.31**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	9Y
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-001	Sample No.:	10
Lab ID:	R-2019-229-001-010	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	NE-06	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1036.63	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	902.11	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	227.44	Weight of Tare (g):	NA
Weight of Water (g):	134.52	Weight of Water (g):	NA
Weight of Dry Soil (g):	674.67	Weight of Dry Soil (g):	NA
Moisture Content (%):	**19.9**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	674.67
Dry Weight of - 3/4" Sample (g):	19630.9	Weight of Minus #200 Material (g):	53.41
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	621.26
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	19630.9		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.09		0.01	0.01	99.99	**99.99**
#20	0.85	0.75	(**)	0.11	0.12	99.88	**99.88**
#40	0.425	42.30		6.27	6.39	93.61	**93.61**
#60	0.250	172.72		25.60	31.99	68.01	**68.01**
#140	0.106	385.70		57.17	89.16	10.84	**10.84**
#200	0.075	19.70		2.92	92.08	7.92	**7.92**
Pan	-	53.41		7.92	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By RFF Date 8/14/2019 Checked By GEM Date 8/15/2019

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August 15, 2019

Project No. R-2019-229-002

Mr. Benjamin Draper
Golder Associates NC, Inc.
Greensboro, NC

bdraper@golder.com

Transmittal
Laboratory Test Results
Lochner - 1653448

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
Geotechnics, Inc.

Michael P. Smith
Regional Manager

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

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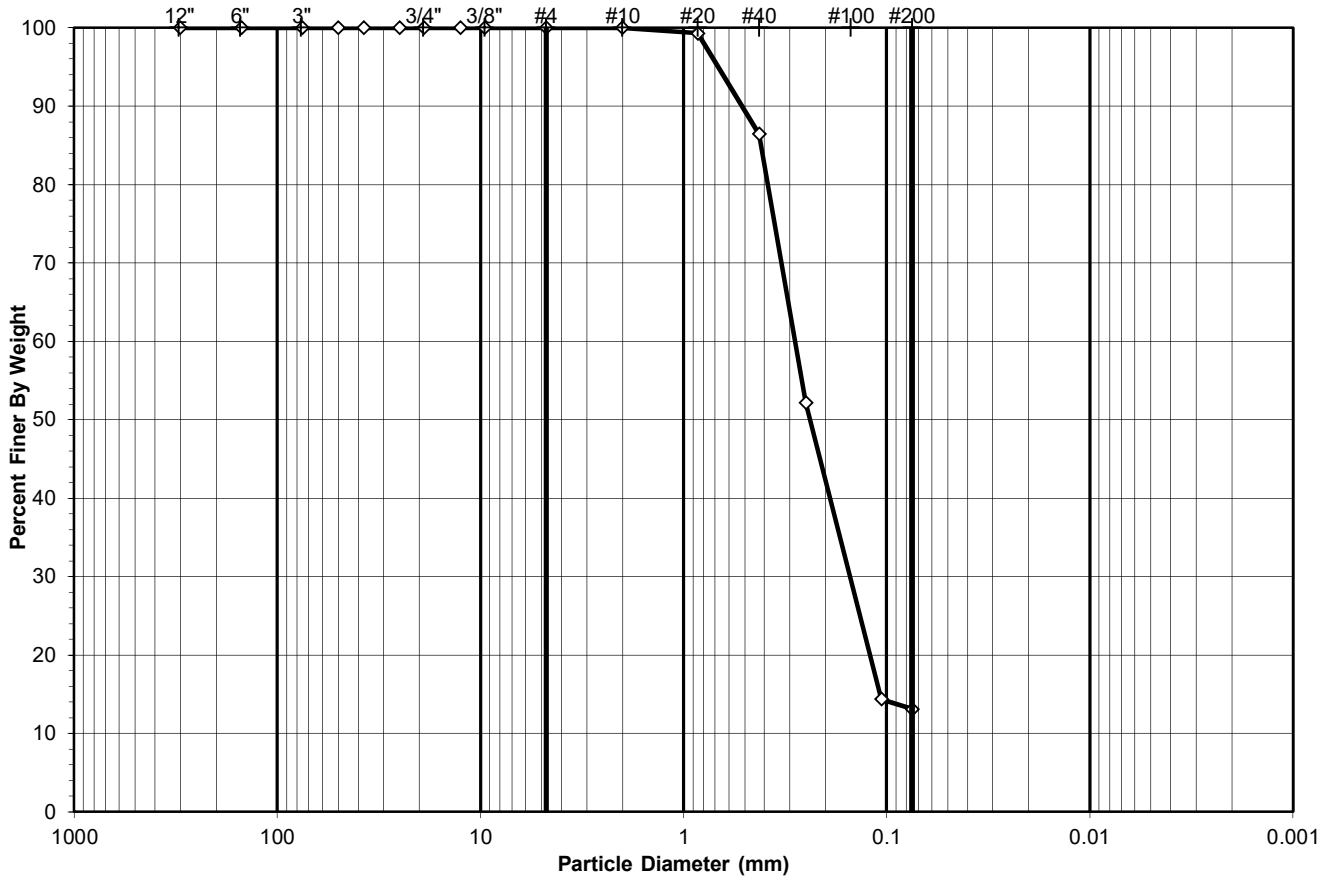
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	31-L
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	11
Lab ID:	R-2019-229-002-001	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	86.91
Finer Than #200	*Silt & Clay*	13.09

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	31-L
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	11
Lab ID:	R-2019-229-002-001	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	AF-07	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1249.79	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	1109.44	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	228.79	Weight of Tare (g):	NA
Weight of Water (g):	140.35	Weight of Water (g):	NA
Weight of Dry Soil (g):	880.65	Weight of Dry Soil (g):	NA
Moisture Content (%):	**15.9**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	880.65
Dry Weight of - 3/4" Sample (g):	20308.4	Weight of Minus #200 Material (g):	115.30
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	765.35
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	20308.4		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.16		0.02	0.02	99.98	**99.98**
#20	0.85	6.04	(**)	0.69	0.70	99.30	**99.30**
#40	0.425	113.18		12.85	13.56	86.44	**86.44**
#60	0.250	302.07		34.30	47.86	52.14	**52.14**
#140	0.106	332.63		37.77	85.63	14.37	**14.37**
#200	0.075	11.27		1.28	86.91	13.09	**13.09**
Pan	-	115.30		13.09	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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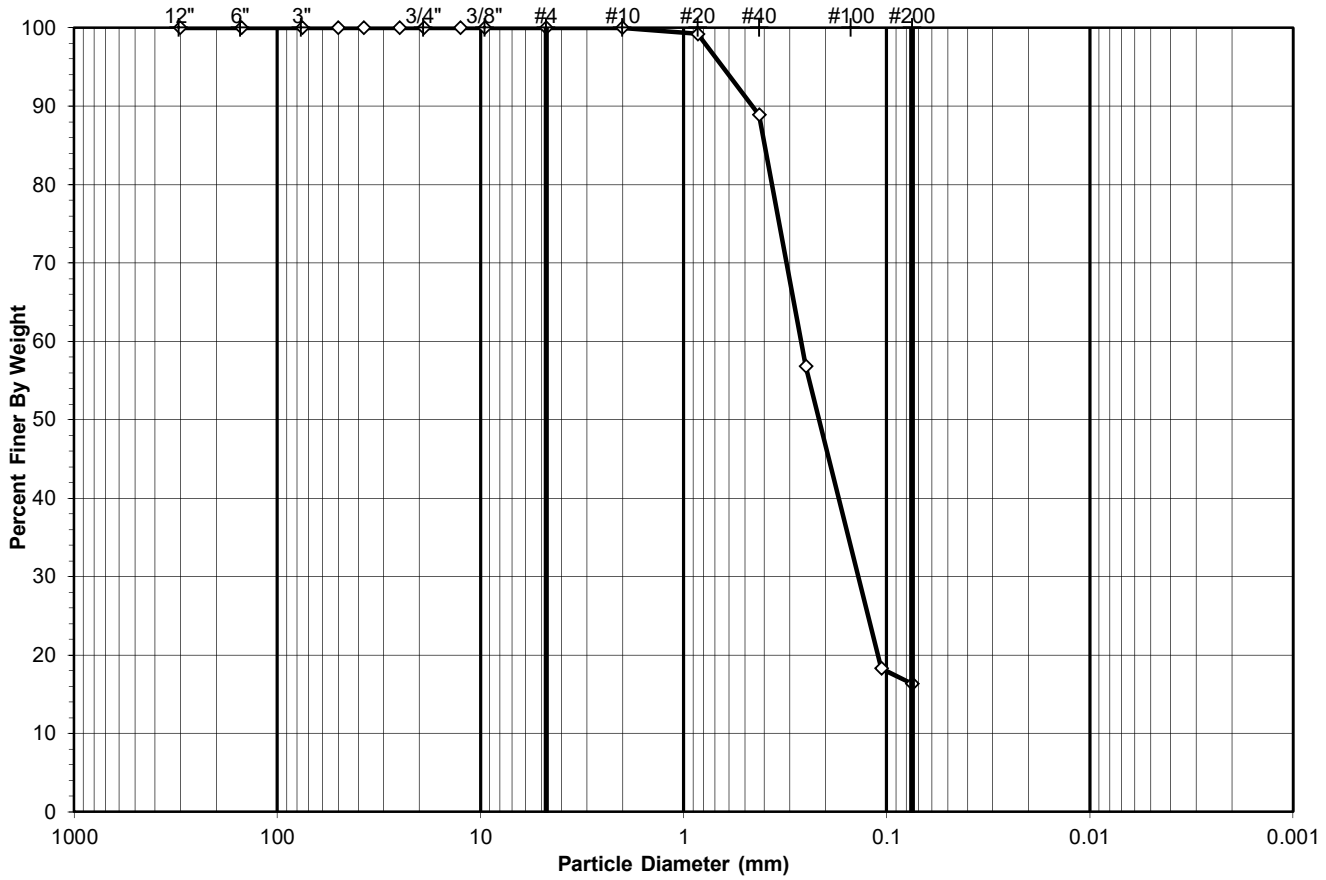
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	33-L
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	12
Lab ID:	R-2019-229-002-002	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	83.68
Finer Than #200	*Silt & Clay*	16.32

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	33-L
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	12
Lab ID:	R-2019-229-002-002	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	836	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	895.36	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	844.33	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	261.66	Weight of Tare (g):	NA
Weight of Water (g):	51.03	Weight of Water (g):	NA
Weight of Dry Soil (g):	582.67	Weight of Dry Soil (g):	NA
Moisture Content (%):	**8.8**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	582.67
Dry Weight of - 3/4" Sample (g):	21649.0	Weight of Minus #200 Material (g):	95.12
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	487.55
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	21649.0		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.05		0.01	0.01	99.99	**99.99**
#20	0.85	4.65	(**)	0.80	0.81	99.19	**99.19**
#40	0.425	60.21		10.33	11.14	88.86	**88.86**
#60	0.250	186.83		32.06	43.20	56.80	**56.80**
#140	0.106	224.38		38.51	81.71	18.29	**18.29**
#200	0.075	11.43		1.96	83.68	16.32	**16.32**
Pan	-	95.12		16.32	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/15/19 Checked By GEM Date 8/15/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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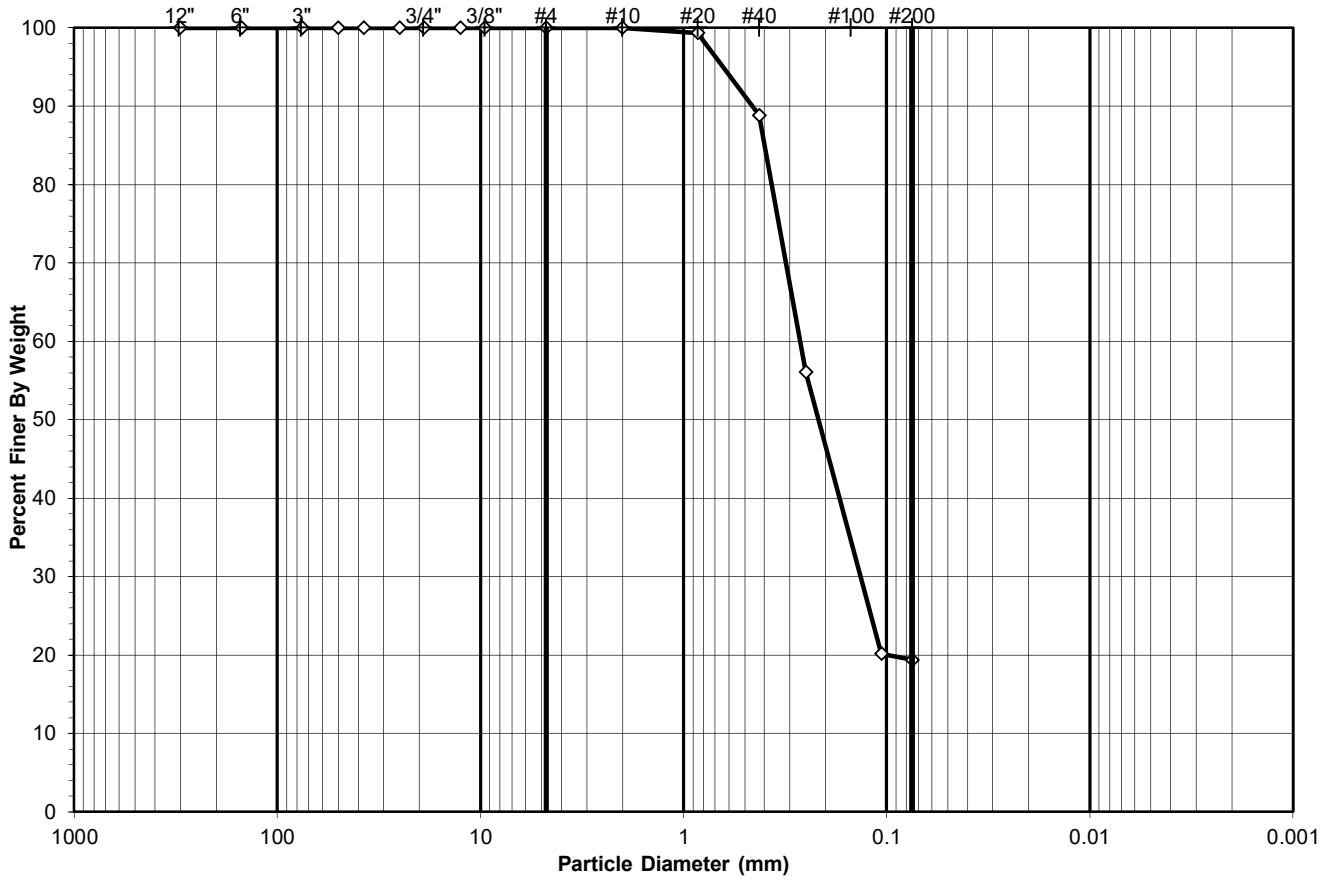
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	35-L
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	13
Lab ID:	R-2019-229-002-003	Soil Color:	Orange

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	80.62
Finer Than #200	*Silt & Clay*	19.38

USCS Symbol:

sm, ASSUMED

USCS Classification:

SILTY SAND

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	35-L
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	13
Lab ID:	R-2019-229-002-003	Soil Color:	Orange

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	837	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	955.38	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	910.78	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	261.75	Weight of Tare (g):	NA
Weight of Water (g):	44.60	Weight of Water (g):	NA
Weight of Dry Soil (g):	649.03	Weight of Dry Soil (g):	NA
Moisture Content (%):	**6.9**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	649.03
Dry Weight of - 3/4" Sample (g):	22031.1	Weight of Minus #200 Material (g):	125.80
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	523.23
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	22031.1		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	4.26	(**)	0.66	0.66	99.34	**99.34**
#40	0.425	68.25		10.52	11.17	88.83	**88.83**
#60	0.250	212.74		32.78	43.95	56.05	**56.05**
#140	0.106	232.89		35.88	79.83	20.17	**20.17**
#200	0.075	5.09		0.78	80.62	19.38	**19.38**
Pan	-	125.80		19.38	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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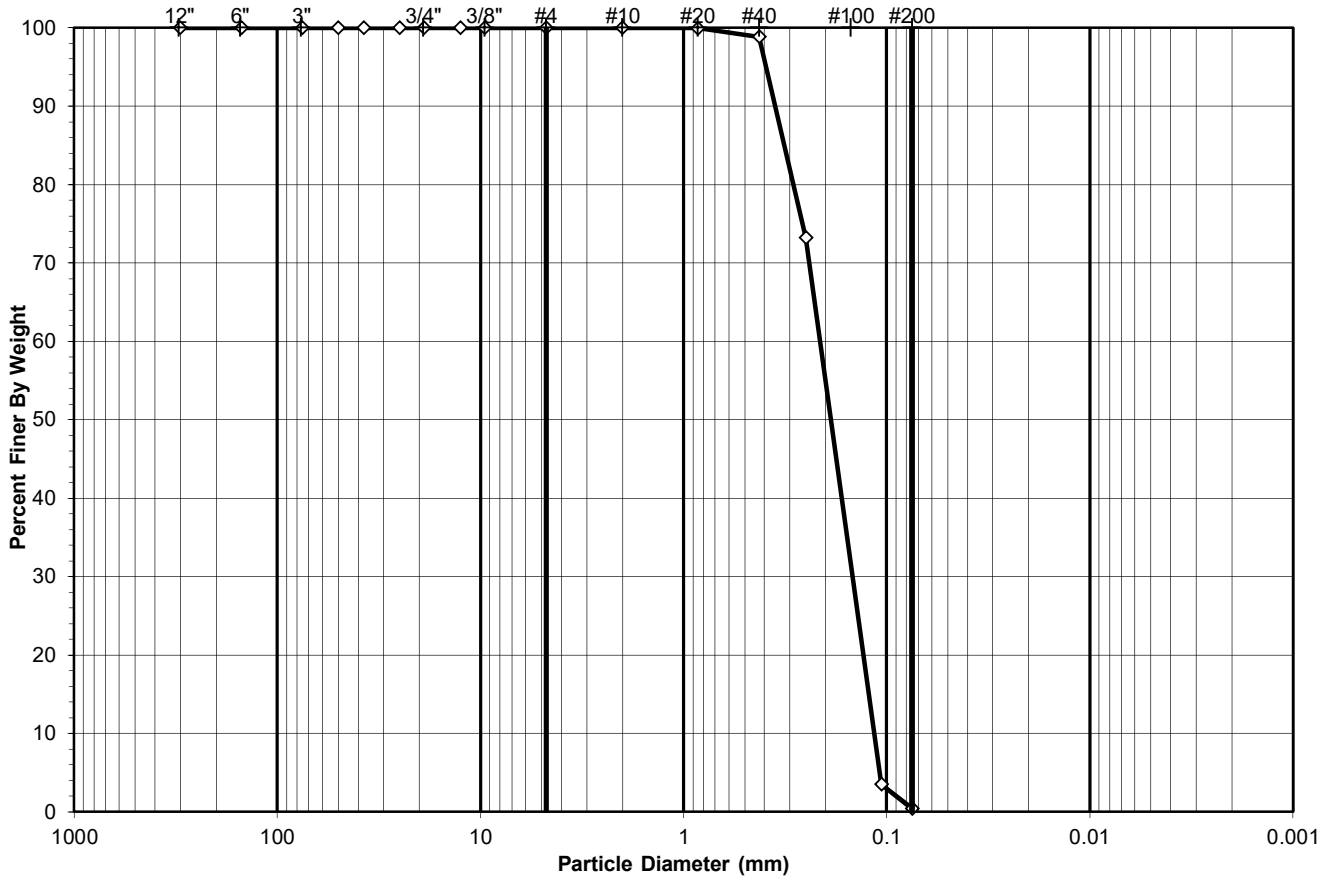
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	39-L2
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-002	Sample No.:	14
Lab ID:	R-2019-229-002-004	Soil Color:	Light Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	99.61
Finer Than #200	*Silt & Clay*	0.39

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.21

D30 = 0.15 **CC = 0.88**

D10 = 0.11 **CU = 1.85**

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	39-L2
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-002	Sample No.:	14
Lab ID:	R-2019-229-002-004	Soil Color:	Light Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	831	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	592.18	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	568.13	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	263.78	Weight of Tare (g):	NA
Weight of Water (g):	24.05	Weight of Water (g):	NA
Weight of Dry Soil (g):	304.35	Weight of Dry Soil (g):	NA
Moisture Content (%):	**7.9**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	304.35
Dry Weight of - 3/4" Sample (g):	21820.7	Weight of Minus #200 Material (g):	1.19
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	303.16
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	21820.7		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.14	(**)	0.05	0.05	99.95	**99.95**
#40	0.425	3.43		1.13	1.17	98.83	**98.83**
#60	0.250	78.03		25.64	26.81	73.19	**73.19**
#140	0.106	212.08		69.68	96.49	3.51	**3.51**
#200	0.075	9.48		3.11	99.61	0.39	**0.39**
Pan	-	1.19		0.39	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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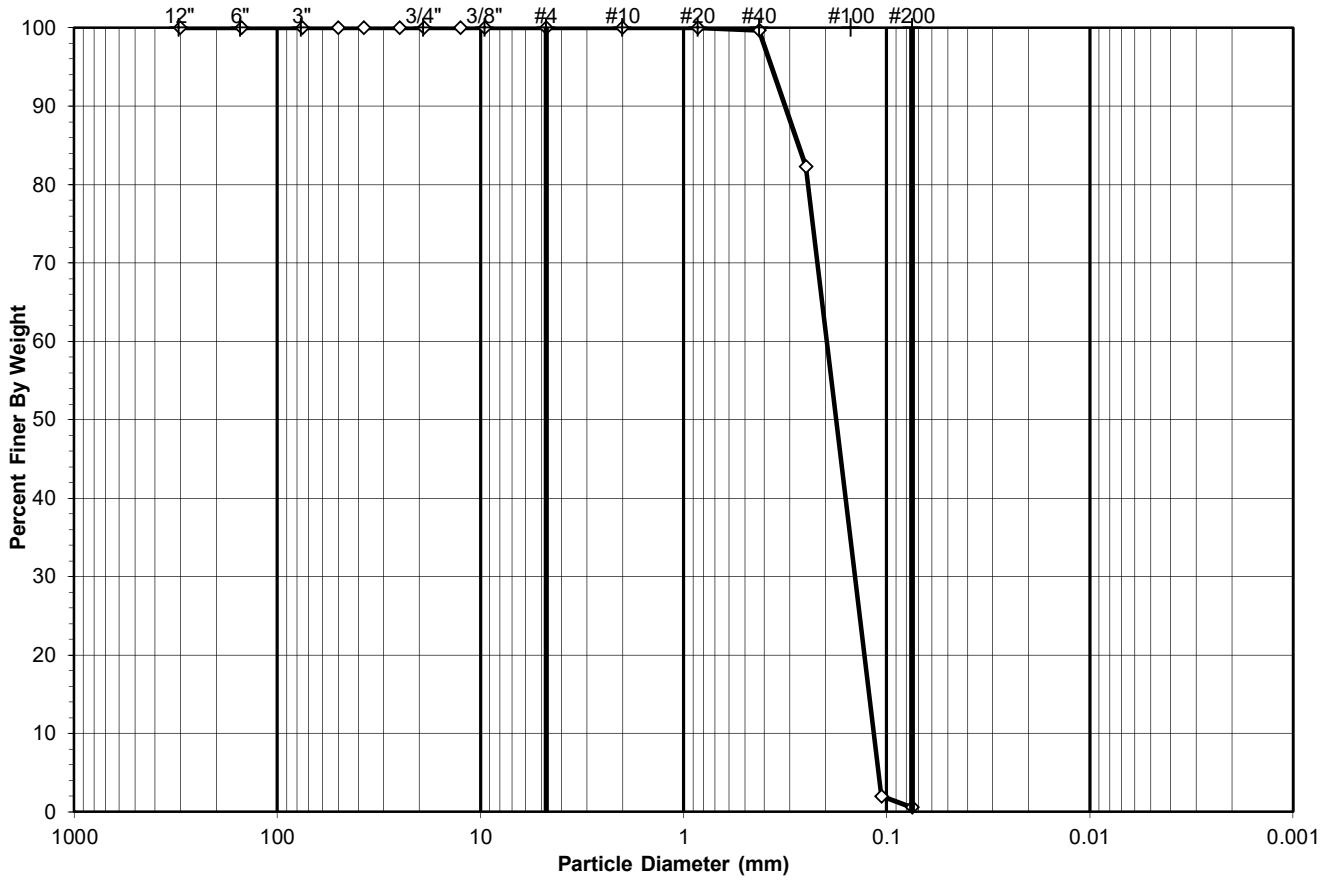
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	40-Alt-L2
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	15
Lab ID:	R-2019-229-002-005	Soil Color:	Gray

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	99.45
Finer Than #200	*Silt & Clay*	0.55

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.20
D30 = 0.14 **CC = 0.90**
D10 = 0.12 **CU = 1.71**

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	40-Alt-L2
Client Reference:	Lochner - 1653448	Depth (ft):	2.0-4.0
Project No.:	R-2019-229-002	Sample No.:	15
Lab ID:	R-2019-229-002-005	Soil Color:	Gray

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	835	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1306.57	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	1160.52	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	257.00	Weight of Tare (g):	NA
Weight of Water (g):	146.05	Weight of Water (g):	NA
Weight of Dry Soil (g):	903.52	Weight of Dry Soil (g):	NA
Moisture Content (%):	**16.2**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	903.52
Dry Weight of - 3/4" Sample (g):	20268.7	Weight of Minus #200 Material (g):	5.01
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	898.51
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	20268.7		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.06		0.01	0.01	99.99	**99.99**
#20	0.85	0.16	(**)	0.02	0.02	99.98	**99.98**
#40	0.425	3.10		0.34	0.37	99.63	**99.63**
#60	0.250	156.58		17.33	17.70	82.30	**82.30**
#140	0.106	725.63		80.31	98.01	1.99	**1.99**
#200	0.075	12.98		1.44	99.45	0.55	**0.55**
Pan	-	5.01		0.55	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

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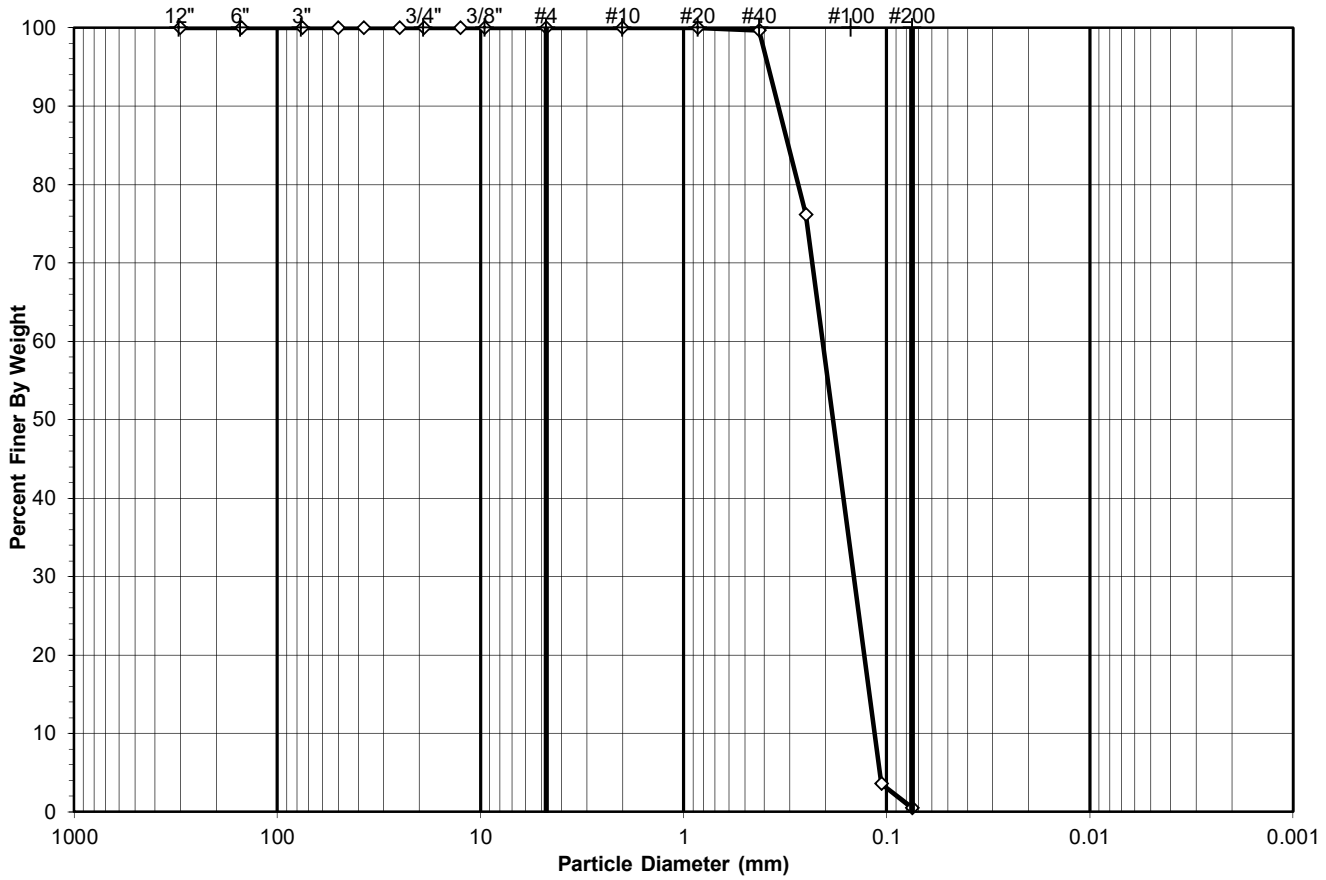
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	41-Alt-L2
Client Reference:	Lochner - 1653448	Depth (ft):	4.0-6.0
Project No.:	R-2019-229-002	Sample No.:	16
Lab ID:	R-2019-229-002-006	Soil Color:	Light Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	99.52
Finer Than #200	*Silt & Clay*	0.48

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.21

D30 = 0.14 **CC = 0.89**

D10 = 0.11 **CU = 1.81**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	41-Alt-L2
Client Reference:	Lochner - 1653448	Depth (ft):	4.0-6.0
Project No.:	R-2019-229-002	Sample No.:	16
Lab ID:	R-2019-229-002-006	Soil Color:	Light Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	AF-01	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	636.73	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	630.09	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	226.22	Weight of Tare (g):	NA
Weight of Water (g):	6.64	Weight of Water (g):	NA
Weight of Dry Soil (g):	403.87	Weight of Dry Soil (g):	NA
Moisture Content (%):	**1.6**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	403.87
Dry Weight of - 3/4" Sample (g):	23164.2	Weight of Minus #200 Material (g):	1.93
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	401.94
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	23164.2		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.01	(**)	0.00	0.00	100.00	**100.00**
#40	0.425	1.36		0.34	0.34	99.66	**99.66**
#60	0.250	94.83		23.48	23.82	76.18	**76.18**
#140	0.106	293.15		72.59	96.40	3.60	**3.60**
#200	0.075	12.59		3.12	99.52	0.48	**0.48**
Pan	-	1.93		0.48	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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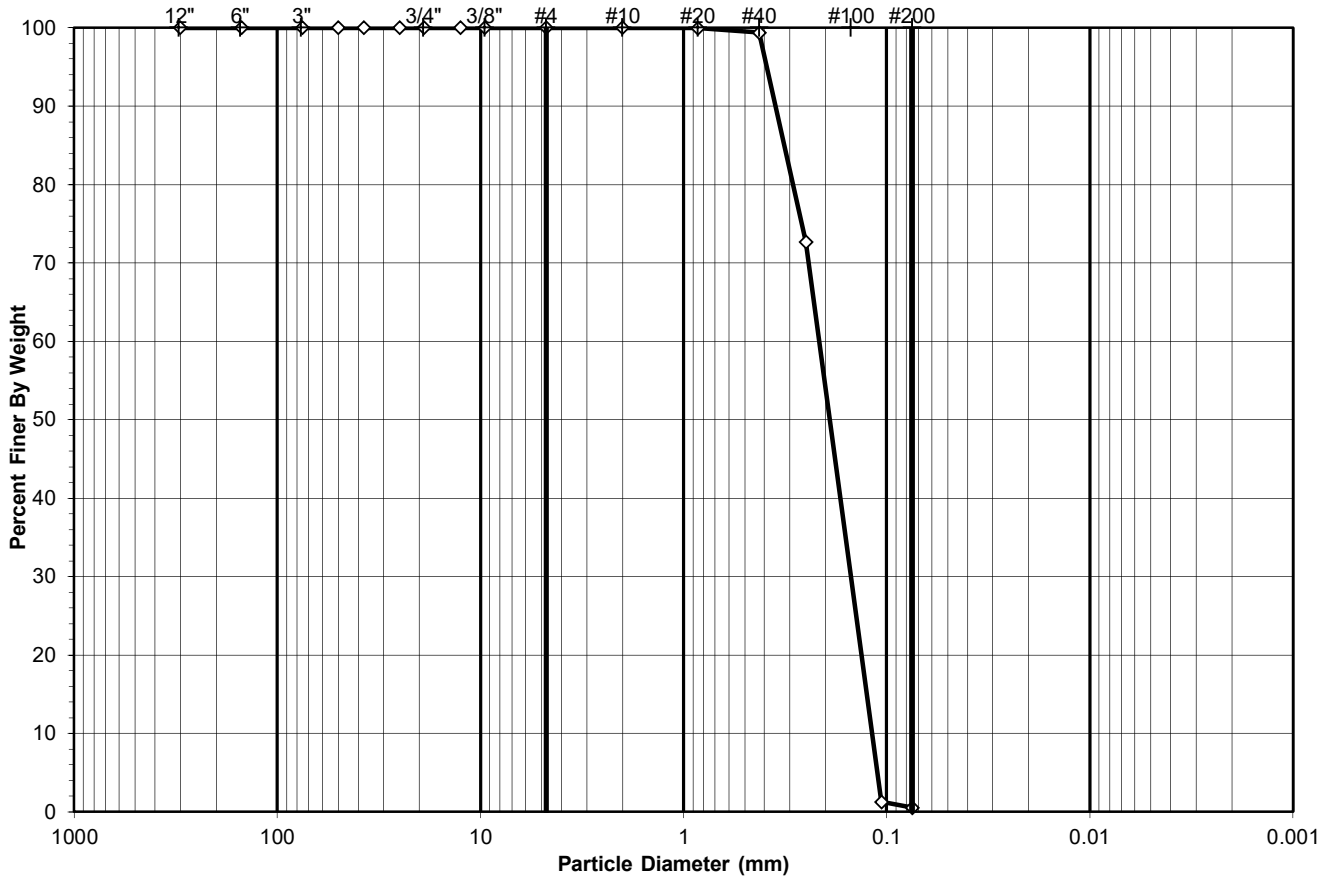
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	53-Y5
Client Reference:	Lochner - 1653448	Depth (ft):	4.0-6.0
Project No.:	R-2019-229-002	Sample No.:	17
Lab ID:	R-2019-229-002-007	Soil Color:	Light Brown

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	99.47
Finer Than #200	*Silt & Clay*	0.53

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.21

D30 = 0.15 **CC = 0.89**

D10 = 0.12 **CU = 1.82**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

S:Excel\Excel QA\Spreadsheets\SieveHydJ.xls

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	53-Y5
Client Reference:	Lochner - 1653448	Depth (ft):	4.0-6.0
Project No.:	R-2019-229-002	Sample No.:	17
Lab ID:	R-2019-229-002-007	Soil Color:	Light Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	AF-10	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1080.01	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	1023.23	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	227.60	Weight of Tare (g):	NA
Weight of Water (g):	56.78	Weight of Water (g):	NA
Weight of Dry Soil (g):	795.63	Weight of Dry Soil (g):	NA
Moisture Content (%):	**7.1**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	795.63
Dry Weight of - 3/4" Sample (g):	21976.6	Weight of Minus #200 Material (g):	4.22
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	791.41
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	21976.6		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.17		0.02	0.02	99.98	**99.98**
#20	0.85	0.26	(**)	0.03	0.05	99.95	**99.95**
#40	0.425	4.65		0.58	0.64	99.36	**99.36**
#60	0.250	212.30		26.68	27.32	72.68	**72.68**
#140	0.106	568.34		71.43	98.75	1.25	**1.25**
#200	0.075	5.69		0.72	99.47	0.53	**0.53**
Pan	-	4.22		0.53	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

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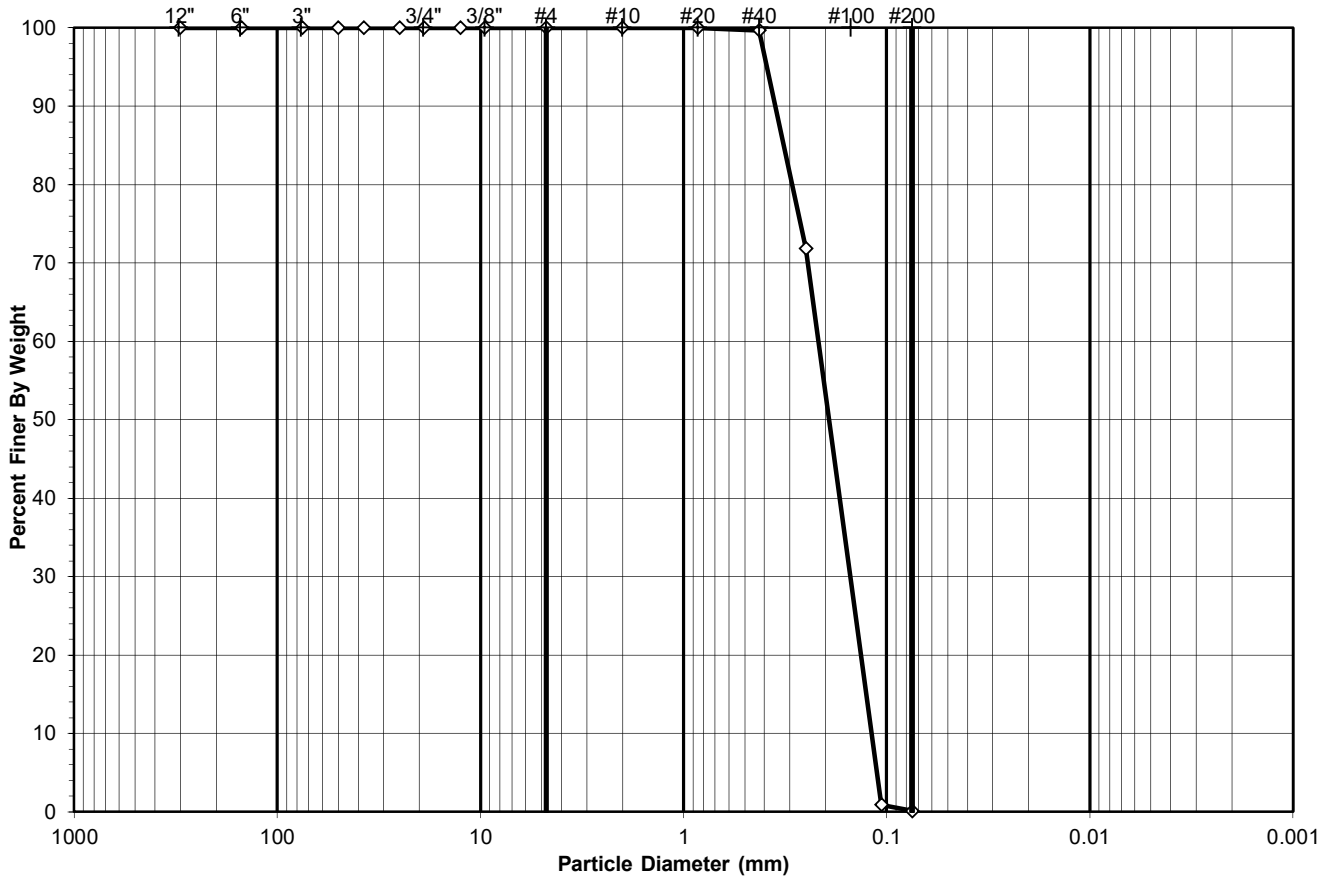
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	50-Alt-Y4
Client Reference:	Lochner - 1653448	Depth (ft):	6.0-8.0
Project No.:	R-2019-229-002	Sample No.:	18
Lab ID:	R-2019-229-002-008	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	99.88
Finer Than #200	*Silt & Clay*	0.12

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.22

D30 = 0.15 **CC = 0.89**

D10 = 0.12 **CU = 1.83**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	50-Alt-Y4
Client Reference:	Lochner - 1653448	Depth (ft):	6.0-8.0
Project No.:	R-2019-229-002	Sample No.:	18
Lab ID:	R-2019-229-002-008	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	AF-04	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	901.99	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	871.53	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	229.04	Weight of Tare (g):	NA
Weight of Water (g):	30.46	Weight of Water (g):	NA
Weight of Dry Soil (g):	642.49	Weight of Dry Soil (g):	NA
Moisture Content (%):	**4.7**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	642.49
Dry Weight of - 3/4" Sample (g):	22479.3	Weight of Minus #200 Material (g):	0.78
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	641.71
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	22479.3		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.00		0.00	0.00	100.00	**100.00**
#10	2.00	0.00		0.00	0.00	100.00	**100.00**
#20	0.85	0.08	(**)	0.01	0.01	99.99	**99.99**
#40	0.425	2.21		0.34	0.36	99.64	**99.64**
#60	0.250	178.41		27.77	28.12	71.88	**71.88**
#140	0.106	456.02		70.98	99.10	0.90	**0.90**
#200	0.075	4.99		0.78	99.88	0.12	**0.12**
Pan	-	0.78		0.12	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

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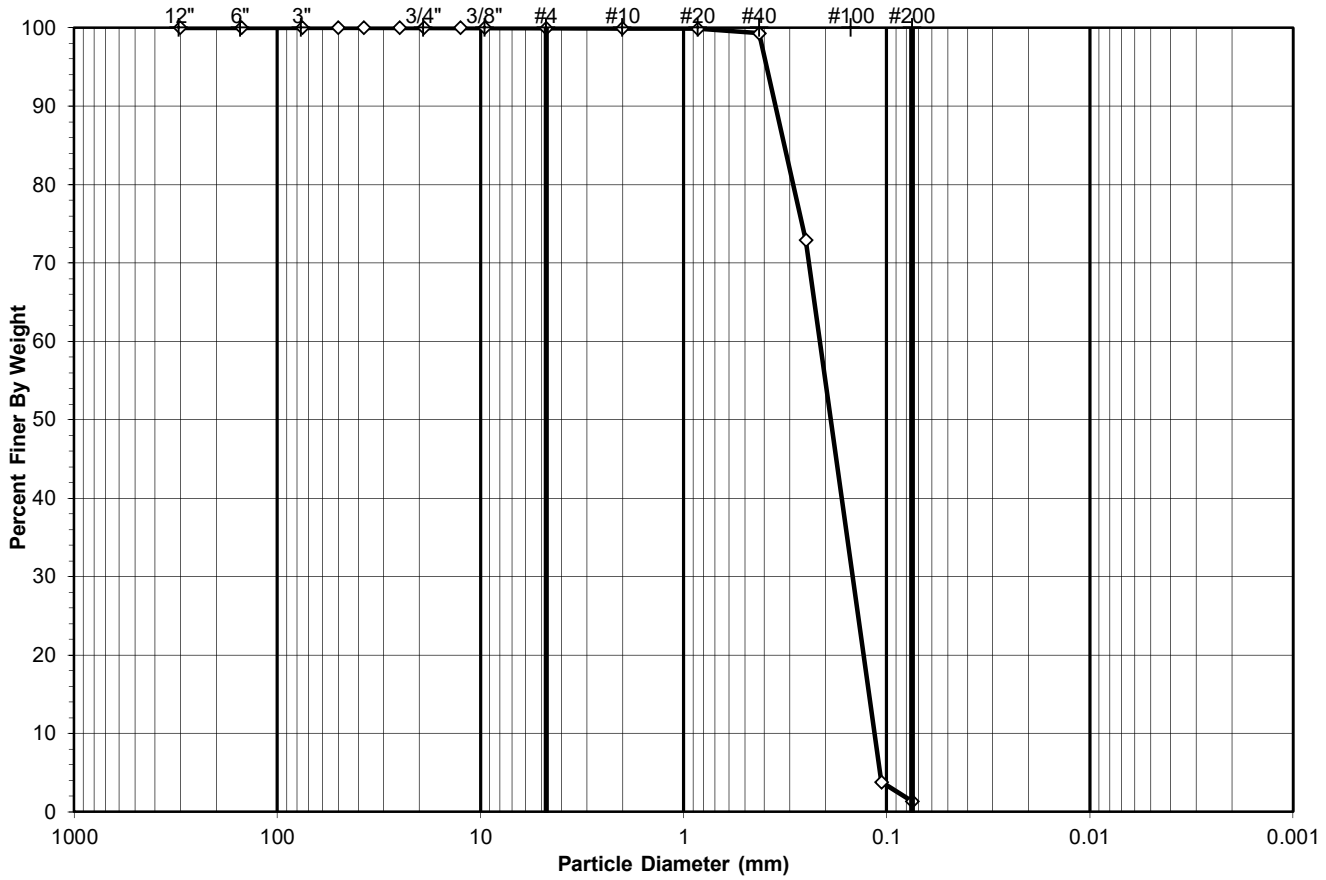
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	47-Y4
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-002	Sample No.:	19
Lab ID:	R-2019-229-002-009	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.10
#4 To #200	*Sand*	98.56
Finer Than #200	*Silt & Clay*	1.33

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.21
D30 = 0.15 **CC = 0.88**
D10 = 0.11 **CU = 1.86**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	47-Y4
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-002	Sample No.:	19
Lab ID:	R-2019-229-002-009	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	AF-08	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	767.20	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	754.82	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	228.76	Weight of Tare (g):	NA
Weight of Water (g):	12.38	Weight of Water (g):	NA
Weight of Dry Soil (g):	526.06	Weight of Dry Soil (g):	NA
Moisture Content (%):	**2.4**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	526.06
Dry Weight of - 3/4" Sample (g):	23003.6	Weight of Minus #200 Material (g):	7.01
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	519.05
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	23003.6		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.55		0.10	0.10	99.90	**99.90**
#10	2.00	0.05		0.01	0.11	99.89	**99.89**
#20	0.85	0.23	(**)	0.04	0.16	99.84	**99.84**
#40	0.425	3.00		0.57	0.73	99.27	**99.27**
#60	0.250	138.79		26.38	27.11	72.89	**72.89**
#140	0.106	363.64		69.13	96.24	3.76	**3.76**
#200	0.075	12.79		2.43	98.67	1.33	**1.33**
Pan	-	7.01		1.33	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By RF Date 8/13/19 Checked By GEM Date 8/15/19

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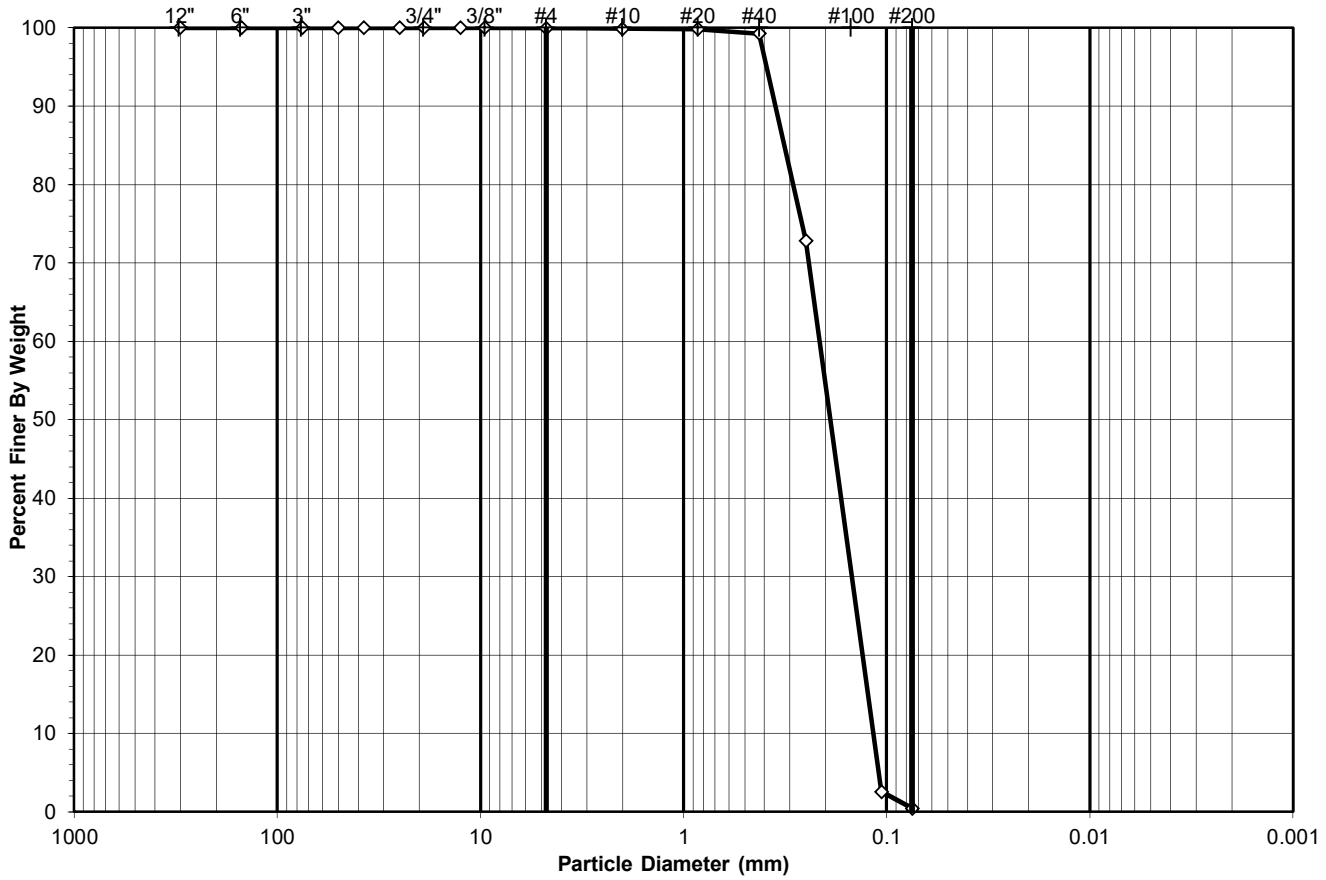
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	42-Y4
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-002	Sample No.:	20
Lab ID:	R-2019-229-002-010	Soil Color:	Tan

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.07
#4 To #200	*Sand*	99.49
Finer Than #200	*Silt & Clay*	0.44

USCS Symbol:
sp, ASSUMED

USCS Classification:
POORLY GRADED SAND

D60 = 0.21
D30 = 0.15 **CC = 0.89**
D10 = 0.12 **CU = 1.84**

DCN: CT-S3B, DATE: 7/17/17, REVISION: 9e

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	Golder Associates	Boring No.:	42-Y4
Client Reference:	Lochner - 1653448	Depth (ft):	0.0-2.0
Project No.:	R-2019-229-002	Sample No.:	20
Lab ID:	R-2019-229-002-010	Soil Color:	Tan

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	NE-05	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	844.40	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	816.83	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	228.94	Weight of Tare (g):	NA
Weight of Water (g):	27.57	Weight of Water (g):	NA
Weight of Dry Soil (g):	587.89	Weight of Dry Soil (g):	NA
Moisture Content (%):	**4.7**	**Moisture Content (%):**	**0.0**

Wet Weight of -3/4" Sample (g):	23545	Weight of the Dry Sample (g):	587.89
Dry Weight of - 3/4" Sample (g):	22490.3	Weight of Minus #200 Material (g):	2.60
Wet Weight of +3/4" Sample (g):	0.00	Weight of Plus #200 Material (g):	585.29
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	22490.3		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25.0	0.00		0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00		0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00		0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00		0.00	0.00	100.00	**100.00**
#4	4.75	0.39		0.07	0.07	99.93	**99.93**
#10	2.00	0.40		0.07	0.13	99.87	**99.87**
#20	0.85	0.21	(**)	0.04	0.17	99.83	**99.83**
#40	0.425	3.39		0.58	0.75	99.25	**99.25**
#60	0.250	155.24		26.41	27.15	72.85	**72.85**
#140	0.106	413.18		70.28	97.43	2.57	**2.57**
#200	0.075	12.48		2.12	99.56	0.44	**0.44**
Pan	-	2.60		0.44	100.00	-	**-**

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Sample*

Tested By EL Date 8/12/19 Checked By GEM Date 8/13/19

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