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EXHIBIT 12
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November 20, 2012
Project No. KE110151A

Quadrant Corporation
14725 SE 36th Street, Suite 100
Bellevue, Washington 98006

Attention: Mr. Pete Lymberis

Subject: Subsurface Exploration and Infiltration Testing
Slocum Property
NE 195th Street and 136th Avenue NE
Woodinville, Washington

Dear Mr. Lymberis:

Associated Earth Sciences, Inc. (AESI) is pleased to present this letter-report providing the results of recent subsurface exploration and in-situ infiltration testing at the above-referenced site. Our understanding of the project is based on the explorations and testing completed for this study; concurrent completion of a "Subsurface Exploration, Geologic Hazards, and Preliminary Geotechnical Engineering Report" dated November 19, 2012, and conversations with you and the project civil engineering firm PACE Engineers, Inc. (PACE).

The location of the site is shown on the "Vicinity Map," Figure 1. The locations of the existing site features and the approximate locations of the explorations accomplished for this study are presented on the "Site and Exploration Plan," Figure 2. Previous explorations completed by AESI for a geotechnical study are also shown on Figure 2. Logs of the subsurface explorations, infiltration testing data, and laboratory testing data are also attached. The conclusions and recommendations contained in this letter-report should be reviewed and modified, or verified, if the project changes from its current configuration.

PURPOSE AND SCOPE

The purpose of this study was to provide subsurface data and field infiltration testing services for evaluating feasibility of on-lot infiltration systems. This letter-report is intended to provide the project team with additional information on which to base the design of the infiltration systems. Our study included site reconnaissance, a review of available geologic literature, excavating exploration pits and infiltration test pits, conducting two infiltration tests and one pit drain test, installation of one shallow well point, and performing mechanical grain size

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analyses. This letter-report summarizes our current field/laboratory work and offers preliminary recommendations based on our present understanding of the project.

AUTHORIZATION

Written authorization to proceed with this study was granted by Mr. Pete Lymberis with Quadrant Corporation (Quadrant). Our study was accomplished in general accordance with our proposal dated November 9, 2012. This letter-report has been prepared for the exclusive use of Quadrant and its agents for specific application to this project. Within the limitations of scope, schedule, and budget, our services have been performed in accordance with generally accepted hydrogeology and geotechnical engineering practices in effect in this area at the time our letter-report was prepared. Our observations, findings, and opinions are a means to identify and reduce the inherent risks to the owner. No other warranty, express or implied, is made.

PROJECT AND SITE DESCRIPTION

The project site is located on a glaciated upland, within a portion of the northeast quarter of the southwest quarter of Section 3, Township 26 North, Range 5 East, W.M., in Woodinville, Washington. The project site consists of a rectangular-shaped parcel of approximately 4.5 acres located at the southwest corner of the intersection of NE 195th Street and 136th Avenue NE. The property is currently vacant and vegetated by mixed coniferous/deciduous forest with moderately thick to thick underbrush. The site is bound to the south and west by developed residential properties.

The topography of the site generally slopes gently down toward the east-southeast at gradients of less than 10 percent. A shallow depression, possibly a glacial kettle, is located in the central portion of the site. This depression is approximately 8 to 10 feet deep. The topography steepens to an inclination of approximately 50 to 75 percent along its north, east, and south property margins, sloping down toward NE 195th Street, 136th Avenue NE, and developed residential properties, respectively. The steepened inclinations along the north and east site margins are interpreted to be cut slopes associated with construction of the adjacent roads. The steepened inclination along the south property margin is interpreted to be a cut slope resulting from mining activities associated with a borrow pit reported to have formerly been located on the developed residential parcels to the south. A small lake occupies the lower-lying portion of the former borrow pit approximately 125 feet south of the site. The cut slopes along the north, east, and west site margins range from approximately 8 to 25 feet in height.

Development Proposal

It is our understanding that project plans include subdividing the site into 23 residential lots. Access into the development would be provided by a new road entering the property off of 136th Avenue NE on the east side of the site. Retaining walls will be constructed along the steep slopes located along the north and south margins of the site. Retaining walls will also be used to grade out the pond area located at the northeast corner of the site.

Current development plans also propose on-site infiltration of stormwater on individual lots. Each home will have a trench system that allows stormwater to infiltrate from the impervious surfaces on the lots such as roof and driveway. Stormwater from the roadway would be directed to a detention pond constructed on the northeast corner of the site. Cuts for the detention pond on the eastern portion of the site would be on the order of 25 to 30 feet.

SUBSURFACE EXPLORATION

Our field study included excavating a series of exploration pits, infiltration test pits, and one infiltration test pit drain, and installation of one shallow well point to gain subsurface information about the site. The exploration pits were excavated using a Caterpillar 312C track-mounted excavator owned and operated by Northwest Excavating and Trucking of Snohomish, Washington under subcontract to our firm. The various types of sediments, as well as the depths where characteristics of the sediments changed, are indicated on the exploration logs presented in Appendix A. The depths indicated on the logs where conditions changed may represent gradational variations between sediment types. Our explorations were approximately located in the field by measuring from known site features visible on an aerial photograph of the site.

The conclusions and recommendations presented in this letter-report are based, in part, on the conditions encountered in the explorations completed for this and previous studies. The number, locations, and depths of the explorations were completed within site and budgetary constraints. Because of the nature of exploratory work below ground, interpolation of subsurface conditions between the field explorations is necessary. Differing subsurface conditions may be present outside of the area of the field explorations due to the random nature of deposition and the alteration of topography by past grading and/or filling. The nature and extent of any variations between the field explorations may not become fully evident until construction. If variations are observed at that time, it may be necessary to re-evaluate specific recommendations in this letter-report and make appropriate changes.

Exploration Pits and Infiltration Test Pits

A total of fourteen exploration pits, two infiltration test pits, and one infiltration test pit drain were excavated for our study using a Caterpillar 312C track-mounted excavator owned and operated by Northwest Excavating and Trucking of Snohomish, Washington. EP-1 through EP-8 were completed on April 19, 2011; EP-9 and IT-1 were completed on August 26, 2011; and EP-10 through EP-14, IT-2, and PD-1 were completed on November 13 and 14, 2012. The pits permitted direct, visual observation of subsurface conditions. Materials encountered in the explorations were studied and classified in the field by an engineering geologist or hydrogeologist from our firm. Selected samples were then transported to our laboratory for further visual classification and testing, as necessary.

Well Point

One hand-driven well point, identified as P-1, was installed to provide information on depth to ground water. The hand-driven well point was located on the eastern portion of the project, and advanced to a depth of 8.6 feet below ground surface.

The well point was constructed using 1.25-inch-diameter, steel casing and well screen, and completed aboveground with a threaded cap. The lower 2.5 feet of P-1 consisted of machine-perforated screen with a threaded end cap to allow the entry of water into the well point. Well point P-1 was developed using tubing and a check valve to move water through the screen and improve the hydraulic connection with the surrounding aquifer material. The well was purged for 10 minutes. The turbidity level was reduced but the discharge was still light brown in color.

Infiltration Testing

Infiltration testing locations were selected in consultation with the design team in order to obtain representative infiltration rates for on-lot infiltration systems. Large-ring infiltration tests were completed at the locations noted on Figure 2 as IT-1 and IT-2. A pit drain infiltration test was completed at the location noted as PD-1 on Figure 2. Infiltration testing is discussed in more detail later in this letter-report.

SUBSURFACE CONDITIONS

Subsurface conditions at the project site were inferred from AESI's subsurface exploration and testing accomplished for this study, our explorations, and to a limited extent, on exploration logs completed on the nearby Woodinville High School site, our visual reconnaissance of the site, and review of selected geologic literature.

The on-site native sediments are mapped as Vashon recessional outwash and Vashon advance outwash on the regional geologic map titled *Composite Geologic Map of the Sno-King Area, Central Puget Lowland, Washington* prepared by Booth, Cox, Troost, and Shimel for the Seattle-Area Geologic Mapping Program, University of Washington (2004). Our interpretation of the sediments encountered at the subject site is in general agreement with the regional geologic map.

As shown on the exploration logs included in Appendix A, natural sediments encountered at the site generally include a thin layer of topsoil overlying native Vashon recessional and advance outwash sediments. A pre-Vashon unit was interpreted to be present at depth in some of the explorations. The following section presents more detailed subsurface information organized from the shallowest (youngest) to the deepest (oldest) sediment types encountered during this study.

The following section presents more detailed subsurface information organized from the youngest to the oldest sediment types.

Stratigraphy

Forest Duff

A surficial, organic forest duff layer was encountered at all exploration pit locations. The forest duff layer was approximately 0.5 to 1 foot thick. Due to the high organic content and varied fines, these materials are not considered suitable for stormwater infiltration.

Glacial Outwash

As discussed above, the site soils on the regional geology map are mapped as Vashon advance outwash. Sediments encountered directly below the forest duff layer in all explorations consisted of sand with interbedded silt layers and variable gravel content. The apparent density of the sediments was variable, ranging from loose to dense. Where caving of the exploration pit sidewalls occurred or the material was easier to excavate, the sediments were interpreted to be Vashon recessional outwash. Where little to no caving of the pit sidewalls occurred or where the material was somewhat more difficult to excavate, the sediments were interpreted to be Vashon advance outwash.

Because of their similar gradation and often subtle density differences, it is often difficult to distinguish between the recessional and advance outwash deposits. As described above, criteria used to distinguish between these sediment types for this study include digging action during excavation of the exploration pits and whether or not any caving of the pit sidewalls was observed. Our interpretation of the origin of the sediments encountered in our explorations

should be considered tentative and could be more accurately assessed from boring logs with blow count data.

Vashon recessional and advance outwash are described in more detail below.

Vashon Recessional Outwash

Sediments encountered directly below the forest duff layer at the locations of exploration pits EP-3 through EP-5, EP-7, EP-8, EP10 through EP-14, IT-1, IT-2, and PD-1 generally consisted of loose to medium dense, reddish tan, reddish brown, and brown sand with variable silt and gravel content.

We interpret these sediments to be representative of Vashon recessional outwash. The Vashon recessional outwash consists of sediments that were deposited by meltwater streams that emanated from the retreating glacial ice during the latter portion of the Vashon Stade of the Fraser Glaciation, approximately 12,500 to 15,000 years ago. The reduced density and reddish tan to reddish brown coloration observed within approximately 2 to 4 feet of the ground surface is interpreted to be due to weathering. The weathered soil horizon also typically contained abundant roots. At the locations encountered, the recessional outwash extended to depths ranging from approximately 2.5 to 10 feet, and was underlain by Vashon advance outwash. The Vashon recessional outwash deposits are suitable for infiltration of stormwater.

Vashon Advance Outwash

Sediments encountered directly below the ground surface at the locations of exploration pits EP-1 and EP-2, EP-6, and EP-9, and beneath the recessional outwash in other explorations, generally consisted of medium dense to dense sand and stiff to very stiff silt with variable gravel content. The advance outwash was highly stratified and the sand/silt layers were interbedded. At the locations of EP-6, EP-11, and IT-2, the advance outwash extended to depths ranging from 16 to 18 feet, and was underlain by pre-Vashon sediments. At the remainder of explorations where the advance outwash was encountered, it extended beyond the maximum depths explored of approximately 9 to 18.5 feet.

We interpret these sediments to be representative of the Vashon advance outwash. The Vashon advance outwash consists of sediments that were deposited by meltwater streams that emanated from the advancing glacial ice during the Vashon Stade of the Fraser Glaciation, approximately 12,500 to 15,000 years ago. The high relative density characteristic of the Vashon advance outwash is due to its consolidation by the glacial ice that overrode these sediments subsequent to their deposition. Where comprised of relatively permeable sand, the Vashon advance outwash deposits are suitable for infiltration of stormwater, and were the target receptor for the infiltration testing, as discussed later in this letter-report. Where comprised of primarily silt,

infiltration opportunities may be limited. Infiltration is discussed in more detail later in this letter-report.

Pre-Vashon Sediments

Sediments interpreted to be representative of pre-Vashon deposits were encountered at depth beneath the advance outwash deposits in exploration pits EP-6, EP-11, and IT-2, and continued beyond the maximum depth explored. These sediments were comprised of gray laminated silt or oxidized or somewhat cemented sand with few silt, trace gravel and trace boulders. The occurrence of the pre-Vashon deposits beneath the site is consistent with site conditions on the nearby Woodinville High School, located to the north of the subject site.

The pre-Vashon sediments were deposited prior to the advance of the Vashon glacier, and have been compacted by the weight of an ice sheet.

Laboratory Analysis

Laboratory analyses were conducted on selected samples collected from our explorations to evaluate the suitability of the soil for in-situ water quality treatment. The analyses conducted included cation exchange capacity (CEC), organic content, and mechanical sieve analysis. The test results are summarized in Table B-1 in Appendix B. The laboratory reports are also included in Appendix B. It should be noted that the CEC and organic content is performed by a subcontracted laboratory. Results from the November 13-14, 2012 subsurface exploration were not yet available at the time this letter-report was prepared. The results will be summarized in an addendum when they are available.

Cation Exchange Capacity

Cation exchange capacity is an indicator of stormwater pre-treatment potential of the existing site soils, and is important to the civil engineer in designing the stormwater management system for the site. The City of Woodinville uses the 2009 *King County Surface Water Design Manual* (KCSWDM). The KCSWDM CEC requirements for stormwater treatment in the native soil are described in Section 5.4, page 5-62. A minimum CEC of 5.0 milliequivalents per 100 grams (meq/100g) is specified. Currently results for CEC are available for four outwash samples; all had a measurable CEC that was slightly below the specified minimum of 5.0 meq/100g. The average CEC content was 3.4 meq/100g. CEC data is summarized in Table B-1 and the laboratory data sheets are attached.

Organic Content

The KCSWDM organic content requirements for stormwater treatment in the native soil are described in Section 5.4, page 5-62. A minimum organic content of 0.5 percent is specified. Currently results for organic content testing are available for four outwash samples. Organic

content exceeded the minimum requirement of 0.5 percent for native soils. The average organic content was 1.3 percent. Organic content data is summarized in Table B-1 and the laboratory data sheets are attached.

Grain Size

We completed 20 mechanical grain size analysis tests in accordance with *American Society for Testing and Materials (ASTM):D 422*. The grain size distributions were compared to the water quality treatment criteria in the KCSWDM as described in Section 5.4, page 5-62, which considers only the sediment passing through (or is finer than) the No. 4 sieve size. The sediments were also classified according to the United States Department of Agriculture (USDA) Textural Classification system. The USDA Textural Classification system considers only the sediment passing through (or is finer than) the No. 10 sieve size. For both the KCSWDM and the USDA comparisons, either the fraction retained on the No. 4 or No. 10 sieve size, respectively, is subtracted prior to determining the remaining percentages for comparison.

From the KCSWDM, Section 5.4, page 5-62:

Soil Properties Required for Groundwater Protection Outside of Groundwater Protection Areas

For infiltration facilities located outside of groundwater protection areas, acceptable groundwater protection is provided by the soil if the first two feet or more of the soil beneath the infiltration facility has a cation exchange capacity greater than 5 and an organic content¹⁰ greater than 0.5%, AND meets one of the following criteria:

- a) The soil has a measured infiltration rate less than or equal to 9 inches per hour¹¹ or is logged as one of the classes from the **USDA Textural Triangle** (Figure 5.4.1.A, p. 5-63), excluding sand and loamy sand (Note: soil texture classes other than sand and loamy sand may be assumed to have an infiltration rate of less than or equal to 9 inches per hour without doing field testing to measure rates.), OR*
- b) The soil is composed of less than 25% gravel by weight with at least 75% of the soil passing the #4 sieve. The portion passing the #4 sieve must meet one of the following gradations:*
 - At least 50% must pass the #40 sieve and at least 2% must pass the #100 sieve, or*
 - At least 25% must pass the #40 sieve and at least 5% must pass the #200 sieve.*

Based on the KCSWDM criteria, the grain size of the majority of tested sediments meet the water quality protection criteria. Based on the USDA Textural Triangle, the majority of tested sediments are generally classified as sand to loamy sand to sandy loam, as shown in Table B-1. The grain size analysis test results are included as attachments to this letter-report.

GROUND WATER CONDITIONS

Ground water seepage was not encountered in any of the exploration pits excavated for our study with the exception of EP-9, the lowest elevation exploration. A well point (P-1) was completed at this location, and the water level in P-1 was measured by hand with an electronic tape periodically between August 2011 and November 2012. The water depth below ground surface ranged from 6.5 to 8 feet, corresponding to elevations 115.5 and 117 feet. The water elevation in P-1 also corresponds to lateral seepage on the slope face and associated hydrophytic vegetation immediately east of well point P-1.

No ground water was encountered in the remaining explorations, with exploration depths ranging from 10.5 to 18.5 feet. Locally, the water level measured in well point P-1 is interpreted to represent a regional water table. The water elevations in well point P-1 are similar to the approximate elevation of open water in the lake south of the site.

It should be noted that fluctuations in the level of the ground water may occur due to the time of the year, variations in amount of precipitation, on- and off-site land usage, and other factors.

FIELD INFILTRATION TESTING RESULTS

Two large-ring infiltration tests and one pit drain infiltration test were completed on the site, noted on Figure 2 as IT-1, IT-2, and PD-1, respectively. The large-ring method was selected because the KCSWDM states that *“Large single ring and PIT tests have been shown to more closely match actual full-scale facility performance than smaller test methods.”* Our experience has also demonstrated that smaller-scale test methods do not account for ground water mounding and lateral dispersion effects, and are of a scale that is too small to provide reliable design information for most infiltration facilities that concentrate stormwater (such as vaults and infiltration ponds).

AESI performed IT-1 on August 23, 2011 and IT-2 and PD-1 on November 13-14, 2012. Northwest Excavating and Trucking provided the large-ring infiltrometer, hoses, and flow meter for the infiltration testing. All infiltration test data was recorded by hand in the field, and infiltration rate calculations were completed based on the field data. The water source for the testing was a 4,000-gallon water truck. The water for testing was de-chlorinated prior to discharge into the infiltration tests.

Large-Ring Testing

IT-1 and IT-2 were conducted in Vashon advance outwash as modified Pilot Infiltration Tests (PITs) using a large-diameter infiltrometer (6-foot-diameter steel ring). The ring was seated

and tamped in place in an excavation with a relatively flat bottom. Water was introduced into the testing area using fire hose attached to a digital propeller flow meter/totalizer, and brought to a relatively constant depth or head within the ring. The flow meter was equipped with a diffuser to minimize turbulence and scouring of the test base during testing. The water level (head) within the infiltrometer was measured with an electronic water level meter. No water was present in the pits prior to testing.

Water was allowed to rise in the pit until the water level reached approximately 6 to 12 inches above the bottom of the pit in tests IT-1 and IT-2, respectively. A low head can minimize sidewall caving and the effects of horizontal infiltration during testing. After the water level reached the target level, the flow was reduced in order to maintain a constant water level (constant head). Readings of the water level, instantaneous flow rate, and total flow volume were recorded at approximately 15-minute intervals. The constant head rate was calculated using the average flow rate per time step, the test cell dimensions, and accounting for the change in storage within the pit. The inflow continued for about 6 hours for each PIT-style test. The total volume used during testing was 1,520 and 700 gallons for tests IT-1 and IT-2, respectively.

After discontinuing water flow, the falling water levels were measured with a water level meter with 0.01-foot divisions until little to no standing water was present. Upon completion of the infiltration tests, infiltration pits IT-1 and IT-2 were overexcavated to depths of 18 feet each to: 1) document the types of soils the water infiltrated through, and 2) identify any soil layers that would restrict the downward flow of infiltrating water. Details are contained on the infiltration pit logs attached to this letter-report (Appendix A).

IT-1 has a constant head field infiltration rate of 12 inches per hour (in/hr) and a falling head rate of 10 in/hr; however, these rates likely represent lateral infiltration rates. During overexcavation of IT-1, it was noted that infiltration test water was pooled on a sandy silt layer approximately 1 foot below the test depth. Once the sandy silt layer was penetrated, water was observed to flow back into the excavation at a depth of about 15 feet.

IT-2 had a constant head field infiltration rate of 5 in/hr and a falling head rate of about 3.5 in/hr. During overexcavation, no seepage or low-permeability layers were observed.

The field-measured infiltration rate in IT-1 was 12 in/hr. Based on a safety factor of 3.5, the recommended design infiltration rate at the location of infiltration test IT-1 is approximately 3.4 in/hr. The field-measured infiltration rate in IT-2 was 5 in/hr. Based on a safety factor of 3.5, the recommended design infiltration rate at the location of infiltration test IT-2 is approximately 1.4 in/hr. The design rate takes into effect the scale of the test, site variability, the depth to perching horizon, and plugging factors.

Pit Drain Test

PD-1 was conducted as a pit drain test in Vashon advance outwash, where the lower portion of the pit was backfilled with free-draining aggregate and the testing water level was maintained relatively high compared to a large-ring infiltration test. Water was introduced into the pit drain through an electronic flow meter with instantaneous flow rate and total flow volume readouts. The water level in the pit was measured with a water level meter with 0.01-foot divisions. No water was present in the pit prior to testing.

Water was allowed to rise in the pit until the water level reached a maximum head of approximately 7.4 feet above the bottom of the pit. Readings of the water level, instantaneous flow rate, and total flow volume were recorded at approximately 15-minute intervals. The inflow continued for about 4 hours for pit drain test PD-1. The total volume used during testing was about 6,070 gallons (the total test water supply). After discontinuing water flow, the falling water levels were measured with a water level meter with 0.01-foot divisions until little to no standing water was present. Nearly all of the water had infiltrated through the pit in 45 minutes. Because PD-1 was completed as a pit drain, no overexcavation occurred.

An inflow rate of about 30 gallons per minute (gpm) was achieved for the last 2.5 hours of the inflow phase of the test and a specific capacity of 4.1 gallons per minute per foot (gpm/foot) was estimated. Specific capacity is the flow capacity per foot of head change and can be estimated by dividing the flow rate by the change in water level elevation under steady state conditions. The falling head rate was about 10 in/hr for the last approximate 6-inch head drop.

CONCLUSIONS AND RECOMMENDATIONS

Our exploration and testing indicates that, from a hydrogeologic and geotechnical standpoint, the parcel is suitable for distributed or limited stormwater infiltration in most areas; however, site-specific exploration and testing will be required at the locations of each infiltration facility due to high variability in subsurface conditions.

On-Lot Infiltration Systems

For on-lot infiltration facilities, a minimum of 3 feet of receptor horizon is required to be present beneath the base of the facility and above either a perching layer or the seasonal high ground water table. The seasonal high ground water elevation is about elevation 117 feet based on periodic measurements in well point P-1.

The site grading plan will remove 4 to 10 feet of native material to construct Lots 1 to 4, and Lot 22 and Lot 23. Because of the grading, the amount of outwash remaining above the seasonal high water table elevation is less, limiting opportunities for deep trenches to access

permeable sand layers. We assume the on-lot infiltration systems will consist of individual infiltration trenches that are 2 to 3 feet in width, 5 to 7 feet in depth below proposed lot grade along most of the trench length, with the exception of one portion of the trench, which would be completed with a pit drain to a depth of about 15 feet below proposed lot grade. Proposed lot grades and either site-specific or nearby explorations are summarized in Table 1.

The recent exploration and testing completed in November 13-14 was focused on Lots 1 to 4 and Lot 22 and Lot 23 to determine feasibility of full infiltration. Based on explorations completed, it is our opinion that there are sufficient permeable layers of sand to accommodate full infiltration of the on-lot runoff.

For the remaining lots, the proposed grading plan would remove less than about 4 feet of native sediment. It is our opinion that full infiltration of these lots is feasible. Additional exploration and testing would be required for design. For planning purposes, a trench sizing rate of 1 to 2 in/hr could be used.

Table 1
Proposed Lots 1 through 4, Lot 22 and Lot 23
Exploration Data and Preliminary Design Infiltration Rate

Lot No.	Nearby or Site-Specific Exploration, Total Depth and Bottom Elevation	Proposed Lot Elevation (feet) and Base of Trench	Exploration Extended Below Base of Trench Base	Preliminary Design Infiltration Rate
1	IT-2, 18 ft bgs; el. 129 ft	135.0 and 129	No, IT-2 completed at about 5 feet below proposed lot elevation	1.4 in/hr
2	EP-6, 16 ft; el. 117 ft EP-11, 18 ft; el. 127 ft	137.0 and 132	Yes, to about 5 feet below	1.4 in/hr
3	PD-1, 16 ft; el. 133 ft	136.0 and 131	Yes, to about 2 feet below	2 in/hr or 4 gpm/ft
4	EP-5, 15 ft; el. 130 ft PD-1, 16 ft; el. 133 ft EP-12, 17 ft; el. 130 ft	142.5 and 137.5	Yes, to about 7 feet below	2 in/hr
22	EP-10, 18.5 ft; el. 130.5 ft EP-13, 16 ft; el. 130 ft	143.5 and 138.5	Yes, to about 8 feet below	1 in/hr
23	EP-10, 18.5 ft; el. 130.5 ft	138.0 and 133	Yes, to about 3 feet below	1 in/hr

ft – feet
bgs – below ground surface
el. – elevation
in/hr – inches per hour
gpm/ft – gallons per minute per foot

Our recommendations below for Lots 1 through 4, Lot 22, and Lot 23 take into account the variability of the advance outwash. Based on our field infiltration testing program and incorporating appropriate factors of safety based on the 2009 KCSWDM, the design infiltration rates presented in Table 1 can be used for preliminary trench sizing purposes provided:

- 1) final infiltration trench design remains consistent with the preliminary design of a trench aligned east-west along the front of Lots 3 through 23 farthest from the slopes on the north and south sides of the parcel, and north-south on the western side of Lots 1 and 2,
- 2) after site grading activities and construction of the trench system, a minimum of 3 feet of the cleaner Vashon advance outwash remains present beneath the trench base or is intersected by the pit drain, and
- 3) our recommendations are predicated on AESI personnel being present during excavation of the facility(s) to confirm that the permeable material tested has been exposed.

If a higher infiltration rate is necessary to fit the infiltration facilities on the lots, additional investigation could include lot-by-lot infiltration testing, pit drain testing, or deepening the trench where feasible.

Care must be taken during construction not to contaminate the receptor soils with stormwater and silt. Therefore, construction should be staged to occur only after the majority of earthwork is completed. The stormwater facilities must not be used to infiltrate stormwater during construction. All construction site stormwater must be directed to a temporary sediment and water quality detention facility. Prior to bringing the stormwater facilities online, the site must be stabilized, with all roadways paved, and all swales and planted areas fully vegetated. Water entering the infiltration facilities must be clean and clear, and contain no visible turbidity.

Once design plans are prepared, we recommend that a copy be provided to AESI for review to verify that the plans comply with the recommendations in this letter-report, or provide additional recommendations, if necessary.

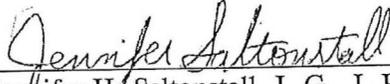
Slocum Property
Woodinville, Washington

Subsurface Exploration and
Infiltration Testing

CLOSURE

We appreciate the opportunity to be of continued service to you on this project. Should you have any questions regarding this letter-report or other geotechnical/hydrogeologic aspects of the project, please call us at your earliest convenience.

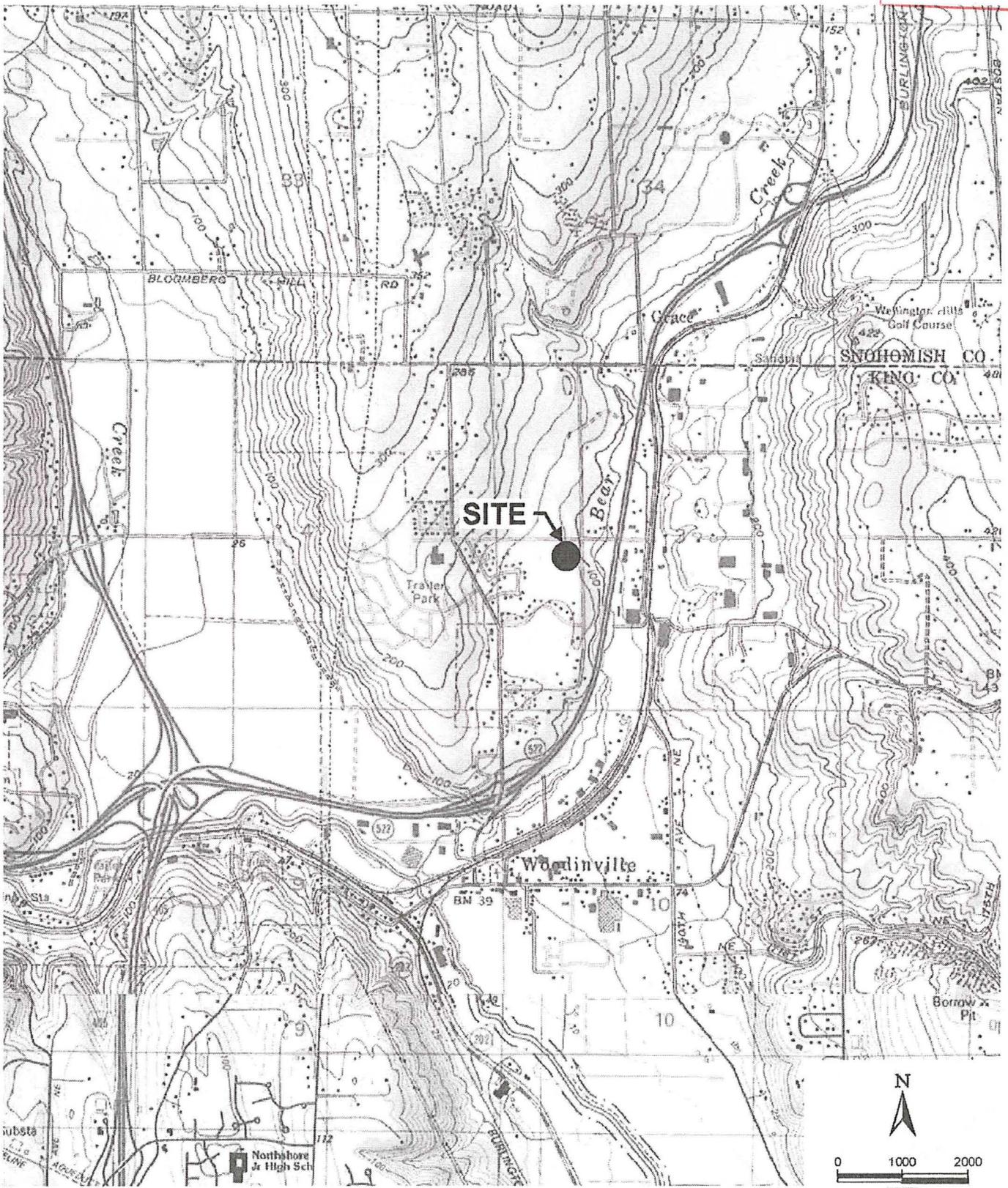
Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington


Jennifer H. Saltonstall, L.G., L.Hg.
Associate Geologist/Hydrogeologist



Matthew A. Miller, P.E.
Principal Engineer

Attachments: Figure 1: Vicinity Map
Figure 2: Site and Exploration Plan
Appendix A: Exploration Logs
Appendix B: Laboratory Testing Results



REFERENCE: USGS TOPO!

Associated Earth Sciences, Inc.

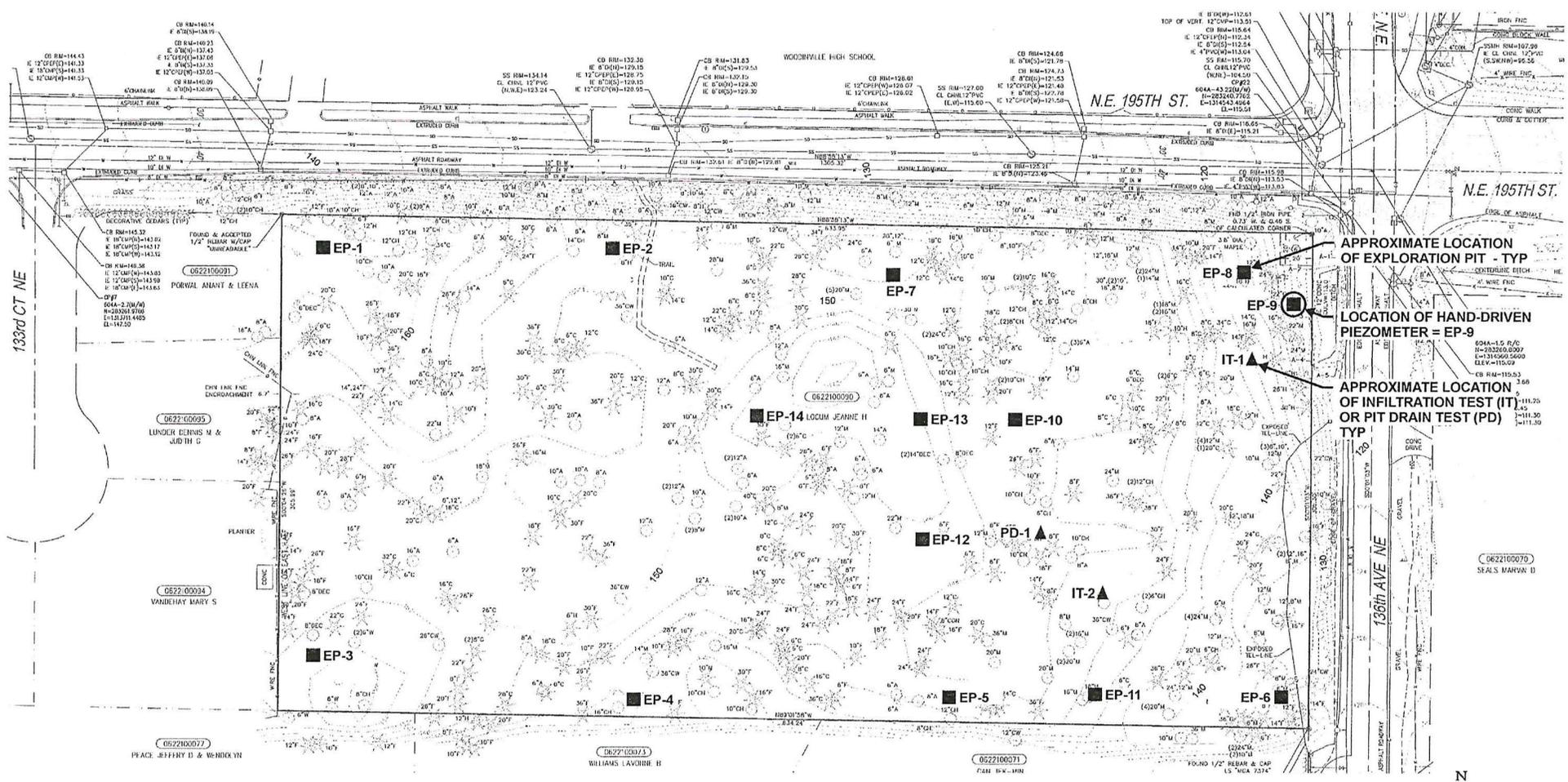


VICINITY MAP
SLOCUM PROPERTY
WOODINVILLE, WASHINGTON

FIGURE 1
DATE 11/12
PROJ. NO. KE110151A

110151 Slocum Property \ 110151 Vicinity 11-12.cdr

110151 Slocum Property 110151 A Site and Expl 11-12.cdr



COMPLETION NOTES:
 EP-1 THROUGH EP-8 COMPLETED APRIL 2011.
 EP-9/P-1 AND IT-1 WERE COMPLETED AUGUST 2011.
 EP-10 THROUGH EP-14, IT-2, AND PD-1 COMPLETED NOVEMBER 2012.

REFERENCE: PACE

Associated Earth Sciences, Inc.



SITE AND EXPLORATION PLAN
 SLOCUM PROPERTY
 WOODINVILLE, WASHINGTON

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FIGURE 2
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APPENDIX A
Exploration Logs

		Terms Describing Relative Density and Consistency		
		Density	SPT ⁽²⁾ blows/foot	
Coarse-Grained Soils - More than 50% ⁽¹⁾ Retained on No. 200 Sieve	Gravels - More than 50% ⁽¹⁾ of Coarse Fraction Retained on No. 4 Sieve	Well-graded gravel and gravel with sand, little to no fines	Very Loose 0 to 4	
		Poorly-graded gravel and gravel with sand, little to no fines	Loose 4 to 10	
		Silty gravel and silty gravel with sand	Medium Dense 10 to 30	
		Clayey gravel and clayey gravel with sand	Dense 30 to 50	
Sands - 50% ⁽¹⁾ or More of Coarse Fraction Passes No. 4 Sieve	≤ 5% Fines (5)	Well-graded sand and sand with gravel, little to no fines	Very Dense > 50	
	5% to 15% Fines (5)	Poorly-graded sand and sand with gravel, little to no fines		
	15% to 30% Fines (5)	Silty sand and silty sand with gravel		
	30% to 50% Fines (5)	Clayey sand and clayey sand with gravel		
Fine-Grained Soils - 50% ⁽¹⁾ or More Passes No. 200 Sieve	Sands and Silts Liquid Limit Less than 50	Silt, sandy silt, gravelly silt, silt with sand or gravel		
		Clay of low to medium plasticity; silty, sandy, or gravelly clay, lean clay		
		Organic clay or silt of low plasticity		
	Sands and Silts Liquid Limit 50 or More	Elastic silt, clayey silt, silt with micaceous or diatomaceous fine sand or silt		
		Clay of high plasticity, sandy or gravelly clay, fat clay with sand or gravel		
		Organic clay or silt of medium to high plasticity		
		Peat, muck and other highly organic soils		
	Highly Organic Soils			

Component Definitions	
Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

(3) Estimated Percentage		Moisture Content
Component	Percentage by Weight	
Trace	< 5	Dry - Absence of moisture, dusty, dry to the touch
Few	5 to 10	Slightly Moist - Perceptible moisture
Little	15 to 25	Moist - Damp but no visible water
With	- Non-primary coarse constituents: ≥ 15% - Fines content between 5% and 15%	Very Moist - Water visible but not free draining
		Wet - Visible free water, usually from below water table

Symbols	
Sampler Type	Blows/6" or portion of 6"
2.0" OD Split-Spoon Sampler	10 15 20
3.0" OD Split-Spoon Sampler	
3.25" OD Split-Spoon Ring Sampler	
Bulk sample	
3.0" OD Thin-Wall Tube Sampler (including Shelby tube)	
Grab Sample	
	Portion not recovered

Casing Symbols	
▽	ATD = At time of drilling
▽	Static water level (date)

(1) Percentage by dry weight
 (2) (SPT) Standard Penetration Test (ASTM D-1586)
 (3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
 (4) Depth of ground water
 (5) Combined USCS symbols used for fines between 5% and 15%

blockslog_key.dwg LAYOUT: Layout2

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

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EXPLORATION LOG KEY

FIGURE A1

LOG OF EXPLORATION PIT NO. EP-1

Depth (ft)	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>	
	DESCRIPTION	Approximate Elev. 162 feet
	Forest Duff	
	Vashon Advance Outwash	
1	Loose to medium dense, moist, reddish brown, fine SAND, little silt (SP/SM); becomes reddish tan below ~2 feet; abundant roots 0 to 2 1/2 feet.	
2		
3	Medium dense to dense, moist, tan, fine SAND, few silt (SP); trace gravel, large boulder present at 5 to 7 feet.	
4		
5		
6		
7		
8	Medium dense to dense, moist, grayish tan, SAND, with gravel, trace silt (SW).	
9		
10		
11	Medium dense to dense, very moist, grayish tan, silty fine SAND and fine sandy SILT (SM/ML) with lenses of clean, fine SAND; contains interbeds of clean fine to medium SAND below approximately 14 feet.	
12		
13		
14		
15		
16		
17		
18	Bottom of exploration pit at depth 17 feet No ground water seepage. No caving.	
19		
20		

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LOG OF EXPLORATION PIT NO. EP-2

Depth (ft)	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>
	<p>DESCRIPTION</p> <p style="text-align: right;">Approximate Elev. 153 feet</p>
	<p>Forest Duff</p>
	<p>Vashon Advance Outwash</p>
1	Loose to medium dense, moist, reddish tan, fine SAND, little silt, few gravel (SP/SM); abundant roots.
2	
3	Medium dense to dense, moist, tan, fine SAND, few silt (SP); contains interbeds of stiff to very stiff, very moist silt from 4 to 6 1/2 feet; becomes grayish tan with silt (SM) below 6 1/2 feet.
4	
5	
6	
7	
8	
9	
10	
11	
12	Contains SILT lenses at ~12 to 13 feet.
13	Becomes gravelly grayish brown below 13 feet.
14	
15	Little gravel below 15 feet.
16	
17	Bottom of exploration pit at depth 16.5 feet No ground water seepage. No caving.
18	
19	
20	

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LOG OF EXPLORATION PIT NO. EP-3

Depth (ft)	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>	
	DESCRIPTION	Approximate Elev. 153 feet
	Forest Duff	
	Vashon Recessional Outwash	
1	Loose to medium dense, moist, brown to reddish brown, silty fine SAND, little gravel (SM); abundant roots.	
2		
3	Medium dense, moist, gray to grayish tan, SAND, with gravel, trace silt (SW); contains lenses of stiff, mottled tan, SILT below 7 feet.	
4		
5		
6		
7		
8	Vashon Advance Outwash	
9	Medium dense to dense, moist, grayish tan, fine SAND, little gravel, few silt (SP); contains pockets of dense, silty SAND, with gravel (SM) above 12 feet.	
10		
11		
12		
13		
14		
15		
16	Bottom of exploration pit at depth 15 feet No ground water seepage. Moderate caving 0 to 8 feet.	
17		
18		
19		
20		

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LOG OF EXPLORATION PIT NO. EP-4

Depth (ft)	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>
	Approximate Elev. 144 feet
	Forest Duff
	Vashon Recessional Outwash
1	Loose to medium dense, moist, reddish tan, fine SAND, little silt, few gravel (SM/SP); abundant roots.
2	
	Vashon Advance Outwash
3	Medium dense to dense, moist, grayish tan, fine SAND, little silt, few gravel (SM); contains lenses of clean, fine SAND and very stiff, laminated SILT.
4	
5	
6	
7	Medium dense to dense, moist, gray, fine SAND, trace silt (SP); contains interbeds of fine sandy silt below 10 feet; few gravel.
8	
9	
10	
11	
12	
13	
14	
15	Bottom of exploration pit at depth 15 feet No ground water seepage. Moderate caving 7 to 10 feet.
16	
17	
18	
19	
20	

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LOG OF EXPLORATION PIT NO. EP-5

Depth (ft)	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p> <p style="text-align: center;">DESCRIPTION</p> <p style="text-align: right;">Approximate Elev. 145 feet</p>	
	Forest Duff	
	Vashon Recessional Outwash	
1	Loose to medium dense, moist, reddish tan, fine SAND, little silt, few gravel (SP/SM); abundant roots.	
2		
3	Medium dense, moist, tan, fine SAND, little silt, few gravel (SP/SM); trace silt below 4 feet; contains lenses and interbeds of silt below 7 1/2 feet; contains scattered roots.	
4		
5		
6		
7		
8		
9		
10	Vashon Advance Outwash	
11	Medium dense to dense, moist, grayish tan, fine SAND, little gravel, trace silt (SP); contains lenses of very moist, silty SAND and fine sandy SILT.	
12		
13		
14		
15		
16	Bottom of exploration pit at depth 15 feet No ground water seepage. Minor caving above 10 feet.	
17		
18		
19		
20		

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4/19/11

LOG OF EXPLORATION PIT NO. EP-6

Depth (ft)	DESCRIPTION	Approximate Elev. 133 feet
	Forest Duff	
	Vashon Advance Outwash	
1	Loose to medium dense, moist, tan, fine SAND, little silt (SP/SM); abundant roots.	
2		
3	Medium dense to dense, moist, tan, fine SAND, little silt (SP/SM); contains lenses and interbeds of stiff to very stiff, SILT and fine SAND, with few silt below 6 1/2 feet; becomes silty and very moist below 12 feet.	
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14	Pre-Vashon ?	
15	Stiff to very stiff, very moist, grayish tan, SILT; laminated (ML).	
16		
17	Bottom of exploration pit at depth 16 feet No ground water seepage. No caving.	
18		
19		
20		

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LOG OF EXPLORATION PIT NO. EP-7

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.	
	DESCRIPTION	Approximate Elev. 152 feet
	Forest Duff	
	Vashon Recessional Outwash	
1	Loose to medium dense, moist, reddish tan, fine SAND, little silt (SP/SM); abundant roots.	
2		
3	Medium dense, moist, grayish tan, fine SAND, few silt (SP); little silt below 4 feet (SP/SM).	
4		
5		
6	Medium dense, very moist, brown, silty SAND, with gravel (SM); contains thin lenses of SAND, with little silt; scattered roots above 7 feet.	
7	Vashon Advance Outwash	
8	Medium dense to dense, moist, grayish tan, fine SAND, little gravel, trace silt (SP).	
9		
10		
11		
12		
13	Stiff to very stiff, very moist, gray-tan, SILT (ML).	
14	Medium dense to dense, moist, gray, SAND, with gravel, trace silt (SW).	
15		
16		
17	Bottom of exploration pit at depth 16 feet No ground water seepage. Moderate caving 7 to 12 feet.	
18		
19		
20		

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LOG OF EXPLORATION PIT NO. EP-8

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.	
	DESCRIPTION	Approximate Elev. 134 feet
	Forest Duff	
1	Vashon Recessional Outwash	
2	Loose, moist, reddish brown, fine SAND, little gravel, little silt (SP/SM); abundant roots.	
3		
4	Vashon Advance Outwash	
5	Medium dense to dense, very moist, tan, silty fine SAND and fine sandy SILT, with little gravel (SM/ML); contains thin lenses of clean sand; becomes mottled at 6 to 7 feet.	
6		
7		
8		
9		
10		
11	Medium dense to dense, moist, gray, fine SAND, trace silt, trace gravel (SP); becomes well graded below 15 feet (SW).	
12		
13		
14		
15		
16		
17	Bottom of exploration pit at depth 16 feet No ground water seepage. Moderate caving below 10 feet.	
18		
19		
20		

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LOG OF EXPLORATION PIT NO. EP-9

Depth (ft)	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>	
	DESCRIPTION	El. ~124.7'
	Forest Duff	
1	Vashon Advance Outwash	
2	Medium dense, damp, brown to oxidized brown, fine to medium SAND, trace silt, abundant roots.	
3		
4	Medium dense, damp, brown to oxidized brown, fine to medium SAND, trace silt, occasional roots.	
5	Medium stiff to stiff, moist, gray to gray brown, sandy SILT, faintly layered; probe 2-1/2 inches.	
6		
7	Medium stiff to stiff, moist to wet, dark mottled brown, sandy SILT.	
8	Medium dense to dense, wet, brown, fine to medium SAND, trace silt.	
9		
10	<p>Bottom of exploration pit at depth 9 feet Rapid ground water seepage at 7.5 feet. Moderate caving 0 to 4 feet, minor caving at 6 feet. Drivepoint installed, water level at 7.3 feet below ground surface.</p>	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

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8/26/11

LOG OF EXPLORATION PIT NO. EP-10

Depth (ft)	DESCRIPTION
	El. ~149'
	Forest Duff
1	Loose, moist, dark brown, silty fine to medium SAND, few fine to coarse gravel; abundant roots, abundant organics (SM).
	Vashon Recessional Outwash
2	Loose to medium dense, slightly moist, brown, fine to medium SAND, few fine to coarse gravel, few silt; few roots (SP).
3	Becomes grayish brown.
4	Medium dense to dense, slightly moist, grayish brown, fine to medium SAND, trace gravel, trace silt (SP).
5	
6	
7	Vashon Advance Outwash
8	Very stiff, slightly moist, brown with faint orange mottling, SILT; finely laminated (ML).
9	
10	
11	Medium dense to dense, slightly moist, grayish brown, fine to medium SAND, few fine to coarse gravel, trace silt; stratified (SP).
12	
13	Increased gravel content to little.
14	Very stiff, slightly moist, brown, SILT; finely laminated (ML).
15	Medium dense, slightly moist, grayish brown, fine to coarse SAND, few fine to coarse gravel, trace silt (SW).
16	Grades to fine to medium SAND (SP).
17	Medium dense to dense and stiff, slightly moist, grayish brown, finely interbedded (1/4 to 1/2 inch), very fine to fine SAND, with silt, and SILT (SM/ML).
18	Medium dense to dense, slightly moist, grayish brown, fine to medium SAND, trace to little gravel, trace silt (SP).
19	Bottom of exploration pit at depth 18.5 feet No ground water seepage. No caving.
20	

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11/14/12

LOG OF EXPLORATION PIT NO. EP-11

EXHIBIT 12
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Depth (ft)	DESCRIPTION	
	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.	
	Forest Duff	E1. ~145'
1	Loose, moist, dark brown, fine to medium SAND, few fine to coarse gravel, few silt; abundant organics, abundant roots (SM).	
	Vashon Recessional Outwash	
2	Loose to medium dense, slightly moist, brown, fine to medium SAND, few fine to coarse gravel, few silt (SP).	
3	Becomes grayish brown.	
4		
5		
6		
7	Vashon Advance Outwash	
8	Medium dense to dense, slightly moist, grayish brown to tan, fine SAND, few to little silt (SP/SM).	
9		
10		
11		
12	Medium dense to dense, slightly moist, grayish brown to tan, interbeds (1/2 to 2 inches), fine SAND, and SILT.	
13		
14		
15	Medium dense to dense, slightly moist, grayish brown, fine SAND, trace silt (SP).	
	Pre-Vashon ?	
16	Medium dense to dense and stiff, slightly moist, grayish brown to brown, thinly bedded (1/8 to 1/4 inch), very fine to fine SAND and SILT (SP/ML).	
17	Stiff, moist, brown to reddish brown, thinly bedded (1/16 to 1/8 inch) SILT (ML).	
18	Dense, moist, brown to reddish brown, fine to medium SAND, few silt, trace gravel, trace coarse sand (SP); boulder at 18 feet.	
19	Bottom of exploration pit at depth 18 feet No ground water seepage. No caving.	
20		

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LOG OF EXPLORATION PIT NO. EP-12

EXHIBIT 12
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Depth (ft)	DESCRIPTION
	E1. ~147'
	Forest Duff
1	Loose, moist, dark brown, silty fine to medium SAND, few fine to coarse gravel; abundant roots, abundant organics (SM).
	Vashon Recessional Outwash
2	Loose to medium dense, slightly moist, brown, fine to medium SAND, few fine to coarse gravel, few to trace silt (SP).
3	Becomes grayish brown at 1 foot.
4	
5	
6	
7	Vashon Advance Outwash
8	Medium dense to dense, slightly moist, grayish brown, fine SAND, trace gravel, trace silt (SP).
9	
10	
11	Medium dense to dense and stiff, slightly moist, grayish brown with orange mottling, thinly bedded (1/4 inch), very fine to fine SAND, with silt and SILT, with sand (SM/ML).
12	
13	
14	Very stiff, slightly moist, grayish brown, finely laminated SILT, with thin (<1/8 inch) interbeds very fine SAND, with silt; micaceous (ML/SM).
15	As above but 1 inch orangish brown and lavender gray, SILT and fine SAND, with silt (ML/SM); thinly bedded to laminated.
16	As above, orangish brown to brown.
17	
18	Bottom of exploration pit at depth 17 feet No ground water seepage. No caving.
19	
20	

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LOG OF EXPLORATION PIT NO. EP-13

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Depth (ft)	<p style="font-size: small;">This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p> <p style="text-align: center;">DESCRIPTION</p>	
	E1. ~146'	
	Forest Duff	
1	Loose, moist, dark brown, silty fine to medium SAND, few fine to coarse gravel; abundant roots, abundant organics (SM).	
	Vashon Recessional Outwash	
2	Loose to medium dense, slightly moist, brown, fine to medium SAND, few fine to coarse gravel, trace silt (SP).	
3		
4		
5		
6		
7		
8	Vashon Advance Outwash	
9	Medium dense to dense and stiff, slightly moist, brown with orange mottling, fine to medium SAND, few to little silt interbedded with brown, SILT, with sand; thinly bedded (1/8 to 1/4 inch) layers (SP/SM).	
10	Medium dense to dense and stiff, slightly moist, grayish brown to light tan, thinly bedded (1/8 to 1/4 inch) very fine to fine SAND and SILT (SP/ML).	
11	Medium dense to dense, fine to medium SAND, few to little silt, trace gravel, trace coarse sand; stratified (SP/SM).	
12		
13	Very stiff, slightly moist, grayish brown, SILT; finely laminated; discontinuous across pit wall (ML).	
14		
15	Medium dense to dense, slightly moist, grayish brown, fine to medium SAND, trace silt (SP).	
16		
17	Bottom of exploration pit at depth 16 feet No ground water seepage. Minor caving 3 to 10 feet.	
18		
19		
20		

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11/14/12

LOG OF EXPLORATION PIT NO. EP-14

EXHIBIT 12
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Depth (ft)	DESCRIPTION	
	El. ~145'	
	Forest Duff	
1	Loose, moist, dark brown, silty fine SAND, trace gravel; abundant roots, abundant organics (SM).	
	Vashon Recessional Outwash	
2	Loose to medium dense, slightly moist, brown, fine SAND, few silt, trace gravel; few roots (SP).	
3	Medium dense, slightly moist, grayish brown with orange mottling, fine to medium SAND, few fine to coarse gravel, few silt; stratified (SW/SM).	
4		
	Vashon Advance Outwash	
5	Medium dense to dense, slightly moist, grayish brown, fine SAND, trace to little silt; stratified, with discontinuous layer (2 inch) of silt; finely laminated (SP/SM).	
6		
7		
8		
9		
10	Medium dense to dense, slightly moist, grayish brown, fine to coarse SAND, few fine to coarse gravel, trace silt (SW).	
11	Bottom of exploration pit at depth 10.5 feet No ground water seepage. Minor caving 3 to 6 feet.	
12		
13		
14		
15		
16		
17		
18		
19		
20		

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LOG OF EXPLORATION PIT NO. IT-1

EXHIBIT 12
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Depth (ft)	DESCRIPTION	
	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.	
	Forest Duff	El. ~136'
1	Loose, slightly moist, dark brown, fine to medium SAND, few silt, abundant roots.	
	Vashon Recessional Outwash	
2	Medium dense, moist, tan brown, fine to medium SAND, trace to few gravel, trace silt, abundant roots; massive (SP).	
3		
4	Medium dense, moist, gray brown, fine to medium SAND, few gravel, trace cobbles and large gravel, trace silt; massive (SP).	
5		
6		
7	Vashon Advance Outwash	
8	Medium dense to dense, moist, gray brown, fine to medium SAND, few gravel, trace silt; stratified (SP).	
9		
10		
11		
12	Medium dense to dense, moist, gray brown, fine to medium SAND, trace to few gravel, trace silt (SP).	
13	Layer of medium dense to dense, moist, gray, SILT and very fine SAND; discontinuous (ML/SP).	
14	Medium dense to dense, moist to very moist, gray, fine SAND, with silt, interbedded with very moist, gray, medium SAND (SM/SP).	
15	Medium dense to dense, moist to very moist, gray, medium SAND, with silt interbeds (SP/ML).	
16		
17		
18	Medium dense to dense, moist, gray, medium SAND, with thin silt interbeds (SP/ML).	
19	Bottom of exploration pit at depth 18 feet Seepage from infiltration test water 14 to 14.5 feet. Heavy caving 0 to 8 feet, moderate caving 8 to 18 feet. Infiltration test at 13-13.5 feet.	
20		

Slocum Property Woodinville, WA

Associated Earth Sciences, Inc.

Project No. KE110151A

Logged by: JHS/SST

Approved by: JHS



8/26/11

KCTP3 110151A.GPJ November 16, 2012

LOG OF EXPLORATION PIT NO. IT-2

EXHIBIT 12
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Depth (ft)	DESCRIPTION	
	<p>This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>	
	Forest Duff	El. ~ 147'
1	Loose, moist, dark brown, silty fine to medium SAND, few fine to coarse gravel; abundant roots, abundant organics (SM).	
	Vashon Recessional Outwash	
2	Loose to medium dense, slightly moist, brown, fine to medium SAND, few fine to coarse gravel, few silt; few roots (SP).	
3	Medium dense, slightly moist, grayish brown, fine to medium SAND, few fine to coarse gravel, few silt; weakly stratified (SP).	
4		
	Vashon Advance Outwash	
5	Medium dense to dense, slightly moist, grayish brown, interbedded fine to medium SAND, few to trace gravel, trace silt and fine SAND, trace silt (SP).	
6		
7		
8		
9		
10		
11	As above, with interbeds of tan, SILT, with fine sand.	
12		
13		
14	Medium dense to dense, slightly moist, grayish brown, fine SAND, few gravel, trace silt; weakly stratified (SP).	
15		
16	As above, with discontinuous layers (4 to 6 inch) of SILT, scattered weathered gravel (SP/ML).	
17		
	Pre-Vashon	
18	Dense, slightly moist, orangish brown, fine to coarse SAND, with gravel, few silt; somewhat cemented (SW).	
19	Bottom of exploration pit at depth 18 feet No ground water seepage. Caving 12 to 16 feet. Infiltration test at 17 feet.	
20		

Slocum Property Woodinville, WA

Associated Earth Sciences, Inc.



Logged by: LBK

Approved by: JHS

Project No. KE110151A

11/13/12

LOG OF EXPLORATION PIT NO. PD-1

EXHIBIT 12
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Depth (ft)	DESCRIPTION
	E1. ~ 149'
	Forest Duff
1	Loose, moist, dark brown, silty fine to medium SAND, few fine to coarse gravel; abundant roots, abundant organics (SM).
	Vashon Recessional Outwash
2	Loose to medium dense, slightly moist, brown with orange mottling, fine to medium SAND, few fine to coarse gravel, few silt (SP).
3	Medium dense, slightly moist, grayish brown, fine to medium SAND, few fine to coarse gravel, few silt; weakly stratified (SP).
4	
5	
6	
7	
8	Vashon Advance Outwash
9	Medium dense to dense, slightly moist, grayish brown, very fine to fine SAND, little to few silt; fine laminae (SP/SM).
10	
11	Medium dense to dense and stiff, slightly moist, light gray to grayish brown, thinly interbedded (1/3 to 1/2 inch) very fine to fine SAND and SILT (SP/ML).
12	
13	Medium dense to dense, slightly moist, grayish brown, fine to medium SAND, few to trace fine gravel, trace silt (SP).
14	
15	
16	Dense, slightly moist, grayish brown to brown, fine to medium SAND, few fine to coarse gravel, trace silt; weakly cemented (SP).
17	Bottom of exploration pit at depth 16 feet Pit from 0 to 11 feet = 4x10 feet / Pit from 11 feet to bottom = 3x8 feet No ground water seepage. Minor caving 10 to 16 feet.
18	Completed as Pit Drain:
19	+2 to 16 feet = Piezometer
19	0 to 7 feet = Native fill
19	7 feet = Plastic sheet
19	7 to 16 feet = Pea gravel
20	

Slocum Property Woodinville, WA

Associated Earth Sciences, Inc.

Project No. KE110151A

Logged by: LBK
Approved by: JHS



11/13/12

KCTP3 110151A.GPJ November 16, 2012

APPENDIX B

Laboratory Testing Results

**Table B-1
Summary of Laboratory Testing**

AESI Pit and Depth	CEC	% OM	Sieve Results - KC Req. #8							Of weight passing #10, % sand (retained #270)	USDA Class	
			Of weight passing #4, Percent Passing				75% passes #4	50% pass #40 + 2% on #100	25% pass #40 + 5% on #200			KC SWDM 2009
			#4	#40	#100	#200						
EP-1 at 2.5-3.5 ft	NT	NT	99	86.2	18.5	8.6	Yes	Yes	Yes	Meets grain size criteria	94	sand
EP-2 at 3-4 ft	3.0	1.2	100	80.7	25.9	12.9	Yes	Yes	Yes	Meets grain size criteria	91	sand
EP-3 at 3-4 ft	NT	NT	83.6	19	1.9	1.2	Yes	No	No	Does not meet grain size criteria	99	sand
EP-4 at 3-4 ft	3.8	1.5	94.2	84.1	37.9	20.8	Yes	Yes	Yes	Meets grain size criteria	83	loamy sand/ sandy loam
EP-5 at 3-4 ft	3.8	1.4	96	85.8	34.5	16.3	Yes	Yes	Yes	Meets grain size criteria	89	sand/ loamy sand
EP-7 at 3-4 ft	2.9	1.2	94.7	80.9	13.8	5.0	Yes	Yes	Yes	Meets grain size criteria	97	sand
EP-8 at 3-4 ft	NT	NT	72.4	41.1	10.8	7.0	No	No	Yes	Nearly meets grain size criteria	93	sand
EP-10 at 15 ft	pending		85.8	42.6	7.4	2.3	Yes	No	No	Nearly meets grain size criteria	99	sand
EP-10 at 18 ft	pending		77.2	56.3	10.3	4.3	Yes	Yes	No	Meets grain size criteria	97	sand
EP-11 at 13 ft	pending		100	98.8	88.8	80.8	Yes	Yes	Yes	Meets grain size criteria	23	Too fine-grained
EP-11 at 17.5 ft	pending		98.8	69.9	21.5	11.5	Yes	Yes	Yes	Meets grain size criteria	90	sand
EP-12 at 16 ft	pending		100	99.2	94.3	77.7	Yes	Yes	Yes	Meets grain size criteria	27	Too fine-grained

EXHIBIT 12
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EP-13 at 13 ft	pending		99.1	45.0	21.0	17.4	Yes	No	Yes	Meets grain size criteria	84	loamy sand/ sandy loam
EP-13 at 15 ft	pending		100	29.1	3.2	1.4	Yes	No	No	Does not meet grain size criteria	99	sand
EP-14 at 3 ft	pending		87.2	63.1	25.8	12.7	Yes	Yes	Yes	Meets grain size criteria	88	sand/ loamy sand
EP-14 at 5 ft	pending		90.1	92.9	34.3	19.6	Yes	Yes	Yes	Meets grain size criteria	82	loamy sand/ sandy loam
IT-1 at 14.5 ft	NT	NT	99.7	96.5	38.3	24.3	Yes	Yes	Yes	Meets grain size criteria	83	loamy sand/ sandy loam
IT-2 at 14 ft	pending		92.1	84.2	13.1	4.2	Yes	Yes	No	Meets grain size criteria	97	sand
IT-2 at 17 ft	pending		61.1	54.7	21.9	11.9	No	Yes	Yes	Does not meet grain size criteria	88	sand/ loamy sand
PD-1 at 16 ft	pending		91.2	53.4	3.9	0.8	Yes	Yes	No	Meets grain size criteria	99	sand

EP - exploration pit

IT - infiltration test pit

CEC - cation exchange capacity

OM - organic matter content, percent by weight

meq/100g - milliequivalents per 100 grams

KC Req. #8 - King County Core Requirement #8 for in-situ water quality treatment, KCSWDM page 5-62

USDA - U.S. Department of Agriculture soil textural classification

NT - not tested

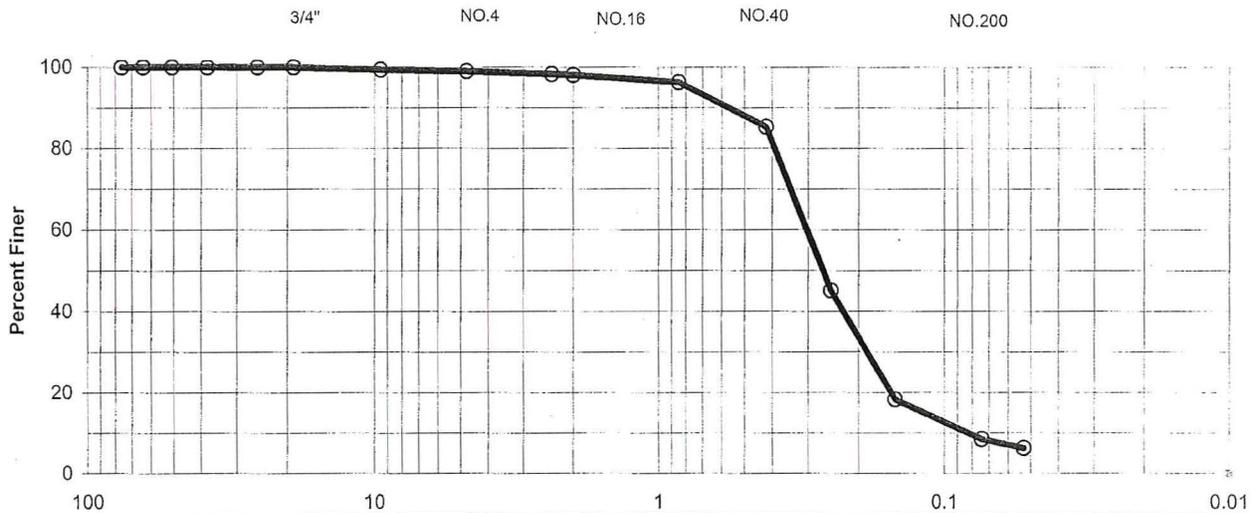
GRAIN SIZE ANALYSIS - MECHANICAL

Date 4/25/2011	Project Slocum Property	Project No. KE110151A	Soil Description Sand few silt trace gravel	
Tested By MS	Location Onsite	EB/EP No EP-1	Depth 2.5- 3.5'	Intended Use / Specification

Wt. of moisture wet sample + Tare	347.95	Total Sample Tare	331.84
Wt. of moisture dry Sample + Tare	325.6	Total Sample wt + tare	773.83
Wt. of Tare	94.85	Total Sample Wt	442.0
Wt. of moisture Dry Sample	230.75	Total Sample Dry Wt	403.0
Moisture %	10%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	2.28	0.6	99.4	-	-
#4	4.76	3.83	1.0	99.0	-	-
#8	2.38	6.82	1.7	98.3	-	-
#10	2	7.66	1.9	98.1	-	-
#20	0.85	14.78	3.7	96.3	-	-
#40	0.42	59.01	14.6	85.4	-	-
#60	0.25	221.45	55.0	45.0	-	-
#100	0.149	329.22	81.7	18.3	-	-
#200	0.074	368.6	91.5	8.5	-	-
#270	0.053	377.7	93.7	6.3	-	-

US STANDARD SIEVE NOS.



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Grain Size, mm

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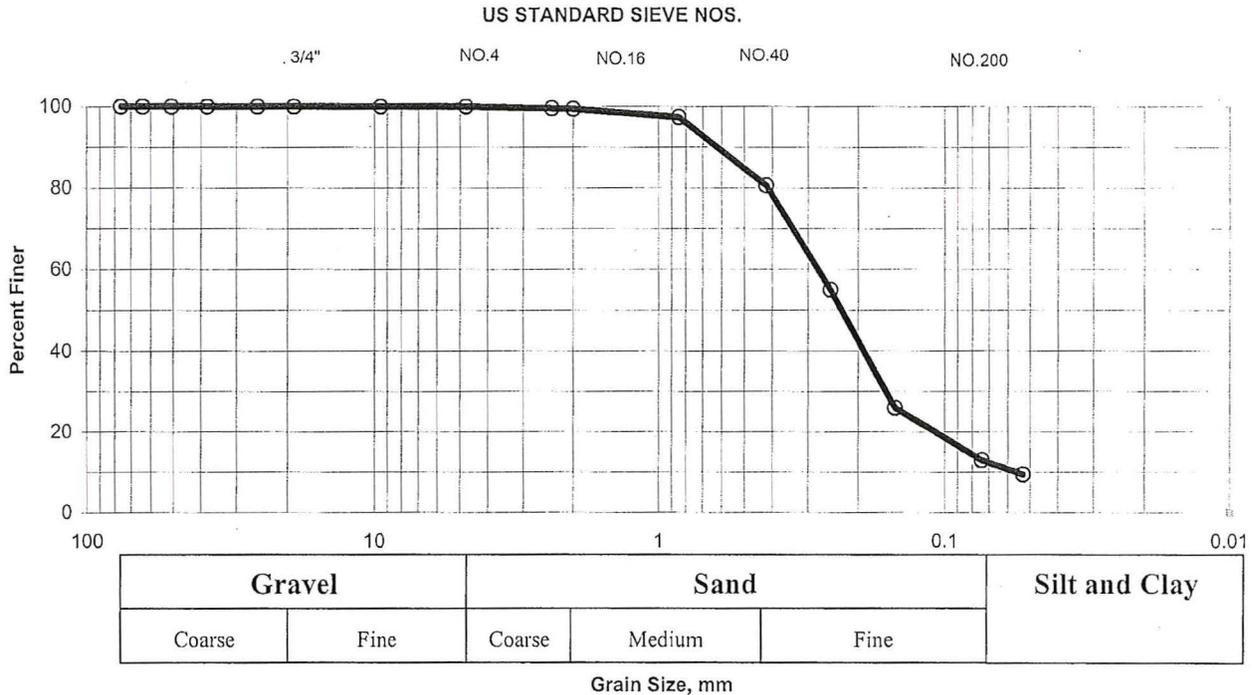
GRAIN SIZE ANALYSIS - MECHANICAL

EXHIBIT 12
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Date 4/25/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand few silt
Tested By MS	Location Onsite	EB/EP No EP-2	Depth 3-4'	Intended Use / Specification

Wt. of moisture wet sample + Tare	328.09	Total Sample Tare	521.14
Wt. of moisture dry Sample + Tare	314.25	Total Sample wt + tare	952.69
Wt. of Tare	101.87	Total Sample Wt	431.6
Wt. of moisture Dry Sample	212.38	Total Sample Dry Wt	405.1
Moisture %	7%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51		0.0	100.0	-	-
#4	4.76		0.0	100.0	-	-
#8	2.38	1.84	0.5	99.5	-	-
#10	2	2.51	0.6	99.4	-	-
#20	0.85	10.56	2.6	97.4	-	-
#40	0.42	78.22	19.3	80.7	-	-
#60	0.25	182.21	45.0	55.0	-	-
#100	0.149	300.1	74.1	25.9	-	-
#200	0.074	352.8	87.1	12.9	-	-
#270	0.053	367.09	90.6	9.4	-	-



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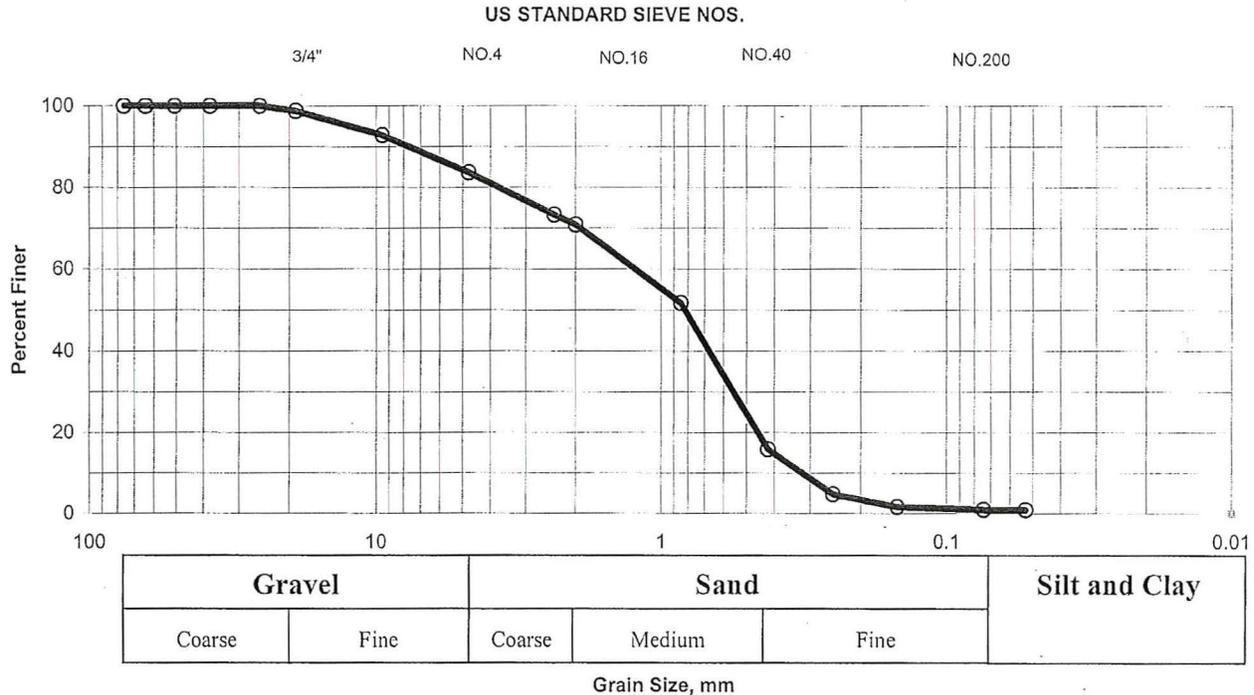
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GRAIN SIZE ANALYSIS - MECHANICAL

Date 4/25/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand little gravel trace silt
Tested By MS	Location Onsite	EB/EP No EP-3	Depth 3-4'	Intended Use / Specification

Wt. of moisture wet sample + Tare	429.38	Total Sample Tare	519.85
Wt. of moisture dry Sample + Tare	416.18	Total Sample wt + tare	1505.4
Wt. of Tare	99.25	Total Sample Wt	985.6
Wt. of moisture Dry Sample	316.93	Total Sample Dry Wt	946.1
Moisture %	4%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19	12.07	1.3	98.7	-	-
3/8	9.51	67.96	7.2	92.8	-	-
#4	4.76	155.05	16.4	83.6	-	-
#8	2.38	252.66	26.7	73.3	-	-
#10	2	276.07	29.2	70.8	-	-
#20	0.85	457.27	48.3	51.7	-	-
#40	0.42	796.04	84.1	15.9	-	-
#60	0.25	901	95.2	4.8	-	-
#100	0.149	931.02	98.4	1.6	-	-
#200	0.074	936.76	99.0	1.0	-	-
#270	0.053	937.47	99.1	0.9	-	-



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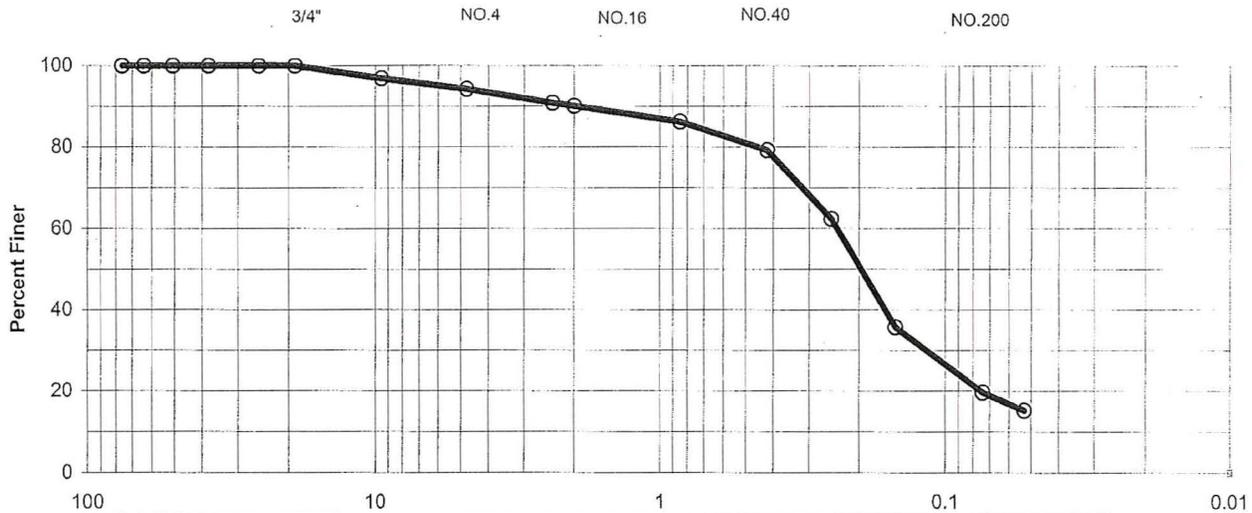
GRAIN SIZE ANALYSIS - MECHANICAL

Date 4/25/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand few silt trace gravel
Tested By MS	Location Onsite	EB/EP No EP-4	Depth 3-4'	Intended Use / Specification

Wt. of moisture wet sample + Tare	237.86	Total Sample Tare	395.71
Wt. of moisture dry Sample + Tare	224.47	Total Sample wt + tare	745.01
Wt. of Tare	101.86	Total Sample Wt	349.3
Wt. of moisture Dry Sample	122.61	Total Sample Dry Wt	314.9
Moisture %	11%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	9.77	3.1	96.9	-	-
#4	4.76	18.2	5.8	94.2	-	-
#8	2.38	28.86	9.2	90.8	-	-
#10	2	31.25	9.9	90.1	-	-
#20	0.85	43.45	13.8	86.2	-	-
#40	0.42	65.52	20.8	79.2	-	-
#60	0.25	118.42	37.6	62.4	-	-
#100	0.149	202.47	64.3	35.7	-	-
#200	0.074	253.07	80.4	19.6	-	-
#270	0.053	267.17	84.8	15.2	-	-

US STANDARD SIEVE NOS.



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Grain Size, mm

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GRAIN SIZE ANALYSIS - MECHANICAL

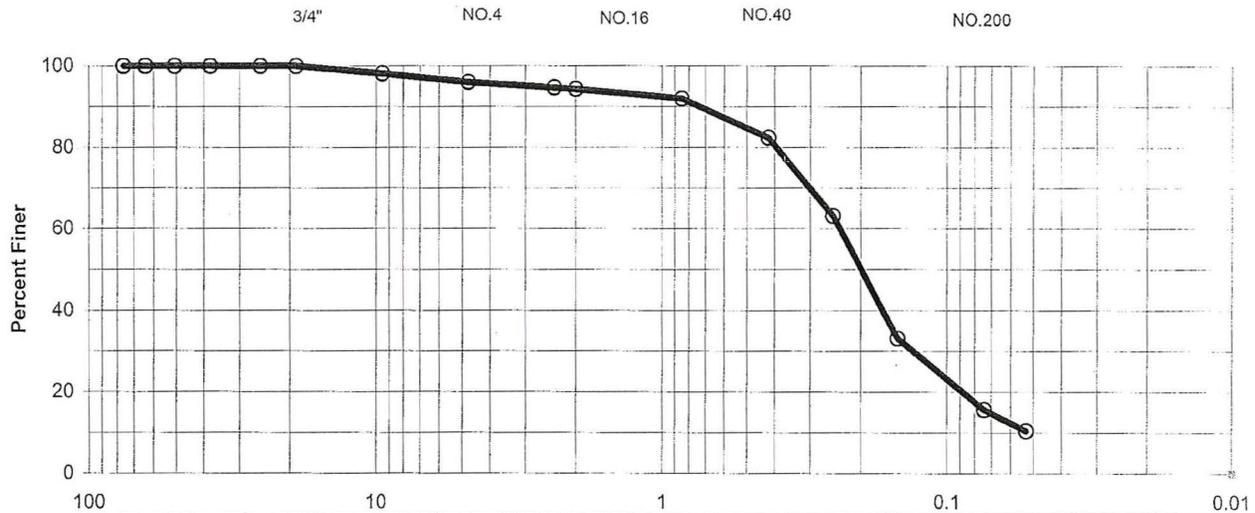
EXHIBIT 12
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Date 4/25/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand few silt trace gravel
Tested By MS	Location Onsite	EB/EP No EP-5	Depth 3-4'	Intended Use / Specification

Wt. of moisture wet sample + Tare	262.88	Total Sample Tare	331.8
Wt. of moisture dry Sample + Tare	246.5	Total Sample wt + tare	724.28
Wt. of Tare	101.83	Total Sample Wt	392.5
Wt. of moisture Dry Sample	144.67	Total Sample Dry Wt	352.6
Moisture %	11%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	6.6	1.9	98.1	-	-
#4	4.76	14.05	4.0	96.0	-	-
#8	2.38	18.85	5.3	94.7	-	-
#10	2	20.12	5.7	94.3	-	-
#20	0.85	28.16	8.0	92.0	-	-
#40	0.42	62.09	17.6	82.4	-	-
#60	0.25	129.86	36.8	63.2	-	-
#100	0.149	235.83	66.9	33.1	-	-
#200	0.074	297.43	84.4	15.6	-	-
#270	0.053	315.8	89.6	10.4	-	-

US STANDARD SIEVE NOS.



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Grain Size, mm

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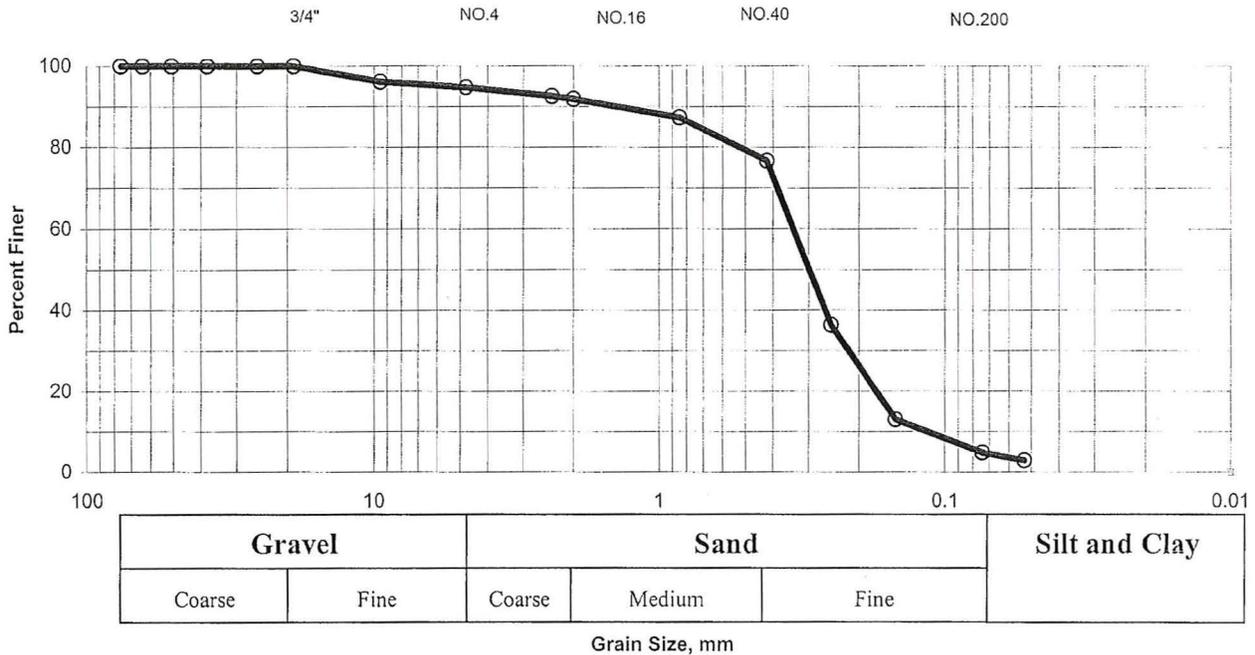
GRAIN SIZE ANALYSIS - MECHANICAL

Date 4/25/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand trace gravel trace silt
Tested By MS	Location Onsite	EB/EP No EP-7	Depth 3-4'	Intended Use / Specification

Wt. of moisture wet sample + Tare	250.3	Total Sample Tare	519.67
Wt. of moisture dry Sample + Tare	240.52	Total Sample wt + tare	842.08
Wt. of Tare	94.88	Total Sample Wt	322.4
Wt. of moisture Dry Sample	145.64	Total Sample Dry Wt	302.1
Moisture %	7%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	11.68	3.9	96.1	-	-
#4	4.76	15.92	5.3	94.7	-	-
#8	2.38	22.47	7.4	92.6	-	-
#10	2	24.5	8.1	91.9	-	-
#20	0.85	38.32	12.7	87.3	-	-
#40	0.42	70.55	23.4	76.6	-	-
#60	0.25	192.38	63.7	36.3	-	-
#100	0.149	262.69	86.9	13.1	-	-
#200	0.074	287.66	95.2	4.8	-	-
#270	0.053	293.42	97.1	2.9	-	-

US STANDARD SIEVE NOS.



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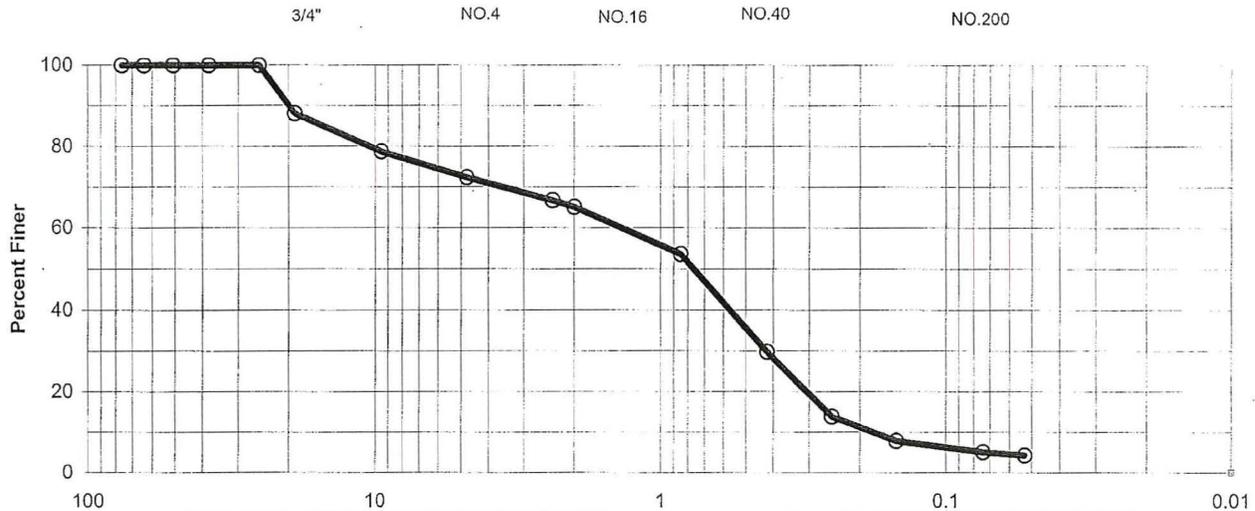
GRAIN SIZE ANALYSIS - MECHANICAL

Date 4/25/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand with gravel trace silt
Tested By MS	Location Onsite	EB/EP No EP-8	Depth 3-4'	Intended Use / Specification

Wt. of moisture wet sample + Tare	326.71	Total Sample Tare	518.34
Wt. of moisture dry Sample + Tare	302.94	Total Sample wt + tare	921.04
Wt. of Tare	99.25	Total Sample Wt	402.7
Wt. of moisture Dry Sample	203.69	Total Sample Dry Wt	360.6
Moisture %	12%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19	43.09	11.9	88.1	-	-
3/8	9.51	76.68	21.3	78.7	-	-
#4	4.76	99.48	27.6	72.4	-	-
#8	2.38	119.81	33.2	66.8	-	-
#10	2	125.8	34.9	65.1	-	-
#20	0.85	167.46	46.4	53.6	-	-
#40	0.42	253.28	70.2	29.8	-	-
#60	0.25	310.74	86.2	13.8	-	-
#100	0.149	332.45	92.2	7.8	-	-
#200	0.074	342.3	94.9	5.1	-	-
#270	0.053	345.24	95.7	4.3	-	-

US STANDARD SIEVE NOS.



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Grain Size, mm

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GRAIN SIZE ANALYSIS - MECHANICAL

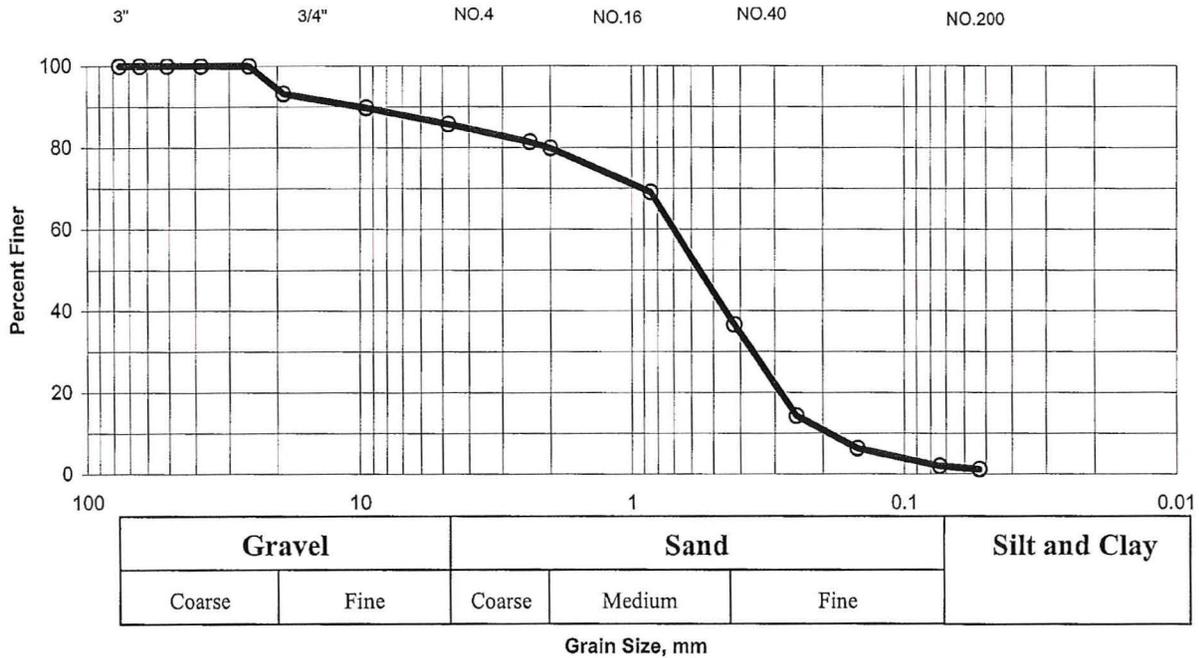
EXHIBIT 12
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Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand few gravel trace silt
Tested By MS	Location Onsite	EB/EP No EP-10	Depth 15'	Intended Use / Specification

Wt. of moisture wet sample + Tare	476.26	Total Sample Tare	331.77
Wt. of moisture dry Sample + Tare	453.88	Total Sample wt + tare	1093.56
Wt. of Tare	101.19	Total Sample Wt	761.8
Wt. of moisture Dry Sample	352.69	Total Sample Dry Wt	716.3
Moisture %	6%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19	48.73	6.8	93.2	-	-
3/8	9.51	72.97	10.2	89.8	-	-
#4	4.76	101.89	14.2	85.8	-	-
#8	2.38	133.27	18.6	81.4	-	-
#10	2	143.79	20.1	79.9	-	-
#20	0.85	220.96	30.8	69.2	-	-
#40	0.42	454.54	63.5	36.5	-	-
#60	0.25	614.03	85.7	14.3	-	-
#100	0.149	670.75	93.6	6.4	-	-
#200	0.074	702.2	98.0	2.0	-	-
#270	0.053	708.09	98.8	1.2	-	-

US STANDARD SIEVE NOS.



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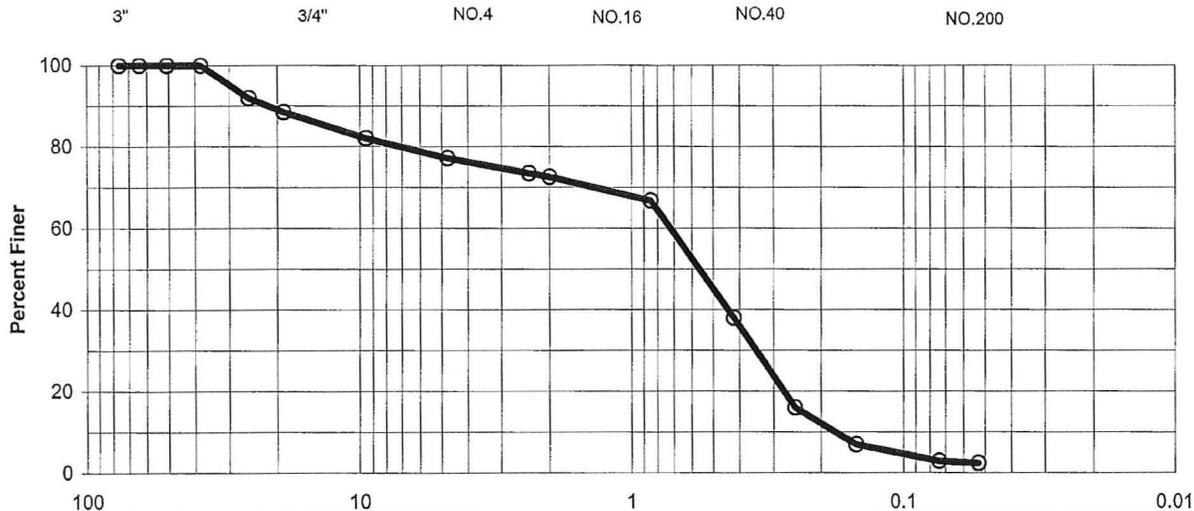
GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand little gravel trace silt
Tested By MS	Location Onsite	EB/EP No EP-10	Depth 18'	Intended Use / Specification

Wt. of moisture wet sample + Tare	486.1	Total Sample Tare	296.61
Wt. of moisture dry Sample + Tare	474.28	Total Sample wt + tare	1169.82
Wt. of Tare	98.39	Total Sample Wt	873.2
Wt. of moisture Dry Sample	375.89	Total Sample Dry Wt	846.6
Moisture %	3%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4	68.16	8.1	91.9	-	-
3/4	19	96.82	11.4	88.6	-	-
3/8	9.51	151.78	17.9	82.1	-	-
#4	4.76	192.88	22.8	77.2	-	-
#8	2.38	224.19	26.5	73.5	-	-
#10	2	231.63	27.4	72.6	-	-
#20	0.85	281.63	33.3	66.7	-	-
#40	0.42	525.32	62.1	37.9	-	-
#60	0.25	711.44	84.0	16.0	-	-
#100	0.149	787.82	93.1	6.9	-	-
#200	0.074	821.89	97.1	2.9	-	-
#270	0.053	826.32	97.6	2.4	-	-

US STANDARD SIEVE NOS.



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Grain Size, mm

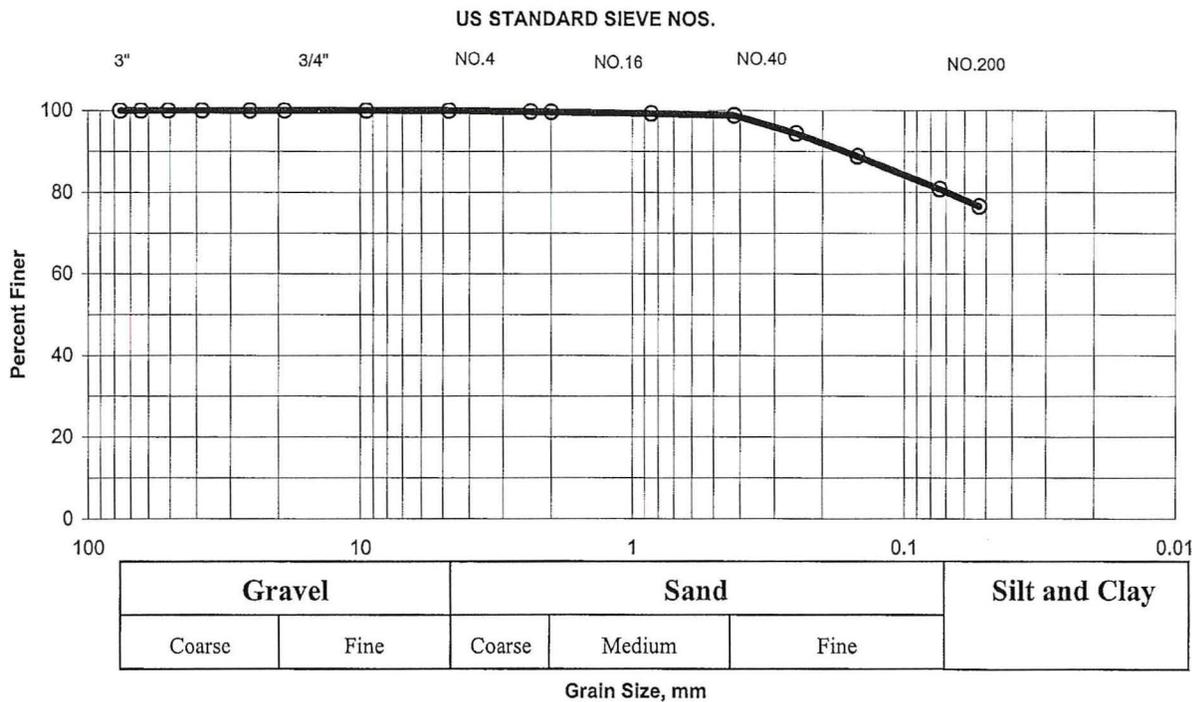
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GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Silt little sand
Tested By MS	Location Onsite	EB/EP No EP-11	Depth 13'	Intended Use / Specification

Wt. of moisture wet sample + Tare	364.34	Total Sample Tare	395.43
Wt. of moisture dry Sample + Tare	324.9	Total Sample wt + tare	1061.62
Wt. of Tare	100.99	Total Sample Wt	666.2
Wt. of moisture Dry Sample	223.91	Total Sample Dry Wt	566.4
Moisture %	18%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51		0.0	100.0	-	-
#4	4.76		0.0	100.0	-	-
#8	2.38	1.6	0.3	99.7	-	-
#10	2	2.16	0.4	99.6	-	-
#20	0.85	4.2	0.7	99.3	-	-
#40	0.42	6.68	1.2	98.8	-	-
#60	0.25	31.79	5.6	94.4	-	-
#100	0.149	63.29	11.2	88.8	-	-
#200	0.074	108.66	19.2	80.8	-	-
#270	0.053	132.68	23.4	76.6	-	-



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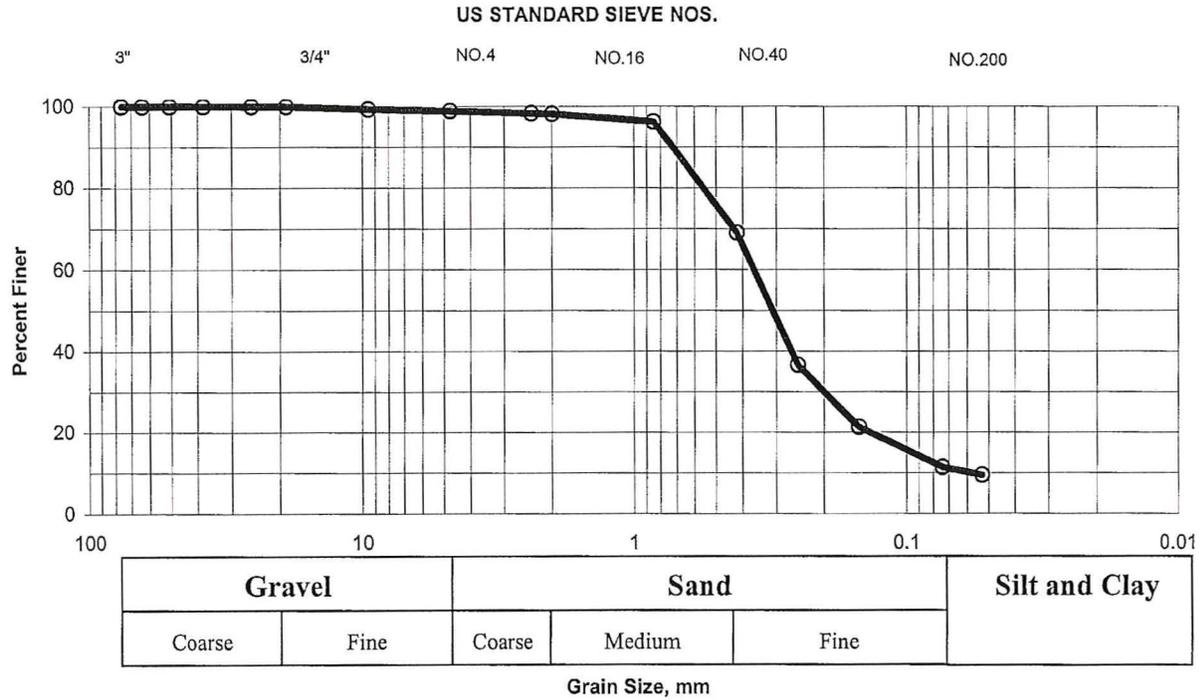
GRAIN SIZE ANALYSIS - MECHANICAL

EXHIBIT 12
PAGE 49 OF 65

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand few silt trace gravel
Tested By MS	Location Onsite	EB/EP No EP-11	Depth 17.5'	Intended Use / Specification

Wt. of moisture wet sample + Tare	333.06	Total Sample Tare	296.19
Wt. of moisture dry Sample + Tare	318.62	Total Sample wt + tare	804.44
Wt. of Tare	101.12	Total Sample Wt	508.3
Wt. of moisture Dry Sample	217.5	Total Sample Dry Wt	476.6
Moisture %	7%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	3.02	0.6	99.4	-	-
#4	4.76	5.46	1.1	98.9	-	-
#8	2.38	7.96	1.7	98.3	-	-
#10	2	8.86	1.9	98.1	-	-
#20	0.85	17.94	3.8	96.2	-	-
#40	0.42	147.47	30.9	69.1	-	-
#60	0.25	302.11	63.4	36.6	-	-
#100	0.149	375.09	78.7	21.3	-	-
#200	0.074	422.34	88.6	11.4	-	-
#270	0.053	431.36	90.5	9.5	-	-



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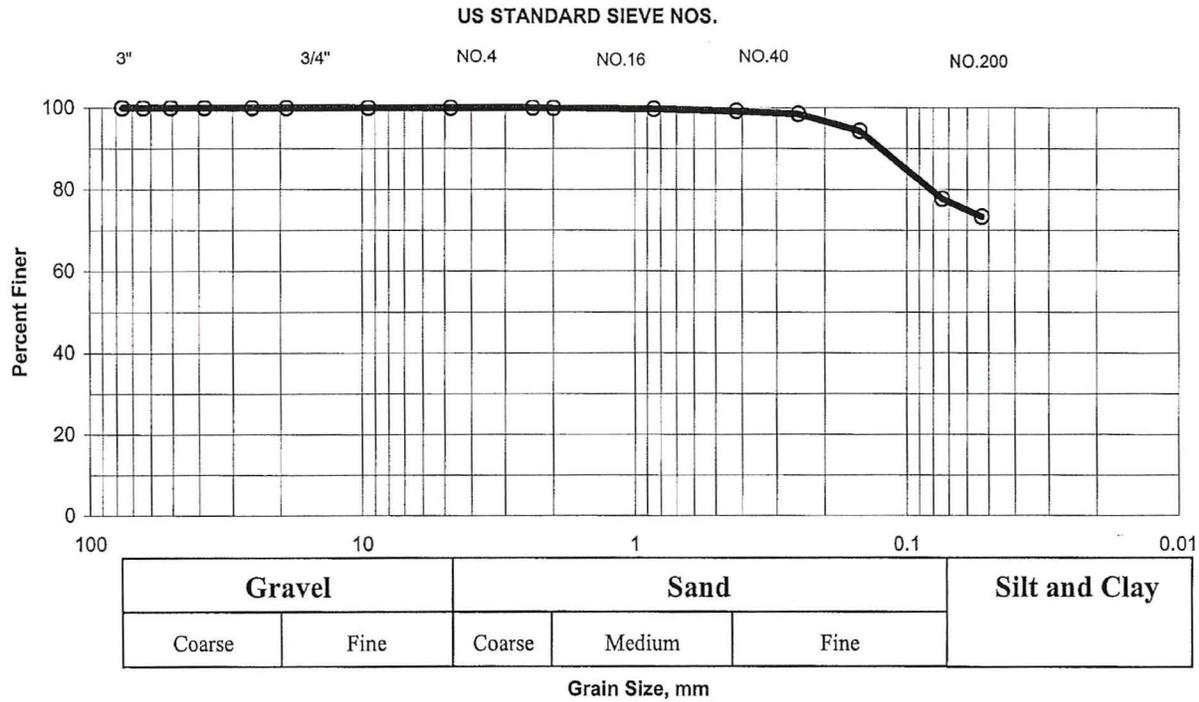
GRAIN SIZE ANALYSIS - MECHANICAL

EXHIBIT 12
PAGE 50 OF 65

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Silt with sand
Tested By MS	Location Onsite	EB/EP No EP-12	Depth 16'	Intended Use / Specification

Wt. of moisture wet sample + Tare	440.99	Total Sample Tare	408.61
Wt. of moisture dry Sample + Tare	374.45	Total Sample wt + tare	1188.26
Wt. of Tare	101.03	Total Sample Wt	779.7
Wt. of moisture Dry Sample	273.42	Total Sample Dry Wt	627.0
Moisture %	24%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51		0.0	100.0	-	-
#4	4.76		0.0	100.0	-	-
#8	2.38		0.0	100.0	-	-
#10	2	0.3	0.0	100.0	-	-
#20	0.85	1.8	0.3	99.7	-	-
#40	0.42	4.99	0.8	99.2	-	-
#60	0.25	9.87	1.6	98.4	-	-
#100	0.149	35.63	5.7	94.3	-	-
#200	0.074	139.89	22.3	77.7	-	-
#270	0.053	167.22	26.7	73.3	-	-



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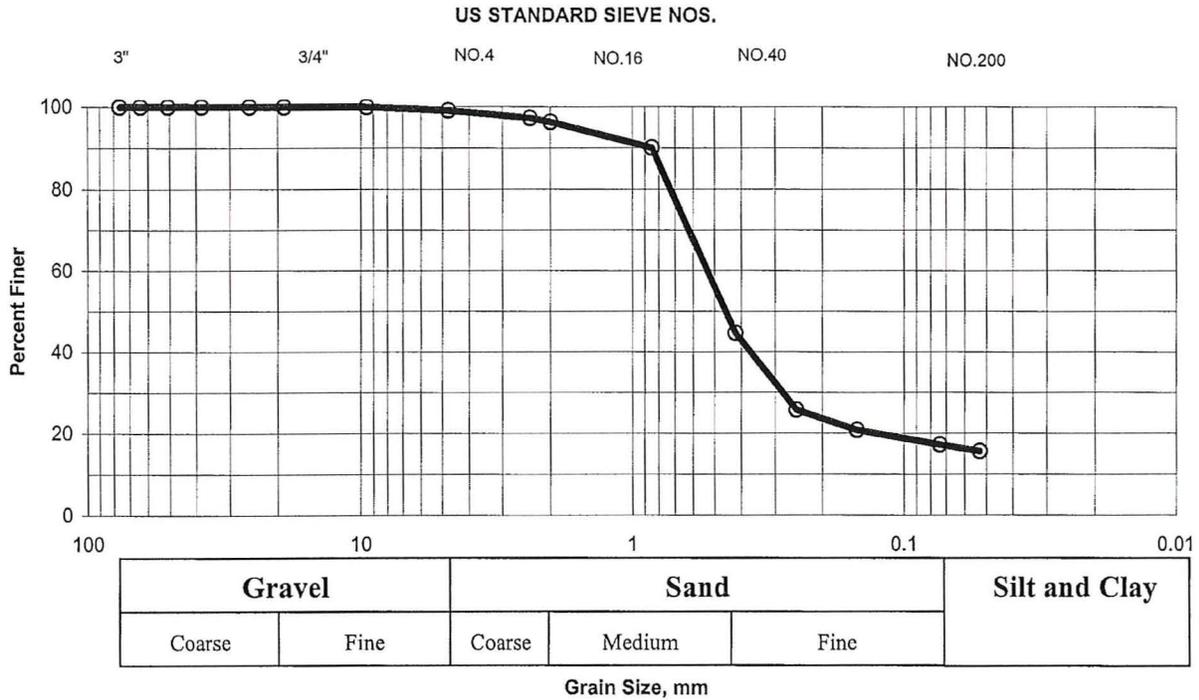
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GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand trace gravel little silt
Tested By MS	Location Onsite	EB/EP No EP-13	Depth 13'	Intended Use / Specification

Wt. of moisture wet sample + Tare	408.4	Total Sample Tare	391.15
Wt. of moisture dry Sample + Tare	387.85	Total Sample wt + tare	1111.71
Wt. of Tare	97.62	Total Sample Wt	720.6
Wt. of moisture Dry Sample	290.23	Total Sample Dry Wt	672.9
Moisture %	7%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51		0.0	100.0	-	-
#4	4.76	5.94	0.9	99.1	-	-
#8	2.38	18.66	2.8	97.2	-	-
#10	2	25.02	3.7	96.3	-	-
#20	0.85	66.78	9.9	90.1	-	-
#40	0.42	372.55	55.4	44.6	-	-
#60	0.25	499.8	74.3	25.7	-	-
#100	0.149	533.03	79.2	20.8	-	-
#200	0.074	556.66	82.7	17.3	-	-
#270	0.053	567.82	84.4	15.6	-	-



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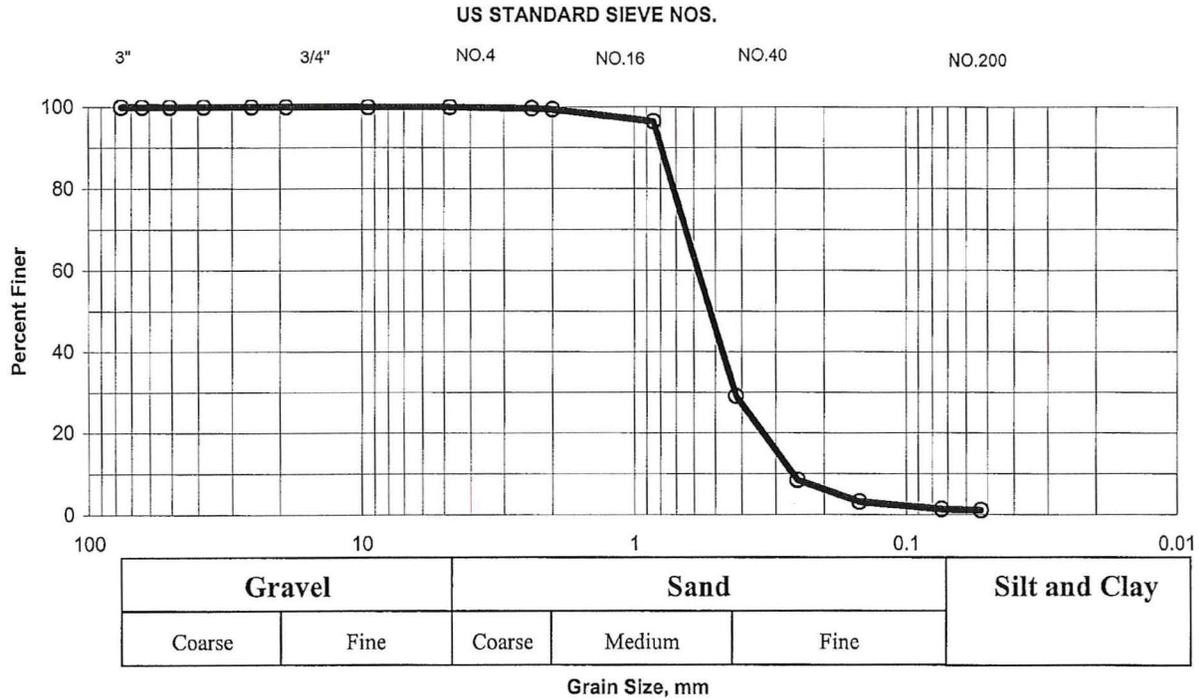
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GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand trace silt
Tested By MS	Location Onsite	EB/EP No EP-13	Depth 15'	Intended Use / Specification

Wt. of moisture wet sample + Tare	478.1	Total Sample Tare	509.67
Wt. of moisture dry Sample + Tare	464.51	Total Sample wt + tare	1282.99
Wt. of Tare	100.66	Total Sample Wt	773.3
Wt. of moisture Dry Sample	363.85	Total Sample Dry Wt	745.5
Moisture %	4%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51		0.0	100.0	-	-
#4	4.76		0.0	100.0	-	-
#8	2.38	2.51	0.3	99.7	-	-
#10	2	4.47	0.6	99.4	-	-
#20	0.85	26.43	3.5	96.5	-	-
#40	0.42	528.85	70.9	29.1	-	-
#60	0.25	682.03	91.5	8.5	-	-
#100	0.149	721.68	96.8	3.2	-	-
#200	0.074	734.88	98.6	1.4	-	-
#270	0.053	736.97	98.9	1.1	-	-



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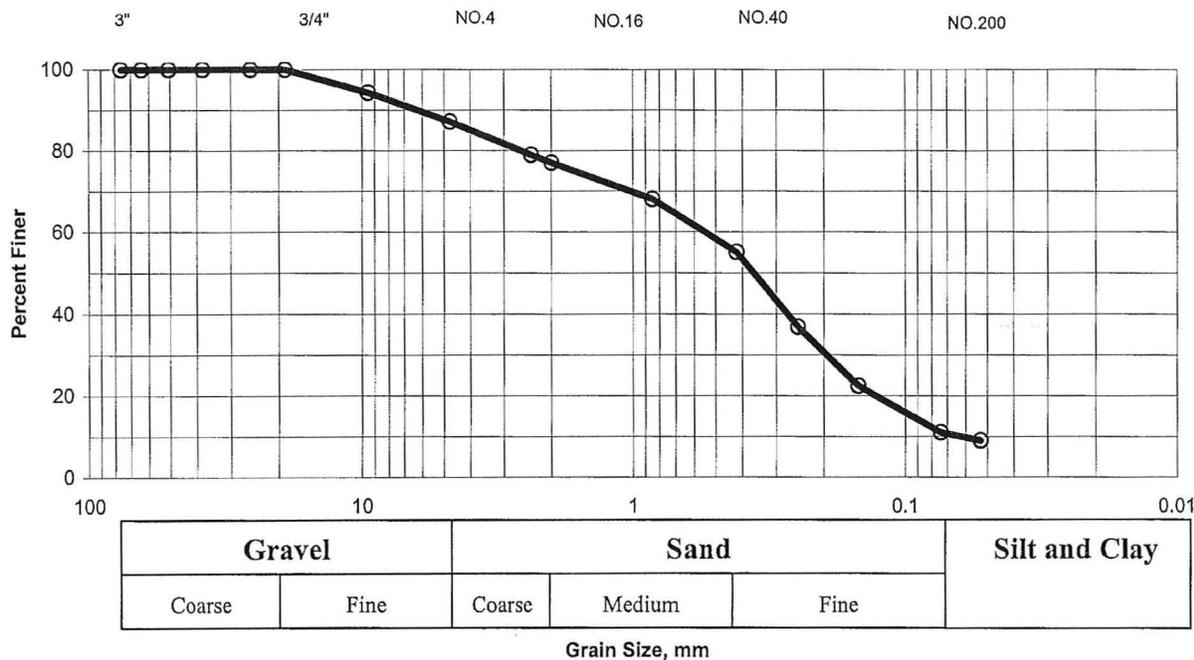
GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand few gravel few silt
Tested By MS	Location Onsite	EB/EP No EP-14	Depth 3'	Intended Use / Specification

Wt. of moisture wet sample + Tare	413.47	Total Sample Tare	343.35
Wt. of moisture dry Sample + Tare	395.2	Total Sample wt + tare	1040.36
Wt. of Tare	100.77	Total Sample Wt	697.0
Wt. of moisture Dry Sample	294.43	Total Sample Dry Wt	656.3
Moisture %	6%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	37.23	5.7	94.3	-	-
#4	4.76	84.27	12.8	87.2	-	-
#8	2.38	137.72	21.0	79.0	-	-
#10	2	150.73	23.0	77.0	-	-
#20	0.85	209.42	31.9	68.1	-	-
#40	0.42	295.11	45.0	55.0	-	-
#60	0.25	414.46	63.2	36.8	-	-
#100	0.149	508.92	77.5	22.5	-	-
#200	0.074	583.76	88.9	11.1	-	-
#270	0.053	596.92	91.0	9.0	-	-

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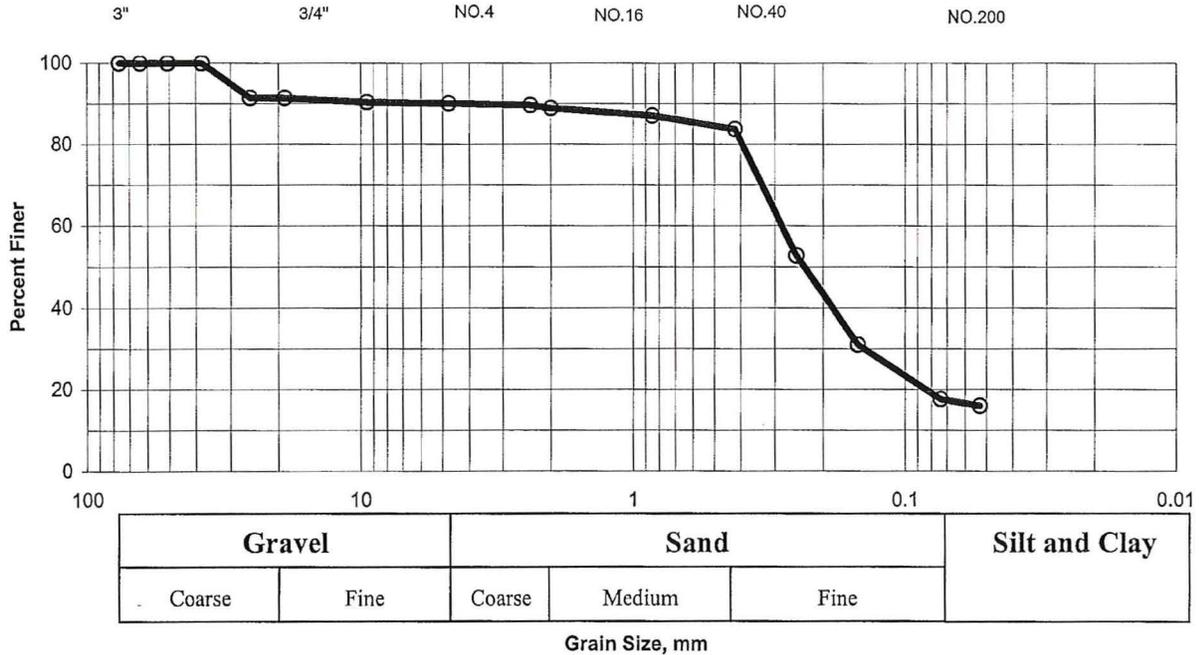
GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A	Soil Description Sand little silt few gravel
Tested By MS	Location Onsite	EB/EP No EP-14	Depth 5'
		Intended Use / Specification	

Wt. of moisture wet sample + Tare	377.66	Total Sample Tare	325.85
Wt. of moisture dry Sample + Tare	361.03	Total Sample wt + tare	1020.36
Wt. of Tare	99.81	Total Sample Wt	694.5
Wt. of moisture Dry Sample	261.22	Total Sample Dry Wt	652.9
Moisture %	6%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4	56.27	8.6	91.4	-	-
3/4	19	56.27	8.6	91.4	-	-
3/8	9.51	62.73	9.6	90.4	-	-
#4	4.76	64.68	9.9	90.1	-	-
#8	2.38	67.89	10.4	89.6	-	-
#10	2	72.3	11.1	88.9	-	-
#20	0.85	84.54	12.9	87.1	-	-
#40	0.42	106.55	16.3	83.7	-	-
#60	0.25	308.54	47.3	52.7	-	-
#100	0.149	450.98	69.1	30.9	-	-
#200	0.074	537.89	82.4	17.6	-	-
#270	0.053	548.64	84.0	16.0	-	-

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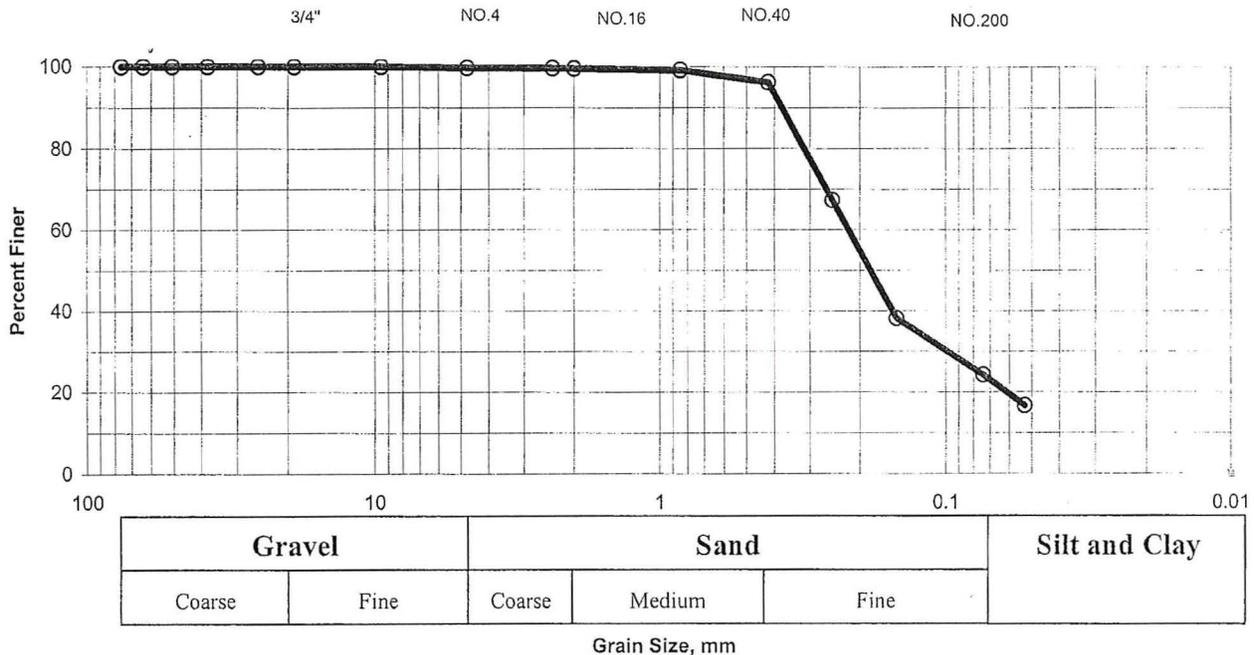
GRAIN SIZE ANALYSIS - MECHANICAL

Date 8/26/2011	Project Slocum Property	Project No. KE110151A		Soil Description Sand little silt trace gravel
Tested By JC	Location Onsite	EB/EP No IT-1	Depth 14.5'	Intended Use / Specification

Wt. of moisture wet sample + Tare	526.46	Total Sample Tare	519.2
Wt. of moisture dry Sample + Tare	447.54	Total Sample wt + tare	1070.32
Wt. of Tare	99.87	Total Sample Wt	551.1
Wt. of moisture Dry Sample	347.67	Total Sample Dry Wt	449.2
Moisture %	23%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51		0.0	100.0	-	-
#4	4.76	1.19	0.3	99.7	-	-
#8	2.38	1.8	0.4	99.6	-	-
#10	2	2.13	0.5	99.5	-	-
#20	0.85	3.77	0.8	99.2	-	-
#40	0.42	16.88	3.8	96.2	-	-
#60	0.25	146.6	32.6	67.4	-	-
#100	0.149	277.58	61.8	38.2	-	-
#200	0.074	340.23	75.7	24.3	-	-
#270	0.053	373.95	83.3	16.7	-	-

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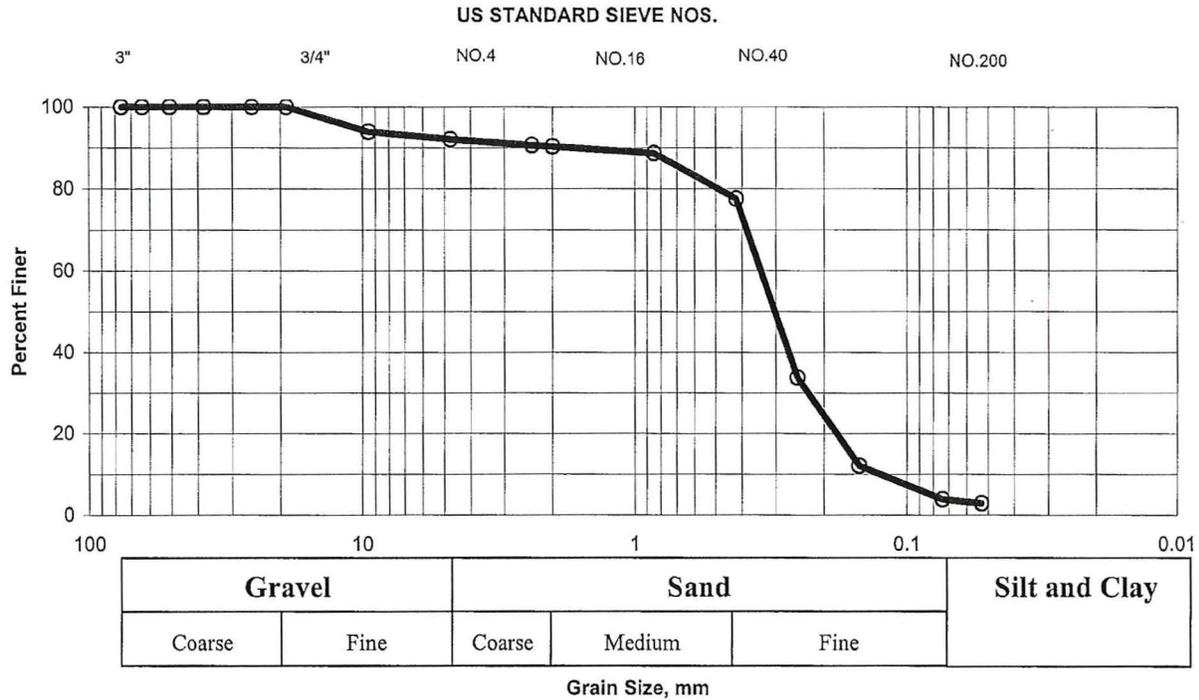
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GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand few gravel trace silt
Tested By MS	Location Onsite	EB/EP No IT-2	Depth 14'	Intended Use / Specification

Wt. of moisture wet sample + Tare	402.31	Total Sample Tare	394.14
Wt. of moisture dry Sample + Tare	390.8	Total Sample wt + tare	1009.82
Wt. of Tare	101.78	Total Sample Wt	615.7
Wt. of moisture Dry Sample	289.02	Total Sample Dry Wt	592.1
Moisture %	4%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	35.92	6.1	93.9	-	-
#4	4.76	47.07	7.9	92.1	-	-
#8	2.38	55.72	9.4	90.6	-	-
#10	2	57.46	9.7	90.3	-	-
#20	0.85	66.9	11.3	88.7	-	-
#40	0.42	132.93	22.5	77.5	-	-
#60	0.25	392.26	66.2	33.8	-	-
#100	0.149	520.77	88.0	12.0	-	-
#200	0.074	569.11	96.1	3.9	-	-
#270	0.053	574.92	97.1	2.9	-	-



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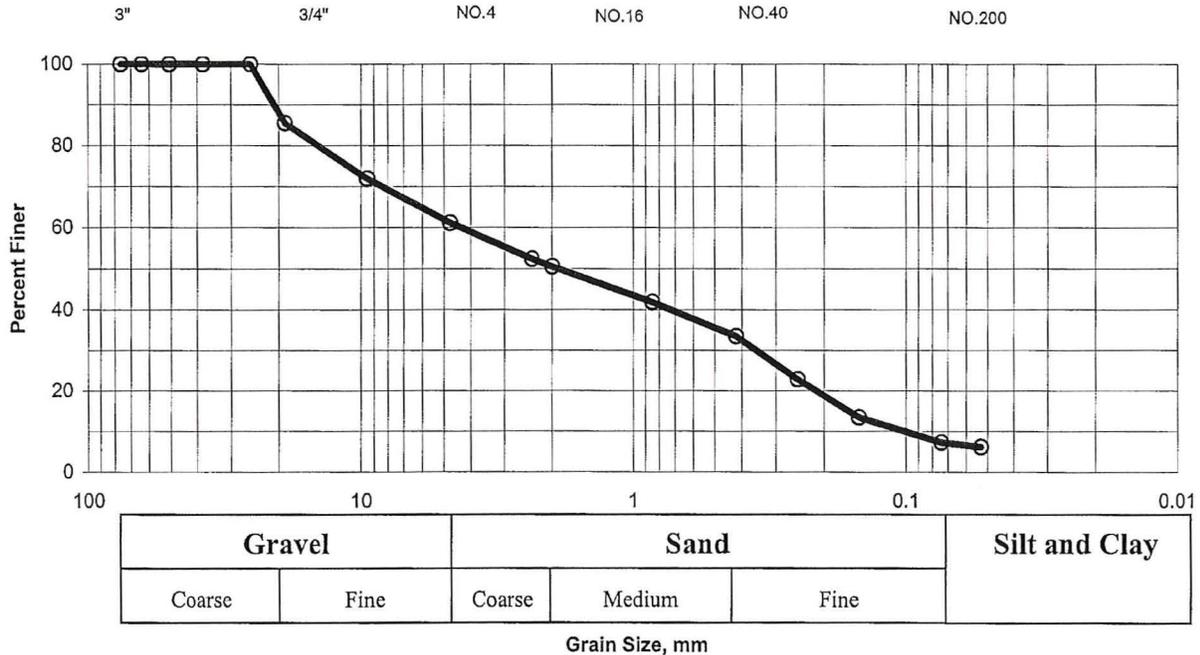
GRAIN SIZE ANALYSIS - MECHANICAL

Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A	Soil Description Sand with gravel few silt
Tested By MS	Location Onsite	EB/EP No IT-2	Depth 17'
Intended Use / Specification			

Wt. of moisture wet sample + Tare	624.97	Total Sample Tare	296.24
Wt. of moisture dry Sample + Tare	602.79	Total Sample wt + tare	1131.17
Wt. of Tare	99.2	Total Sample Wt	834.9
Wt. of moisture Dry Sample	503.59	Total Sample Dry Wt	799.7
Moisture %	4%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19	116.1	14.5	85.5	-	-
3/8	9.51	224.16	28.0	72.0	-	-
#4	4.76	310.74	38.9	61.1	-	-
#8	2.38	381.46	47.7	52.3	-	-
#10	2	395.77	49.5	50.5	-	-
#20	0.85	465.32	58.2	41.8	-	-
#40	0.42	532.03	66.5	33.5	-	-
#60	0.25	617.27	77.2	22.8	-	-
#100	0.149	692.45	86.6	13.4	-	-
#200	0.074	741.7	92.7	7.3	-	-
#270	0.053	750.77	93.9	6.1	-	-

US STANDARD SIEVE NOS.



ASSOCIATED EARTH SCIENCES, INC.

911 5th Ave., Suite 100 Kirkland, WA 98033 425-827-7701 FAX 425-827-5424

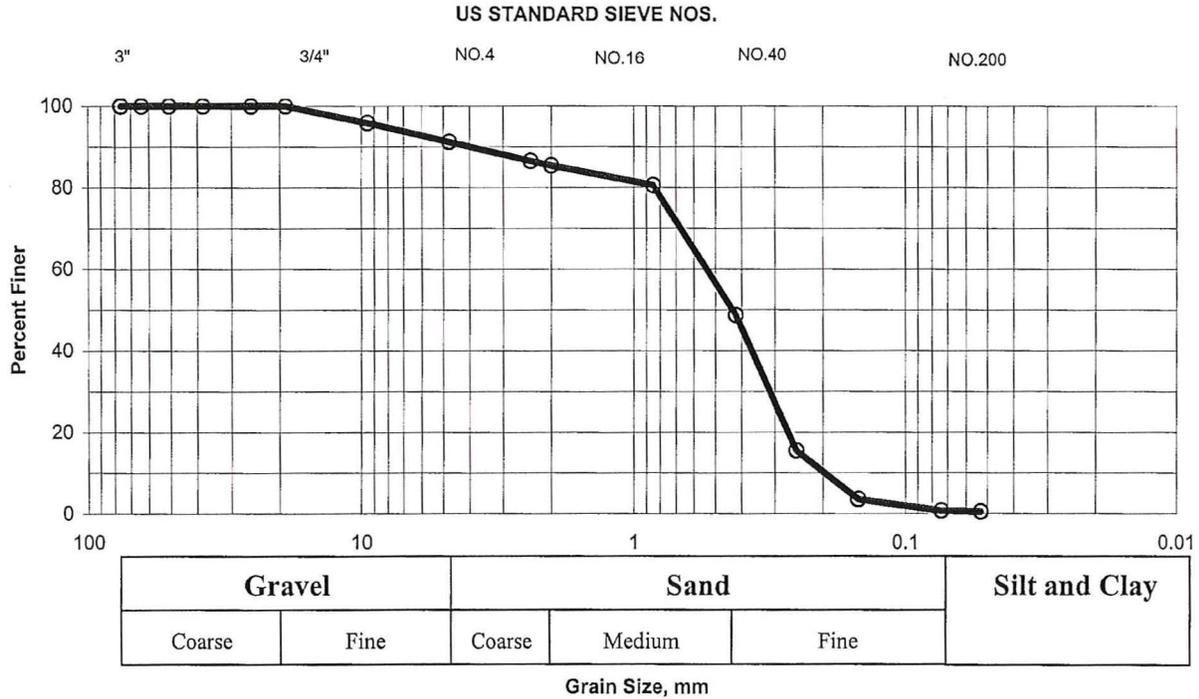
GRAIN SIZE ANALYSIS - MECHANICAL

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Date Sampled 11/14/2012	Project Slocum Property	Project No. KE110151A		Soil Description Sand few gravel trace silt
Tested By MS	Location Onsite	EB/EP No PD-1	Depth 16'	Intended Use / Specification

Wt. of moisture wet sample + Tare	507.99	Total Sample Tare	313.42
Wt. of moisture dry Sample + Tare	494.57	Total Sample wt + tare	1096.22
Wt. of Tare	100.01	Total Sample Wt	782.8
Wt. of moisture Dry Sample	394.56	Total Sample Dry Wt	757.1
Moisture %	3%		

Sieve No.	Diam. (mm)	Wt. Retained (g)	% Retained	% Passing	Specification Requirements	
					Minimum	Maximum
3	76.1		0.0	100.0	-	-
2.5	64		0.0	100.0	-	-
2	50.8		0.0	100.0	-	-
1.5	38.1		0.0	100.0	-	-
1	25.4		0.0	100.0	-	-
3/4	19		0.0	100.0	-	-
3/8	9.51	31.46	4.2	95.8	-	-
#4	4.76	66.64	8.8	91.2	-	-
#8	2.38	102.24	13.5	86.5	-	-
#10	2	110.14	14.5	85.5	-	-
#20	0.85	146.93	19.4	80.6	-	-
#40	0.42	388.58	51.3	48.7	-	-
#60	0.25	639.96	84.5	15.5	-	-
#100	0.149	730.02	96.4	3.6	-	-
#200	0.074	751.47	99.3	0.7	-	-
#270	0.053	753.26	99.5	0.5	-	-



ASSOCIATED EARTH SCIENCES, INC.

911 5th Ave., Suite 100 Kirkland, WA 98033 425-827-7701 FAX 425-827-5424

Chain of Custody No. _____

Client Name & Address: AESI 911 5 th Ave, Ste 100 Kirkland, WA 98033	Invoice To: same as client info
Contact Person: Jenny Saltonstall	Invoice Contact: Jenny Saltonstall
Phone No: 425-827-7701	PO Number: KE110151A
Fax No: 425-827-5424	Invoice Ph/Fax: 425-827-7701
E-mail: jsaltonstall@aesgeo.com	Invoice E-mail: jsaltonstall@aesgeo.com
Report Delivery: (Choose all that apply) <input checked="" type="checkbox"/> Mail / <input type="checkbox"/> Fax / <input checked="" type="checkbox"/> Email / <input checked="" type="checkbox"/> Posted Online	Data posted to online account: <input checked="" type="checkbox"/> YES / <input type="checkbox"/> NO Web Login ID:

Special Instructions:

Requested TAT: (Rush must be pre-approved by lab)
Standard RUSH (5 Day / 3 Day / 48 HR / 24 HR)

Temperature upon Receipt:

Project Name: Slocum Property

Project Number: KE110151A

Analysis Requested

AmTest ID	Client ID (35 characters max)	Date Sampled	Time Sampled	Matrix	No. of containers	Analysis Requested		QA/QC
						Cation Exchange Capacity	Organic Matter ASTM D 2974	
	EP-2 @ 3-4'	4/19/2011		SOIL		X	X	
	EP-4 @ 3-4'	4/19/2011		SOIL		X	X	
	EP-5 @ 3-4'	4/19/2011		SOIL		X	X	
	EP-7 @ 3-4'	4/19/2011		SOIL		X	X	

Collected/Relinquished By: <i>Anthony J. Peter</i>	Date 4/26/11	Time 1:50 AM	Received By: <i>Robbie</i>	Date 4/26/11	Time 1:50
Relinquished by:	Date	Time	Received By:	Date	Time
Relinquished By:	Date	Time	Received By:	Date	Time

COMMENTS:

Chain of Custody No.

Client Name & Address: AESI 911 5 th Ave, Ste 100 Kirkland, WA 98033	Invoice To: Same as client info
Contact Person: Jenny Saltonstall	Invoice Contact: Jenny Saltonstall
Phone No: 425-827-7701	PO Number: KE110151A
Fax No: 425-827-5424	Invoice Ph/Fax: 425-827-7701
E-mail: jsaltonstall@aesgeo.com	Invoice E-mail: jsaltonstall@aesgeo.com
Report Delivery: (Choose all that apply) <input checked="" type="checkbox"/> Mail / <input type="checkbox"/> Fax / <input checked="" type="checkbox"/> Email / <input checked="" type="checkbox"/> Posted Online	Data posted to online account: <input checked="" type="checkbox"/> YES / <input type="checkbox"/> NO Web Login ID:

Special Instructions:

Requested TAT: (Rush must be pre-approved by lab)
Standard RUSH (5 Day / 3 Day / 48 HR / 24 HR)
Temperature upon Receipt:

Project Name: Slocum Property		Date Sampled	Time Sampled	Matrix	No. of containers	Analysis Requested										QA/QC	
AmTest ID	Client ID (35 characters max)					Cation Exchange Capacity	Organic Matter ASTM D 2974										
6044	EP-2 @ 3-4'	4/19/2011		SOIL		X	X										
45	EP-4 @ 3-4'	4/19/2011		SOIL		X	X										
46	EP-5 @ 3-4'	4/19/2011		SOIL		X	X										
47	EP-7 @ 3-4'	4/19/2011		SOIL		X	X										

Collected/Relinquished By: <i>Smithy J. Peter</i>	Date 4/26/11	Time 1:50 PM	Received By: <i>R. Duke</i>	Date 4/26/11	Time 11:50
Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	Date	Time	Received By:	Date	Time

COMMENTS:



Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664

EXHIBIT 12
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 Professional
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Apr 30 2011
 AESI
 911 5th Ave, Suite 100
 Kirkland, WA 98033
 Attention: Jenny Saltonstall

MAY 04 2011

Dear Jenny Saltonstall:

Enclosed please find the analytical data for your Slocum Property project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
EP-2 @3-4'	Soil	11-A006044	CEC-s, OM ASTM
EP-4 @3-4'	Soil	11-A006045	CEC-s, OM ASTM
EP-5 @3-4'	Soil	11-A006046	CEC-s, OM ASTM
EP-7 @3-4'	Soil	11-A006047	CEC-s, OM ASTM

Your samples were received on Tuesday, April 26, 2011. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Method Detection Limits (MDL's), as opposed to Practical Quantitation Limits (PQL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


 Kathy Fugiel
 President

Project #: KE110151A
 PO Number: KE110151A

BACT = Bacteriological
 CONV = Conventional
 TC = Total Coliforms

MET = Metals
 ORG = Organics

NUT = Nutrients
 DEM = Demand

MIN = Minerals
 APC = Aerobic Plate Count

Am Test Inc.
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(425) 885-1664
www.amtestlab.com



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ANALYSIS REPORT

AESI
911 5th Ave, Suite 100
Kirkland, WA 98033
Attention: Jenny Saltonstall
Project Name: Slocum Property
Project #: KE110151A
PO Number: KE110151A
All results reported on an as received basis.

Date Received: 04/26/11
Date Reported: 4/30/11

MAY 04 2011

AMTEST Identification Number 11-A006044
Client Identification EP-2 @3-4'
Sampling Date 04/19/11

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Cation Exchange Capacity	3.0	meq/100g		0.5	SW-846 9081	HL	04/29/11
Organic Matter	1.2	%			ASTM D 2974	NLN	04/29/11

AMTEST Identification Number 11-A006045
Client Identification EP-4 @3-4'
Sampling Date 04/19/11

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Cation Exchange Capacity	3.8	meq/100g		0.5	SW-846 9081	HL	04/29/11
Organic Matter	1.5	%			ASTM D 2974	NLN	04/29/11

AMTEST Identification Number 11-A006046
Client Identification EP-5 @3-4'
Sampling Date 04/19/11

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Cation Exchange Capacity	3.8	meq/100g		0.5	SW-846 9081	HL	04/29/11
Organic Matter	1.4	%			ASTM D 2974	NLN	04/29/11

AESI
Project Name: Slocum Property
AmTest ID: 11-A006047

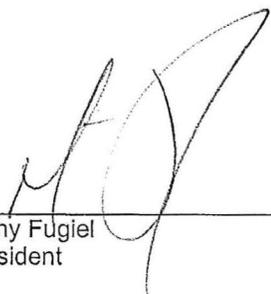


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AMTEST Identification Number 11-A006047
Client Identification EP-7 @3-4'
Sampling Date 04/19/11

Miscellaneous

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANLST	DATE
Cation Exchange Capacity	2.9	meq/100g		0.5	SW-846 9081	HL	04/29/11
Organic Matter	1.2	%			ASTM D 2974	NLN	04/29/11



Kathy Fugiel
President

QC Summary for sample numbers: 11-A006044 to 11-A006047

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
11-A006047	Cation Exchange Capacity	meq/100g	2.9	2.9	0.00
11-A006046	Organic Matter	%	1.4	1.5	6.9

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Cation Exchange Capacity	meq/100g	10.	9.8	98.0 %

BLANKS

ANALYTE	UNITS	RESULT
Cation Exchange Capacity	meq/100g	< 0.5

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664



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EXHIBIT 12
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Sample Acceptance/Compliance Check Form

Client: AESI COC # 5000 Batch Number 1172242
Project Name: Slocum Property Date Received: 4/26/11 Received By: Lynn Lake
Samples received at AmTest by: Client
Number of Coolers/Boxes Received: N/A
Temperature at time of receipt: Not Requested degrees C

	YES	NO	N/A
Were the Custody Seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Was a Chain-of-Custody provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the Chain-of-Custody filled out properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the sample containers arrive intact and in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the sample container labels agree with the custody papers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were the correct sample containers used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were the containers supplied by AmTest?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the samples within specified holding times?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were bubbles absent from any 40 mL VOA vials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Was a Trip Blank received?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Was the client contacted about any sample or COC problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are the samples FDA regulated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were the coolers/boxes decontaminated with a 10% Bleach solution?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explain any discrepancies or problems with the samples (include sample numbers):

NOTE: This form is used for all samples received by AmTest. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by method/SOP.

Client: AESI COC # 5000 Batch Number 1172242
Project Name: Slocum Property Date Received: 4/26/11 Received By: Lynn Lake