SOILTECH CONSULTANTS
Geotechnical Engineering

December 14, 2018

Hancock County Port and Harbor Commission
14054 Fred & Al Key Road
Kiln, Mississippi 39556

Attention: Mr. Bill Cork, CEO

Re: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi
Project No.: NS.14751.000.003

Dear Mr. Cork:

SoilTech Consultants has completed the preliminary geotechnical investigation for the above referenced project. This work was performed in general accordance with our proposal dated September 13, 2018. This report presents our findings, observations and preliminary recommendations regarding development of this site.

PROJECT INFORMATION

We understand that the Commission has recently acquired options to purchase adjoining parcels that are approximately two miles southeast of the intersection of US Highway 90 and Lower Bay Road in the Port Bienville Industrial Park. The combined properties are being considered for future development as the site of an industrial facility. A site location map is attached in the Appendix.

OBJECTIVES

The objectives of this geotechnical investigation included the following:

- To assess generalized subsurface conditions at widely spaced borings.
- To identify potential challenges associated with site development as an industrial facility.
- To develop preliminary recommendations related to design and construction.

SITE DESCRIPTION

The site is located about 4 miles inland from the Gulf of Mexico. Having a total surface area of about 940 acres, the various parcels consist of mostly undeveloped land.

To the west of Lower Bay Road and to the east of Road C in the Port Bienville Industrial Park, three Thian tracts reportedly total about 168 acres. Most of this land is wooded, but about one-third of the Thian tracts are grassy and open. Published mapping indicates a grass landing strip on the northernmost Thian tract. While a locked gate at the entrance to the property did not

permit entry (see Photograph 1), small farm ponds, a single-family residence and storage structures were observed on available aerial photography.

To the east of Lower Bay Road, tracts owned by Seven States Timberland, LLC, have a total area of about 772 acres. These tracts extend to the south of the intersection of Lower Bay Road and Old Lower Bay Road. Except for the northeastern end of the property off Old Lower Bay Road, these tracts are mostly wooded. Along much of these tracts, a maintained overhead utility easement approximately parallels Lower Bay Road. To the east of this overhead utility easement, a natural gas easement (see Photograph 2) extends north-south. Within the southern half of the Seven States Timberland property, a rail line with several rail spurs are located approximately east-west across the subject property, and an at-grade rail spur crossing at Lower Bay Road is located about 400 feet southeast of the intersection of Lower Bay Road and Port and Harbor Drive. To the south of the rail spur, an easement for overhead utility lines extend approximately northeast from Lower Bay Road. An approximately one-acre pond is present near the southeasternmost property corner (see Photograph 3). While unconfirmed, the pond's location and shape suggest the pond is manmade.

A private residence is located to the north of the site limits off Old Lower Bay Road. However, besides industrial facilities to the west and south of the Thian parcels, aerial photography provided by Google Earth indicates the properties that border the site to the east and south are mostly wooded and undeveloped.

Photograph 1 – Pond and Pasture to West of Boring S-2

Based on published topographic mapping, the Thian parcels have ground surface elevations between +2 and +10 feet. Along the approximately northern third of the Seven States Timberland property, the existing ground surface elevations appear to vary from about +5 to +10 feet. The remainder of the Seven States Timberland tracts typically have ground elevations between about +10 and +15 feet.

Stormwater drainage across the project site is generally poor. During our site visits, areas of standing water or wet surface soils (see Photograph 2) were observed irregularly throughout the site. Extending approximately east-west across the northern end of the site footprint, an unnamed creek feeds into Mulatto Bayou near the western project limits. This creek is directed

through a culvert under Lower Bay Road about 1,500 feet south of the intersection of Old Lower Bay Road and Lower Bay Road.

Photograph 2 – Standing Water at Gas Pipeline Easement Near Boring S-4

Photograph 3 – Pond at Southeastern Corner of Project Limits

LITERATURE REVIEW

GEOLOGIC SETTING

Based on published mapping, the site is located within the coastal deposits of the Mississippi Gulf Coast. This sediment is geologically young and characterized by a cross bedded mixture of silt, sand, gravel and clay. Limestone may also be present at depth. The sediments of coastal deposits lack regional lithologic layering and tend to be discontinuous and variable in thickness.

SOIL SURVEY

According to the United States Department of Agriculture's Natural Resources Conservation Service, the web soil survey indicates that the upper 5 feet of the site consists of a mixture of silt (ML), clay (CL-ML, CL) and sand (SM, SC-SM, SC). Seasonal high groundwater is typically within a couple feet of natural grades. Indicative of some corrosivity potential, most of the site's upper soils reportedly have pH values of about 4.5 to 5.

SUBSURFACE EXPLORATION

Field Investigation

The field investigation included a limited "windshield" review from mostly paved roadways by a geotechnical engineer and four geotechnical borings along/near unpaved roads as shown on the Boring Location Map in the Appendix. The borings were drilled by SoilTech in late November 2018.

Each of the borings was drilled to a termination depth of 75 feet. The borings were advanced by a truck-mounted drill rig utilizing solid stem augers in the upper 10 to 20 feet prior to switching to rotary wash drilling. Upon completion, the borings were backfilled full-depth using cement grout.

The borings were located in the field by measurement from existing features and GPS. Elevations of the borings were estimated from Google Earth topographic data. The locations and elevations of the borings should be considered accurate only to the degree implied by the methods used in their determination.

In each boring, split-spoon samples were obtained on regular intervals via the Standard Penetration Test procedure (ASTM D1586). Auger cuttings from within one foot of the ground surface were also collected in each boring. A portion of each sample was sealed in a plastic jar at the time of sample collection.

Laboratory Testing

Laboratory testing performed as part of this preliminary exploration included determinations of natural moisture, Atterberg limits, grain-size distribution (i.e., percentage of fines), pH, resistivity and soluble sulfates. These test results are attached in the Appendix.

Laboratory testing was assigned and mostly performed by SoilTech to confirm visual soil classifications and to assess representative physical and mechanical properties. SoilTech's subcontract laboratory, Waypoint Analytical, performed the determinations of soluble sulfates.

GENERALIZED SUBSURFACE CONDITIONS

The logs represent our interpretation of subsurface conditions based on field logs, laboratory test results and visual examination of recovered samples. The interface between strata on the logs should be considered approximate. The transition between materials may more gradual than is indicated on the logs. Information on actual subsurface conditions exists only at the specific boring locations and is relevant only to the time the subsurface exploration was performed.

Generalized Stratigraphy

Besides a few inches of sand/gravel fill along some of the site's unpaved roads, the generalized stratigraphy from the SoilTech borings consists of irregular layers/zones of loose to medium dense sand and firm to stiff clay over dense to very dense sand at depths of about 47 feet or more.

Typically, the encountered fine-grained clayey soils in the borings were determined to have Unified Soil Classification System designations of CL and CH. Sand seams were often identified within the sampled fine-grained soils. Sampled coarse-grained soils had USCS designations of SC, SC-SM, SM, SP-SM and SP. Measured SPT N-values in fine- and coarse-grained soils above a depth of about 50 feet often varied between 5 and 15 blows per foot. Except for the 2 bpf measured between depths of 23.5 and 25 feet in Boring S-1, all SPT N-values recorded during this investigation were 5 bpf or greater.

The top of dense to very dense sand varied between a minimum depth of about 47 feet at Boring S-1 to a maximum depth of about 56 feet at Boring S-4. SPT N-values in this deeper sand stratum were typically measured between about 50 and 100+ bpf. While dense to very dense sand extended to the borings' termination depth of 75 feet in three of the borings, clay (CH) with silty sand seams was sampled below this sand between depths of about 72 and 75 feet.

Subsurface cross sections, boring logs and a soil classification chart are attached in the Appendix. Subsurface cross sections (A-A' and B-B') have been prepared to better illustrate the site's apparent subsurface variability.

Groundwater

Each of the borings were begun using augers to a depth of about 10 to 20 feet before extracting the augers and measuring the groundwater level in the borehole. The groundwater level was assessed again after an observation period of at least 15 minutes before introducing potable water into the borehole to perform rotary wash drilling. Once completed the boreholes were backfilled full-depth with cement grout, and additional groundwater observations over time could not be obtained.

Consistent with reported soil survey data, a shallow groundwater table appears to be present across the site. Groundwater measurements obtained in the boreholes are tabulated below. Fluctuations in rainfall, evaporation, construction activity, surface runoff and other site-specific factors could cause groundwater elevations at the time of construction to vary from those observed during the SoilTech subsurface exploration.

Summary of Groundwater Measurements			
Boring	***Depth of Water Level (feet)***		***Elapsed Time to Final Reading***
	Initial	***Final***	***(hours)***
S-1	11	8	0.5
S-2	7	3	0.5
S-3	12.5	12.5	0.75
S-4	8.5	8.5	0.75

Seismic Considerations

According to the *International Building Code (2012)*, the seismic class of a site is based on the properties of the upper 100 feet of soil and/or rock. Per this reference, this site's seismic class is considered Type D.

The borings for this preliminary exploration did not extend to a depth of 100 feet, but we consider it probable that the soil between depths of 75 and 100 feet will support assignment of this seismic class to the site for final design.

Corrosivity Potential

Two shallow soil samples were selected for determinations of soluble sulfate content, resistivity, and pH. Although one sample's pH was less than 5.0, the test results in the table below suggest that the site's upper soils present a mildly corrosive environment for Portland cement concrete and steel.

Corrosion Potential Testing Results				
Boring	***Depth (feet)***	***pH***	***Resistivity (Ω-cm)***	***Soluble Sulfate (ppm)***
S-2	1.5-3	4.3	26,000	<100
S-3	1.5-3	6.0	19,000	<100

GEOTECHNICAL CONSIDERATIONS

The results of the preliminary subsurface investigation lead us to conclude that the site can accommodate development as an industrial facility with engineered solutions for the site-specific geotechnical and construction challenges. As discussed below, specific items that warrant consideration during the planning and design phase include the following: poorly draining surface soils, shallow groundwater, and mild corrosivity potential.

Raising site grades and/or incorporating drainage ditches/canals are recommended as means of addressing poor surface drainage. Compaction of fill immediately over existing grades may prove challenging where surface soils are or become unstable because of difficulty in directing stormwater off the site. Measures to address locally unstable soils prior to placing structural fill should be anticipated.

Shallow groundwater is anticipated to infiltrate excavations. This will impact both temporary construction measures associated with buried features, such as foundations, and may also cause buoyancy concerns for any buried vaults/tanks.

While corrosion is not anticipated to be a significant concern for elements below the seasonal low groundwater table, construction elements in contact with the site's near surface soils may warrant various protection measures to minimize potential for corrosion degradation.

Additional site development considerations would include the rate of settlement of in-place soils where site grades are raised. Selection of shallow or deep foundations for specific structural elements will be largely based on deflection requirements.

PRELIMINARY RECOMMENDATIONS

Site Preparation

Site preparation is a key aspect of the performance of new construction. Factors that must be addressed include removal of objectionable materials present at the site, clearing and stripping of vegetation, discovery and mitigation of unstable or unsuitable soils, proper placement of fill materials, and establishment/control of surface drainage.

After removal of objectionable materials and prior to placement of fill, foundations, or pavements, the exposed subgrade should be evaluated to verify stability. This can be accomplished by proof rolling. Proof rolling should be performed with a minimum of two passes by a fully-loaded dump truck or other suitable vehicle approved by the geotechnical engineer of record. After proof rolling, areas that rut or "pump" may require mitigation. Options for mitigation are provided below.

The near-surface soils at this site are sensitive to increases in moisture content and have a tendency to lose strength and become unstable as the moisture content increases or as a result of construction traffic. As such, we suggest construction at this site take place during an extended dry period.

Mitigation of Unstable Soils

Given the shallow groundwater conditions anticipated across much of the site, subgrade soils may be or become wet and locally unstable. Optimal solutions may differ across the site based on grading requirements and localized conditions. Some options for mitigation of unstable soils are presented below.

Moisture Conditioning of In-Place Soils: This consists of processing the unstable soil in-place to reduce the moisture content. Generally, if the unstable soil is about 12 inches or less in depth, the materials could likely be scarified with a disc or similar and aerated in-place to reduce the moisture content prior to compaction. This approach will likely be problematic at lower areas of this site unless measures are taken to improve surface drainage.

Removal and Replacement: This consists of excavation of the unstable soils and exposing a stable surface that is capable of the placement of structural fill with compaction and stability.

Like moisture conditioning, excavations near or below groundwater may result in a weakening of otherwise stable soils such that this approach may produce mixed results.

Chemical Stabilization of In-Place Soils: Chemical stabilization of the subgrade soils could be accomplished by mixing hydrated lime or Portland cement with in-place soils. Because the subgrade soils appear to typically be fine-grained, a thorough mixing of hydrated lime into the upper 12± inches of exposed subgrade may be used to create a stable subgrade. The chemically treated soils should be compacted to a minimum of 98% of the Standard Proctor (ASTM D698) density. Because of surface soil variability, the rate of lime application will likely vary between about 5% and 7% by volume.

Bridging with Select Granular Fill, Geogrid and/or Woven Geotextile: Unstable soils may be bridged using a bidirectional geogrid and/or woven geotextile and granular bridge lift. Estimated quantities of bridging materials may be more accurately estimated upon completion of the final subsurface exploration and preliminary facility design.

Structural Fill Materials

Structural fill should be free of deleterious materials. For new embankment, we recommend limiting the maximum values for liquid limit and plasticity index to 45% and 15%, respectively. Select granular fill should generally be limited to materials that classify as a clean to silty sand (SM, SP, SP-SM). Loose lifts of fill should be placed no thicker than 9 inches. In general, we recommend that the compactive effort of each lift produce a minimum compaction of 98% of the Standard Proctor density with the placed moisture content within ±3% of the Standard Proctor's optimum moisture content. Based on earthwork and performance requirements, additional fill material and compaction requirements may be required during final design.

Slopes

Our preliminary recommendation is that permanent slopes be limited to 3H:1V or flatter to ensure stability, limit erosion effects, and provide ease of access for mowers, if applicable. Because of the shallow groundwater table, the use of steepened fill slopes may require select granular fill, geosynthetic reinforcement, or both. Permanent slopes should be evaluated and designed after additional subsurface exploration is performed.

Excavations and Dewatering

The excavations necessary for construction should be made in compliance with OSHA regulations. The federal regulations require that excavations be performed in a manner and method that would not place employees at risk in case of an excavation cave-in. Further, these regulations require that all excavations five feet or greater in depth be sloped, sheeted, braced or shored to prevent the risk of a cave-in. The Contractor is fully responsible for the design, construction and maintenance of safe temporary slopes and shoring.

Drainage ditches and/or sump and pump methods are anticipated to be adequate to remove surface water that may accumulate in shallow excavations. For excavations deeper than about five feet, groundwater control will likely become more challenging. To achieve a "dry" bottom within deeper excavations, formal design of dewatering systems will likely be required. Because of the variability of upper soils at the site, design of a dewatering system should be based on subsurface data gathered at the site of planned excavation(s).

Drainage

Finish grades around structures and pavement should be established to promote quick run-off of surface water away from the structure in all directions. Drainage should be established and maintained both during and after construction.

FOUNDATIONS

Shallow Foundations

The ultimate bearing capacities for shallow foundations bearing near existing grades are estimated to be on the order of 4,500 to 6,000 pounds per square foot. Using a factor of safety of at least 2.5, we estimate net allowable bearing pressures on the order of about 2,000 psf may be utilized for preliminary design of shallow foundations.

Bearing in structural fill above existing grades, utilization of geosynthetic reinforcement, or use of ground improvement, such as stone columns, will likely allow for the use of higher design pressures. However, deflection limitations of specific structures may dictate a reduced design bearing pressure. Based on the preliminary exploration, post-construction settlements associated with consolidation of clayey soils are not anticipated to control design bearing pressures, but a more complete subsurface exploration at planned project elements will allow for more confident prediction of settlements associated with shallow foundations.

Deep Foundations

Where large axial/lateral loads must be resisted with minimal deflections, it may be necessary to support various structural elements on deep foundations. We recommend that all considered deep foundations extend into the dense to very dense sand, which was typically first encountered between depths of about 45 and 55 feet.

In general, deep foundations should have a center-to-center horizontal spacing of at least five diameters. Greater horizontal spacing may be necessary to limit stress overlap for deep foundations subject to sizable lateral loads. Resistance to uplift will be provided by the weight of the deep foundation plus skin friction.

Drilled Shafts and Augercast Piles

Drilled shafts and augercast piles are drilled-in foundations that are filled with concrete and steel reinforcement and may be utilized for a deep foundation at this site. To maintain hole stability, drilled shaft construction at this site will require the slurry method and may also require the use of steel casing. Except in cases where limited space prevents use of a pile footing or high lateral load resistance is required, we recommend the use of augercast piles in lieu of drilled shafts as the construction method for augercast piles, coupled with installation monitoring/documentation, may be advantageous at this site.

Preliminary estimates of axial compressive capacity for a range of diameters for augercast piles for this project were calculated using the computer program *SHAFT V6.0*. Results of our analyses using representative subsurface conditions are presented in the Appendix as ultimate geotechnical capacity curves.

Driven Piles

Driven steel H-piles and pipe piles are recommended as preferred driven foundations. Prestressed concrete piles may also be employed, but the risk of pile damage due to excessive

driving stresses may be elevated where shallow zones of stiff clay or dense sand must be penetrated.

For illustrative purposes, an HP12x53 was selected for preliminary analysis of axial compressive capacity using the computer program *APile*. Results of our analyses using representative subsurface conditions are presented in the Appendix as ultimate geotechnical capacity curves. A similar range of axial compressive capacities may be anticipated for driven 12-inch diameter pipe piles. Pile penetration into the dense to very dense sand may be limited to 5 to 10 feet before driving stresses become excessive.

Capacity Verification

Regardless of the selected deep foundation, performance of load testing may allow for a reduced factor of safety, increased confidence in production pile/shaft capacity and reduced construction costs due to optimized deep foundations. Full-time construction monitoring is strongly recommended and considered imperative during installation of any deep foundation system.

We offer the following comments about load testing of deep foundations:

- Drilled shafts may be designed and constructed without load testing, but integrity testing to confirm post-pour concrete integrity is strongly recommended. Factors of safety for load resistance must be more sizable where capacity verification testing is not performed.
- The use of augercast piles will require the use of static load testing to verify adequate load transfer. A minimum of 0.5% to 1% of the production piles would likely require load testing, but a better estimate can be made during final design.
- Driven piles will require the use of test piles using pile dynamic analyzer (PDA) monitoring during driving. Restrikes of the piles are recommended to allow assessment of pile setup. PDA testing will allow for capacity assessment as well as establishment of pile driving termination criteria for production piles. Like augercast piles, the number of test piles should be determined after additional information becomes available.

Floor Slabs

We recommend the use of a vapor retarder under all floor slabs. A vapor retarder should be installed as outlined in *American Concrete Institute 302*. Specific recommendations for slab designs may be developed during the final geotechnical exploration and design phase.

Corrosivity

To control corrosivity related degradation of construction materials from exposure to possible reagents in the soil, designers may incorporate such measures as sacrificial steel, protective coatings (e.g., galvanization), sacrificial anodes, and cathodic protection systems. Selection of the appropriate mitigation measures for various project elements can be most appropriately selected after the final subsurface exploration.

PAVEMENTS

General considerations for pavements at this site will involve the impacts of shallow groundwater and saturated subgrade soils. The pavement thickness designs for various driveways and parking areas should be developed after site grading and traffic demands are

prepared. The use of geosynthetic reinforcement and/or chemical stabilization may allow a reduction in pavement section thickness.

FINAL GEOTECHNICAL EXPLORATION

Planning and Coordination

A final geotechnical exploration should be performed upon completion of a preliminary site layout/design. Additional subsurface exploration activities should include borings at all major facility elements, especially at critical structures that may have specific post-construction deflection requirements. A thorough discussion and consideration of foundation, pavement and earthwork performance requirements will be critical in appropriately tailoring the subsurface exploration.

Based on findings of a final phase subsurface exploration, it may be advantageous to avoid certain areas with problematic soils. While our borings did not encounter peat or highly organic soils, given the site's geologic setting and proximity to Mulatto Bayou, it should be remembered that such soils may be present within the project limits. Additional subsurface exploration may be used to identify potential on-site borrow areas.

Chemical Stabilization

If lime or cement stabilization is considered as a preferred means of addressing unstable surficial soils, the final subsurface exploration can further explore the required treatment volume(s).

Groundwater Characterization

The use of temporary wells should be considered during the final geotechnical exploration. We anticipate that seasonal high groundwater across the site will typically be within two to five feet of natural grades, but we recommend that additional measures be performed to confirm the variability of groundwater regimes across the site.

Shear Strength Characterization of Cohesive Soils

We recommend that the final geotechnical exploration include collection of Shelby tube samples of cohesive soils to allow for a comprehensive laboratory testing program. Selection of undrained and drained shear strength parameters may be selected with higher confidence upon completion of laboratory strength testing.

Seismic Site Class Characterization

We recommend drilling at least two additional borings to a depth of at least 100 feet to verify the assignment of seismic class D for the site.

Corrosivity Characterization

While the limited testing performed during this preliminary subsurface exploration suggests mild corrosivity potential, we understand that higher corrosion potential exists at nearby sites. Therefore, we recommend that the final phase subsurface exploration include additional characterization testing to aid identification of any necessary mitigation measures.

CONSTRUCTION CONSIDERATIONS

We recommend that a construction-monitoring program be performed by a qualified testing laboratory employed by the owner. The testing laboratory should be under the direct supervision of a registered professional engineer employed full time by the testing laboratory. Observation and documentation of construction activities is a key component to ensure construction is completed in accordance with project documents. It is not uncommon for unforeseen site conditions to be encountered or develop during construction that were not discovered during subsurface investigations.

The construction monitoring program should include (at a minimum) the observation of surface conditions subsequent to stripping and grubbing, the observation of proof rolling and any necessary mitigation, the observation and testing of placement of fill soils, verification of suitability of foundation bearing surfaces, verification that reinforcing steel is placed in accordance with project documents, the observation and testing of structural concrete, the observation and testing of structural mortar and grout, and the observation and testing of structural steel. Additionally, monitoring of deep foundation installations should be considered a critical task.

LIMITATIONS

Our services have been performed in a manner consistent with that standard of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, express or implied, and no warranty or guarantee is included or intended in this report.

CLOSURE

We appreciate the opportunity to provide our services to you. If we can answer any questions or provide additional information, please do not hesitate to contact us.

Cordially,
SoilTech Consultants, Inc.

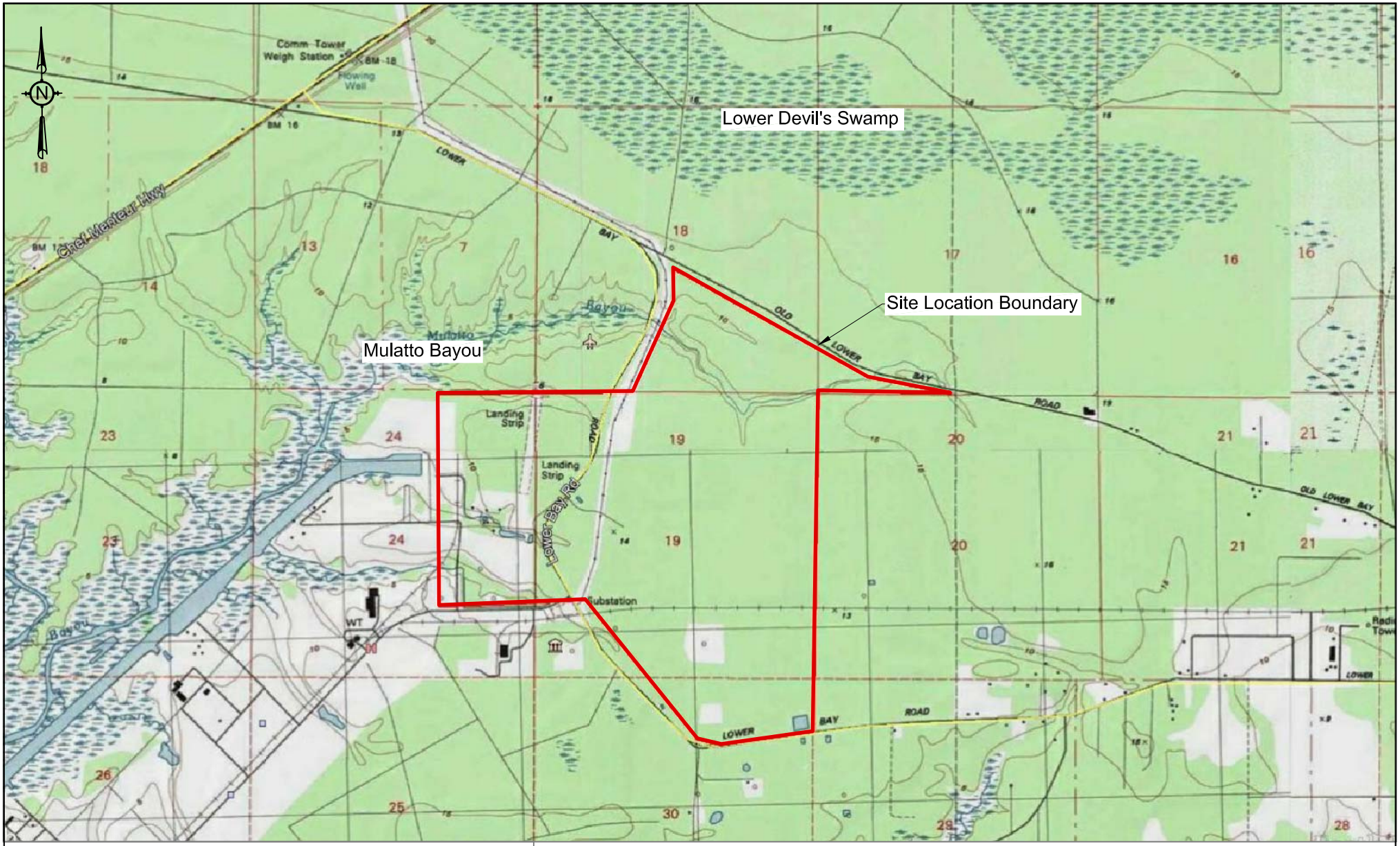
James L. Vinson, PE
Practice Leader

Barton M. Schreiner, PE
Senior Geotechnical Engineer

Copies Submitted: Digital

A P P E N D I X

Drawings
Soil Classification Chart
Boring Logs
Laboratory Test Results
Capacity Curves for Deep Foundations



APPROXIMATE SOIL BORING LOCATION COORDINATES

BORING	LATITUDE	LONGITUDE	BORING	LATITUDE	LONGITUDE
S-1	N 30° 15' 29.01"	W -89° 31' 56.44"	S-2	N 30° 14' 47.00"	W -89° 32' 42.00"
S-3	N 30° 14' 26.19"	W -89° 32' 05.07"	S-4	N 30° 14' 46.32"	W -89° 32' 21.15"

Topographic Map Source: Earth Point

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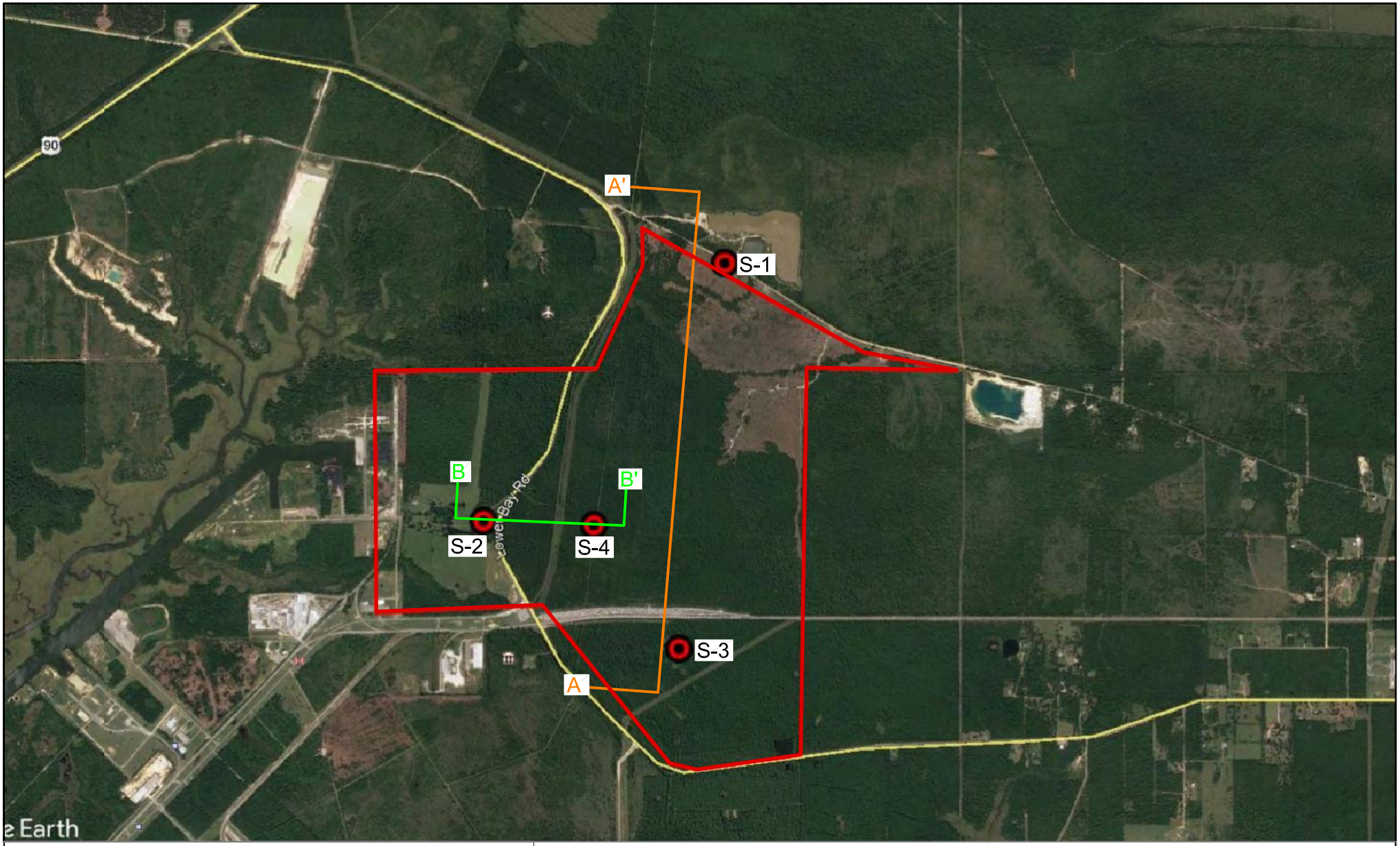
Ridgeland, MS 39157

PRELIMINARY GEOTECHNICAL INVESTIGATION
SEVEN STATES TIMBERLAND AND
THIAN PROPERTIES
HANCOCK COUNTY, MISSISSIPPI

SITE
LOCATION MAP

Project No.: NS.14751.000.003
CAD FILE NO.: Figures.dwg
Drawn By: APW
Checked By: JLV
Date: 12/12/2018
Scale: 1" ~ 2510'
Figure No.: 1



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LEGEND

- Soil Boring Location
- Soil Profile A to A'
- Soil Profile B to B'
- Site Location Boundary

Aerial Map Source: Google Earth Point

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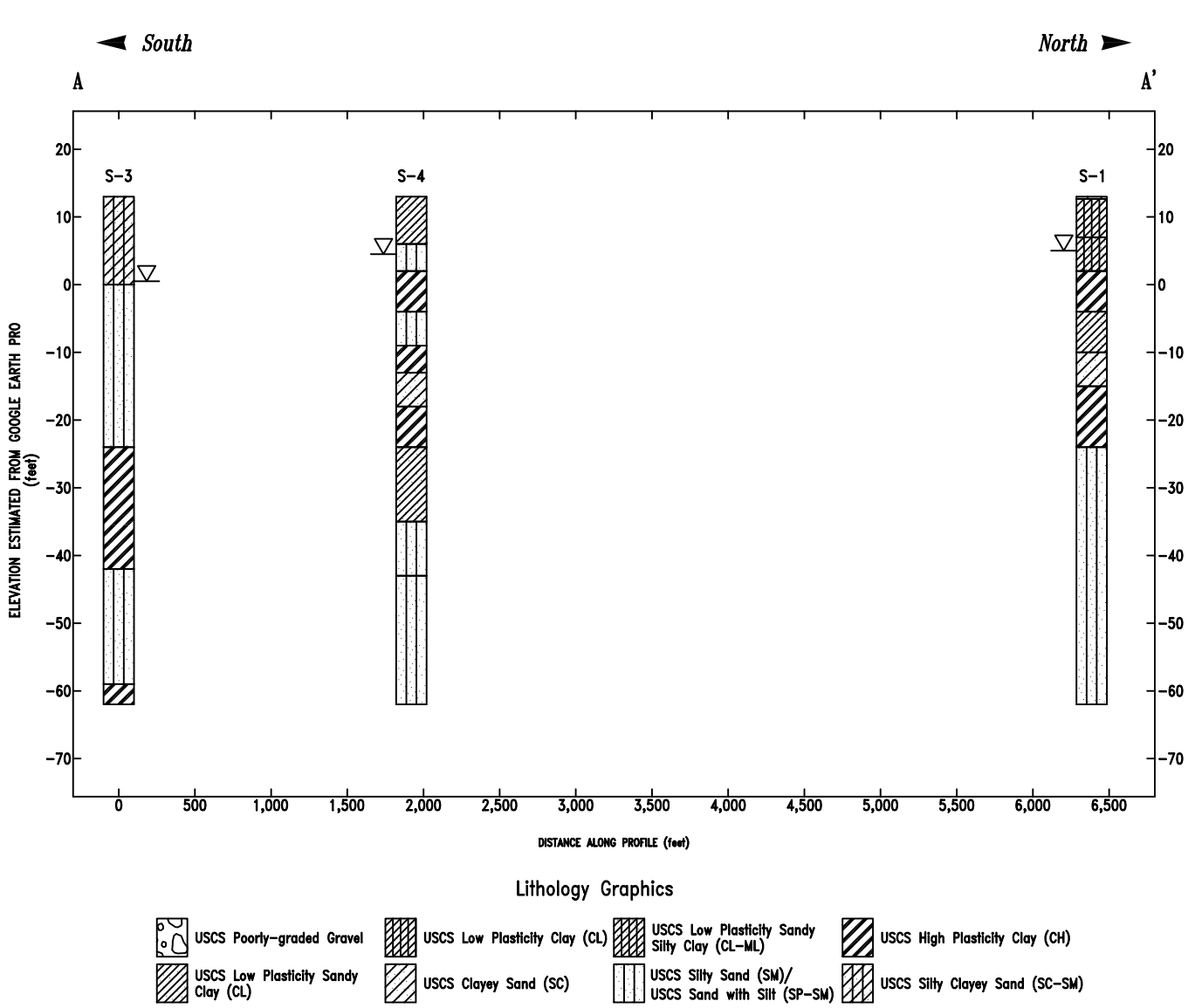
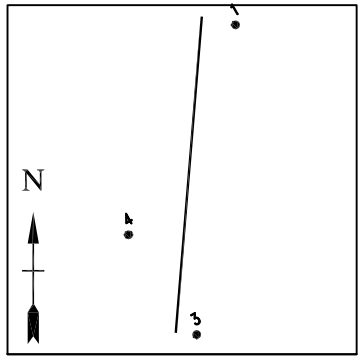
PRELIMINARY GEOTECHNICAL INVESTIGATION
SEVEN STATES TIMBERLAND AND
THIAN PROPERTIES
HANCOCK COUNTY, MISSISSIPPI

BORING
LOCATION MAP

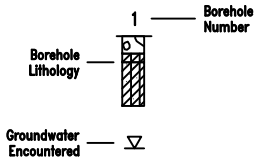
Project No.: NS.14751.000.003
CAD FILE NO.: Figures.dwg
Drawn By: APW
Checked By: JLV
Date: 12/12/2018
Scale: NOT TO SCALE
Figure No.: 2





Site Map Scale 1 inch equals 3,575 feet

Explanation



Vertical Exaggeration: 44.5x

Lithology Graphics

- USCS Poorly-graded Gravel
- USCS Low Plasticity Clay (CL)
- USCS Low Plasticity Sandy Silty Clay (CL-ML)
- USCS High Plasticity Clay (CH)
- USCS Low Plasticity Sandy Clay (CL)
- USCS Clayey Sand (SC)
- USCS Silty Sand (SM)/ USCS Sand with Silt (SP-SM)
- USCS Silty Clayey Sand (SC-SM)

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GENERALIZED SOIL PROFILE A to A'

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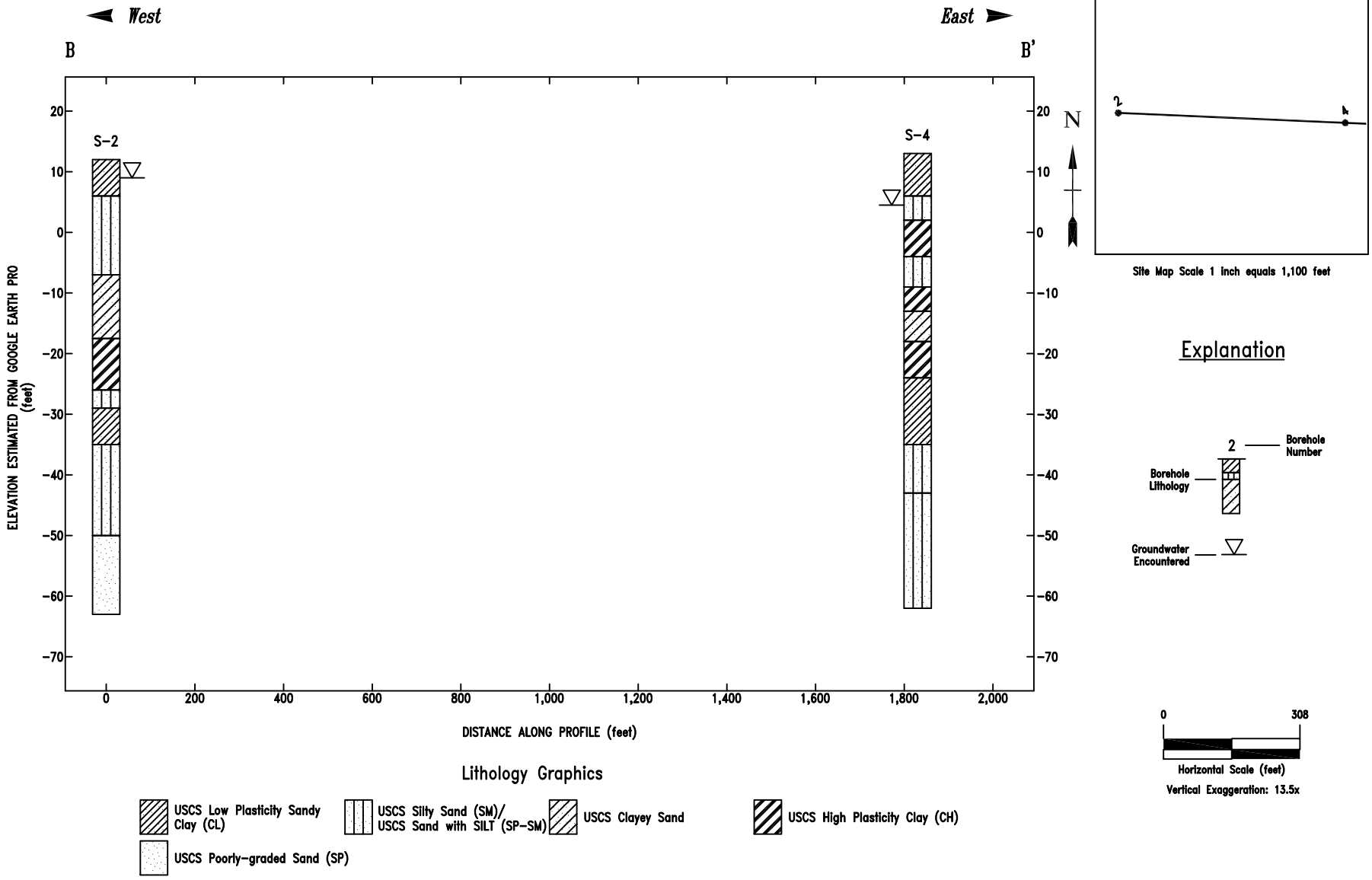
Scale: As Shown
Figure No.: 3



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GENERALIZED SOIL PROFILE B to B'

Project No.: NS.14751.000.003
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Drawn By: APW
Checked By: JLV
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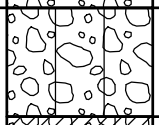
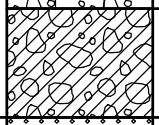
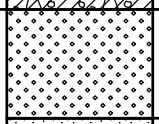
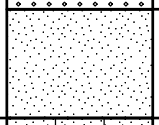
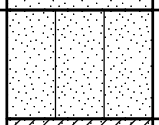
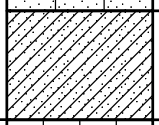
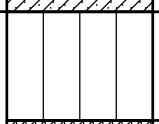
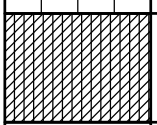
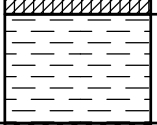
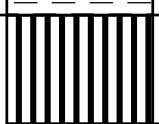
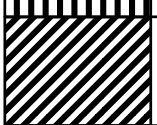
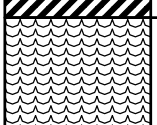
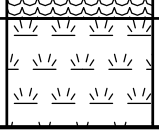
Scale: As Shown
Figure No.: 4

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOIL BORING LOG

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

No. S-1
SHEET 1 OF 2

PROJECT NO.: NS.14751.000.003
DATE: 11/19/18
DRILLER: M. Bates
TECHNICIAN: G. Jones/R. Williams
ENGINEER: J. Vinson

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

Location: 30°15'29.01" -89°31'56.44"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	% Passing No. 200
			Surface Elevation: 13 ft. MSL+/-			LABORATORY DATA				PL MC% LL 20 40 60 80	
			Gravel (4")								
			Stiff light gray and tan silty clay (CL) - with silty fine sand seams and ferrous stains	11 b/f 4-5-6		27					
5				11 b/f 4-5-6		24			29		
			Firm tan and light gray silty sandy clay (CL-ML) - with ferrous stains	5 b/f 3-2-3		28			7		
10											
			Firm light gray and tan clay (CH) - with ferrous stains	7 b/f 3-3-4		47					
15											
			Firm tan and gray sandy clay (CL) - with ferrous stains	7 b/f 4-3-4		30			23		
20											
			Very loose dark gray clayey sand (SC) - with wood	2 b/f 3-1-1		24					16.8
25											
			Firm gray clay (CH) - with wood - with shell fragments from 29.5' to 30'	5 b/f 3-3-2		62					
30											
35				8 b/f 2-5-3							
			Medium dense to very dense light gray fine to medium sand with silt (SP-SM) - with clay seams, gravel, and shell fragments	16 b/f 4-6-10							
40											
45				20 b/f 10-9-11							
				77 b/f 11-28-49							

Groundwater Observations

Groundwater encountered at 11'
Rose to 8' after 30 minutes

Advancement Method

0 - 20 ft: Machine Auger
20 - 75 ft: Rotary Wash

Abandonment Method

Boring grouted upon completion

Notes

Elevation estimated from Google Earth Pro
Blow counts determined from automatic hammer

SoilTech Consultants

NS.14751.000.003 14751.000.003.GPJ GEOTECHNICAL TEMPLATE.GDT 12/11/18

SOIL BORING LOG

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

No. S-1
SHEET 2 OF 2

PROJECT NO.: NS.14751.000.003
DATE: 11/19/18
DRILLER: M. Bates
TECHNICIAN: G. Jones/R. Williams
ENGINEER: J. Vinson

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

Location: 30°15'29.01" -89°31'56.44"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	% Passing No. 200
			Surface Elevation: 13 ft. MSL+/-							PL MC% LL 20 40 60 80	
55			**Medium dense to very dense light gray fine to medium sand with silt (SP-SM) (continued)** **- with clay seams, gravel, and shell fragments**	90 b/f 11-41-49							
60				55 b/f 13-23-32		17				●	
65				51 b/f 19-29-22							
70				62 b/f 19-28-34							
75				63 b/f 18-29-34							
			Terminal Depth at 75.0 ft								
80											
85											
90											
95											

Groundwater Observations	Advancement Method	Notes
Groundwater encountered at 11' Rose to 8' after 30 minutes	0 - 20 ft: Machine Auger 20 - 75 ft: Rotary Wash	Elevation estimated from Google Earth Pro Blow counts determined from automatic hammer
	Abandonment Method	
	Boring grouted upon completion	

SoilTech Consultants

NS.14751.000.003 14751.000.003.GPJ GEOTECHNICAL TEMPLATE.GDT 12/11/18

SOIL BORING LOG

No. S-2

SHEET 1 OF 2

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

PROJECT NO.: NS.14751.000.003
DATE: 11/20/18
DRILLER: M. Bates
TECHNICIAN: R. Williams
ENGINEER: J. Vinson

Location: 30°14'47" -89°32'42"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	PL MC% LL 20 40 60 80	% Passing No. 200
			Surface Elevation: 12 ft. MSL+/-									
			Stiff brown sandy clay (CL) **- with trace of gravel** **- light gray, red, and tan with ferrous stains below 1.5'**	12 b/f 4-5-7		19						
5				10 b/f 2-2-8		17			9			50.7
			Medium dense tan and light gray fine sand with silt (SP-SM)	16 b/f 4-7-9		23						
15				14 b/f 5-6-8		26						7.1
20			**Loose to medium dense dark gray clayey sand (SC)**	12 b/f 5-5-7		25						
25				7 b/f 2-2-5								
			- with gravel seam at 29'	7 b/f 3-3-4								
30			**Firm dark gray clay (CH)** **- with silty fine sand seams**	6 b/f 2-2-4		60			65			85.5
40			**Loose light gray and gray silty fine sand (SM)**	7 b/f 3-3-4		20			3			
45			**Firm light gray fine sandy clay (CL)**	6 b/f 2-2-4		30						
			Medium dense to very dense gray silty fine sand (SM) **- with clay seams and organics**	16 b/f 5-6-10		25						

LABORATORY DATA

Groundwater Observations

Groundwater encountered at 7'
Rose to 3' after 30 minutes

Advancement Method

0 - 10 ft: Machine Auger
10 - 75 ft: Rotary Wash

Abandonment Method

Boring grouted upon completion

Notes

Elevation estimated from Google Earth Pro
Blow counts determined from automatic hammer

SoilTech Consultants

NS.14751.000.003 14751.000.003.GPJ GEOTECHNICAL TEMPLATE.GDT 12/11/18

SOIL BORING LOG

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

No. S-2
SHEET 2 OF 2

PROJECT NO.: NS.14751.000.003
DATE: 11/20/18
DRILLER: M. Bates
TECHNICIAN: R. Williams
ENGINEER: J. Vinson

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

Location: 30°14'47" -89°32'42"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	% Passing No. 200
			Surface Elevation: 12 ft. MSL+/-			LABORATORY DATA				PL MC% LL 20 40 60 80	
55			**Medium dense to very dense gray silty fine sand (SM) (continued)** **- with clay seams and organics**	48 b/f 11-18-30							
60				67 b/f 10-18-49		20				●	
65			**Very dense gray medium to coarse sand (SP)** **- with trace of gravel**	99 b/f 41-49-50							
70				100+ b/f 30-44- 50+							
75				100+ b/f 24-41- 50+							
			Terminal Depth at 75.0 ft								
80											
85											
90											
95											

Groundwater Observations	Advancement Method	Notes
Groundwater encountered at 7' Rose to 3' after 30 minutes	0 - 10 ft: Machine Auger 10 - 75 ft: Rotary Wash	Elevation estimated from Google Earth Pro Blow counts determined from automatic hammer
	Abandonment Method	
	Boring grouted upon completion	

SoilTech Consultants

SOIL BORING LOG

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

No. S-3
SHEET 1 OF 2

PROJECT NO.: NS.14751.000.003
DATE: 11/28/18
DRILLER: J. Price
TECHNICIAN: G. Jones
ENGINEER: J. Vinson

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

Location: 30°14'26.19" -89°32'5.07"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	% Passing No. 200
			Surface Elevation: 13 ft. MSL+/-							PL MC% LL 20 40 60 80	
			Medium dense dark gray silty clayey sand (SC-SM)	11 b/f 5-5-6		14					
5				10 b/f 3-5-5		15			5		38.8
			- tan, light gray, and red below 7'	12 b/f 5-5-7		19					28.8
10											
15			**Loose to dense light gray and gray sand with silt (SP-SM)**	8 b/f 2-3-5		25					
20				16 b/f 8-7-9		20					
			- with wood from 21' to 33'								
25				22 b/f 4-10-12		24					7.1
30				30 b/f 10-14-16		24					
35				32 b/f 15-21-11							
			Firm to very stiff gray clay (CH)								
40			**- with silty fine sand seams**	6 b/f 2-3-3		51					
45				5 b/f 2-2-3		57			45		
			- with sand pockets below 46'	5 b/f 3-3-2							

Groundwater Observations
Groundwater encountered at 12.5'
No rise observed after 45 minutes

Advancement Method
0 - 20 ft: Machine Auger
20 - 75 ft: Rotary Wash

Abandonment Method
Boring grouted upon completion

Notes
Elevation estimated from Google Earth Pro
Blow counts determined from automatic hammer

SoilTech Consultants

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SOIL BORING LOG

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

No. S-3
SHEET 2 OF 2

PROJECT NO.: NS.14751.000.003
DATE: 11/28/18
DRILLER: J. Price
TECHNICIAN: G. Jones
ENGINEER: J. Vinson

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

Location: 30°14'26.19" -89°32'5.07"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	% Passing No. 200
			Surface Elevation: 13 ft. MSL+/-							PL MC% LL 20 40 60 80	
			Firm to very stiff gray clay (CH) (continued) - with silty fine sand seams and sand pockets	26 b/f 2-6-20							
55			**Dense to very dense light gray sand with silt (SP-SM)**	100+ b/f 27-35-50+		22					
60											
65				62 b/f 21-29-33							
70				45 b/f 14-21-24							5.4
			Stiff gray clay (CH) - with silty fine sand seams	9 b/f 4-5-4		50					
75			**Terminal Depth at 75.0 ft**								
80											
85											
90											
95											

Groundwater Observations	Advancement Method	Notes
Groundwater encountered at 12.5' No rise observed after 45 minutes	0 - 20 ft: Machine Auger 20 - 75 ft: Rotary Wash	Elevation estimated from Google Earth Pro Blow counts determined from automatic hammer
	Abandonment Method	
	Boring grouted upon completion	

SoilTech Consultants

NS.14751.000.003 14751.000.003.GPJ GEOTECHNICAL TEMPLATE.GDT 12/11/18

SOIL BORING LOG

No. S-4
SHEET 1 OF 2

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

PROJECT NO.: NS.14751.000.003
DATE: 11/30/18
DRILLER: J. Price
TECHNICIAN: G. Jones
ENGINEER: J. Vinson

Location: 30°14'46.32" -89°32'21.15"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	PL MC% LL 20 40 60 80	% Passing No. 200
			Surface Elevation: 13 ft. MSL+/-									
			Stiff to very stiff tan and dark gray fine sandy clay (CL) - red, tan, and light gray below 1'	11 b/f 5-5-6		22						
5				17 b/f 3-7-10		21			17			52.0
10			**Medium dense red and light gray silty fine sand (SM)**	17 b/f 8-8-9		22						
15			**Stiff to very stiff light gray clay (CH) - interbedded with silty fine sand seam**	15 b/f 6-6-9		26			66			
20			**Medium dense red and light gray silty fine sand (SM)**	10 b/f 4-5-5		30						
25			**Firm gray clay (CH) - interbedded with silty fine sand seams**	5 b/f 4-2-3		33						
30			**Loose gray clayey sand (SC)**	5 b/f 3-2-3		25						
35			**Firm gray clay (CH)**	5 b/f 2-2-3		59						
40			**Firm gray fine sandy clay (CL)**	5 b/f 3-2-3		30			26			
45				7 b/f 3-3-4		27						
			Medium dense light gray silty fine sand (SM)	17 b/f 7-8-9		26						43.7

Groundwater Observations

Groundwater encountered at 8.5'
No rise observed after 45 minutes

Advancement Method

0 - 20 ft: Machine Auger
20 - 75 ft: Rotary Wash

Abandonment Method

Boring grouted upon completion

Notes

Elevation estimated from Google Earth Pro
Blow counts determined from automatic hammer

SoilTech Consultants

NS.14751.000.003 14751.000.003.GPJ GEOTECHNICAL TEMPLATE.GDT 12/11/18

SOIL BORING LOG

PROJECT: Preliminary Geotechnical Investigation
Seven States Timberland and Thian Properties
Hancock County, Mississippi

No. S-4
SHEET 2 OF 2

PROJECT NO.: NS.14751.000.003
DATE: 11/30/18
DRILLER: J. Price
TECHNICIAN: G. Jones
ENGINEER: J. Vinson

CLIENT: Neel-Schaffer, Inc.
Hattiesburg, Mississippi

Location: 30°14'46.32" -89°32'21.15"

Depth (ft)	Symbol	Samples	DESCRIPTION OF MATERIAL	Field Test Results	Undrained Shear Strength (ksf)	Moisture Content (%)	Unit Weight (pcf) Moist	Unit Weight (pcf) Dry	Plasticity Index PI	○ Cohesion / △ Triaxial (ksf) 1 2 3 4	PL MC% LL 20 40 60 80	% Passing No. 200
			Surface Elevation: 13 ft. MSL+/-									
55			**Medium dense light gray silty sand (SM) (continued)**	18 b/f 6-9-9								
60			**Dense to very dense gray fine sand with silt (SP-SM)** **- with clay partings and trace of gravel**	100+ b/f 27-33-50+		16						
65				53 b/f 20-24-29								
70				50 b/f 21-25-25		15						10.3
75				46 b/f 20-24-22								
			Terminal Depth at 75.0 ft									
80												
85												
90												
95												

Groundwater Observations	Advancement Method	Notes
Groundwater encountered at 8.5' No rise observed after 45 minutes	0 - 20 ft: Machine Auger 20 - 75 ft: Rotary Wash	Elevation estimated from Google Earth Pro Blow counts determined from automatic hammer
	Abandonment Method	
	Boring grouted upon completion	SoilTech Consultants

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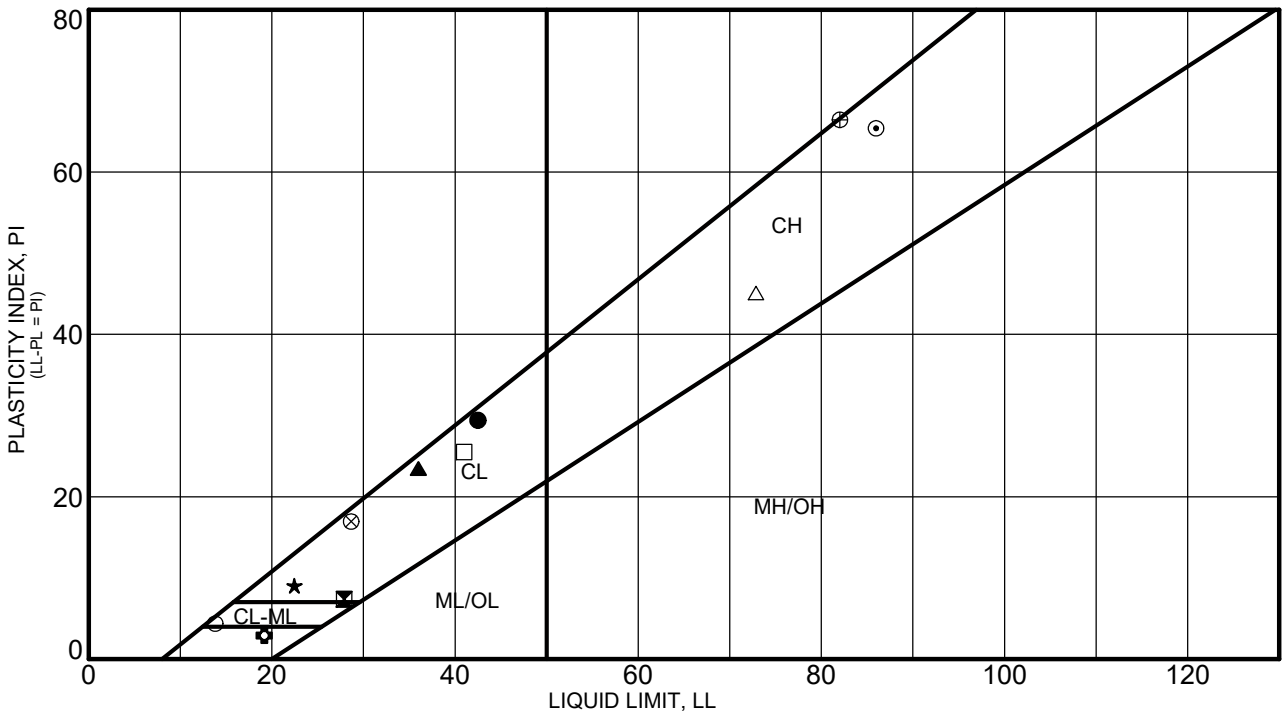
LABORATORY TEST RESULTS

Boring	Top Depth (ft)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing No. 200
S-1	1.5	27				
S-1	3.5	24	42	13	29	
S-1	8.5	28	28	21	7	
S-1	13.5	47				
S-1	18.5	30	36	13	23	
S-1	23.5	24				16.8
S-1	28.5	62				
S-1	58.5	17				
S-2	1.5	19				
S-2	3.5	17	22	13	9	50.7
S-2	8.5	23				
S-2	13.5	26				7.1
S-2	18.5	25				
S-2	33.5	60	86	21	65	85.5
S-2	38.5	20	19	16	3	
S-2	43.5	30				
S-2	48.5	25				
S-2	58.5	20				
S-3	1.5	14				
S-3	3.5	15	14	9	5	38.8
S-3	8.5	19				28.8
S-3	13.5	25				
S-3	18.5	20				
S-3	23.5	24				7.1
S-3	28.5	24				
S-3	38.5	51				
S-3	43.5	57	73	28	45	
S-3	58.5	22				
S-3	68.5					5.4
S-3	73.5	50				
S-4	1.5	22				
S-4	4.5	21	29	12	17	52
S-4	8.5	22				
S-4	13.5	26	82	16	66	
S-4	18.5	30				
S-4	23.5	33				
S-4	28.5	25				
S-4	33.5	59				
S-4	38.5	30	41	15	26	
S-4	43.5	27				
S-4	48.5	26				43.7
S-4	58.5	16				
S-4	68.5	15				10.3



	BORING NUMBER	SAMPLE DEPTH	LL	PL	PI	Classification
●	**1**	**3.5**	**42**	**13**	**29**	**Light gray and tan silty clay**
⊠	**1**	**8.5**	**28**	**21**	**7**	**Tan and light gray silty sandy clay**
▲	**1**	**18.5**	**36**	**13**	**23**	**Tan and gray sandy clay**
★	**2**	**3.5**	**22**	**13**	**9**	**Light gray, red, and tan sandy clay**
⊙	**2**	**33.5**	**86**	**21**	**65**	**Dark gray clay**
✿	**2**	**38.5**	**19**	**16**	**3**	**Light gray and gray silty fine sand**
○	**3**	**3.5**	**14**	**9**	**5**	**Dark gray silty clayey sand**
△	**3**	**43.5**	**73**	**28**	**45**	**Gray clay**
⊗	**4**	**4.5**	**29**	**12**	**17**	**Red, tan, and light gray sandy clay**
⊕	**4**	**13.5**	**82**	**16**	**66**	**Light gray clay**
□	**4**	**38.5**	**41**	**15**	**26**	**Gray sandy clay**

See Soil Boring Logs for detailed material descriptions.

SoilTech Consultants, Inc.
101 Business Park Drive, Suite A
Ridgeland, Mississippi 39157
(601)952-2995/(601)952-2944 fax

ATTERBERG LIMITS RESULTS

Project Name: Seven States Timberland and Thian Properties
Location: Hancock County, Mississippi
Number: NS.14751.000.003

ATTERBERG LIMIT CHART (HIGH PLASTICITY) 14751.000.003.GPJ GEOTECHNICAL TEMPLATE.GDT 12/11/18

SoilTech Consultants, Inc.

pH Determination for Use in Corrosion Testing

ASTM G 51

Project: Seven States **Project No.:** NS.14751.000.003

Boring No.	Sample No.	Top Depth	Description	Date	Tech.	pH		Average	Comments
S-2	2	1.5		11/29/18	AW	4.36	4.23	**4.30**	
S-3	2	1.5		12/04/18	AW	6.02	6.08	**6.05**	

Calculated By: AW Date: 11/30/2018

Checked By: LBR Date: 12/6/2018

SoilTech Consultants, Inc.

Resistivity

ASTM G 187

Project: Seven States **Project No.:** NS.14751.000.003

Boring No.	Sample No.	Top Depth	Description	Date	Tech.	Raw Data	Ohms	Resistance (Ohm.cm)	Comments
S-2	2	1.5		12/03/18	AW	2.6	10,000	**26,000**	
S-3	2	1.5		12/06/18	SE	1.9	10,000	**19,000**	

Calculated By: AW Date: 12/3/2018

Checked By: LBR Date: 12/6/2018

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00173
Soil Tech
Ms. Laura Reese
PO Box 12466
Jackson , MS 39236

Project Information : Seven States
Hancock County

Report Date : 12/06/2018
Received : 11/29/2018

Report Number : **18-333-0234**

REPORT OF ANALYSIS

Brian Herrington
Technical Director

Lab No : **69872**
Sample ID : **S-2 Sample 2 @ 1.5-3**

Matrix: **Solids**
Sampled:

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method	
Soluble Sulfate Ion	<0.010	%	0.010	1	12/06/18 11:07	BTH	MT-58	~

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

Waypoint ANALYTICAL

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00173
Soil Tech
Ms. Laura Reese
PO Box 12466
Jackson , MS 39236

Project Information : Seven States
Hancock County

Report Date : 12/14/2018
Received : 12/05/2018

Report Number : **18-339-0208**

REPORT OF ANALYSIS

Brian Herrington
Technical Director

Lab No : **70087**
Sample ID : **S-3 Sample 2 @ 1.5 - 3**

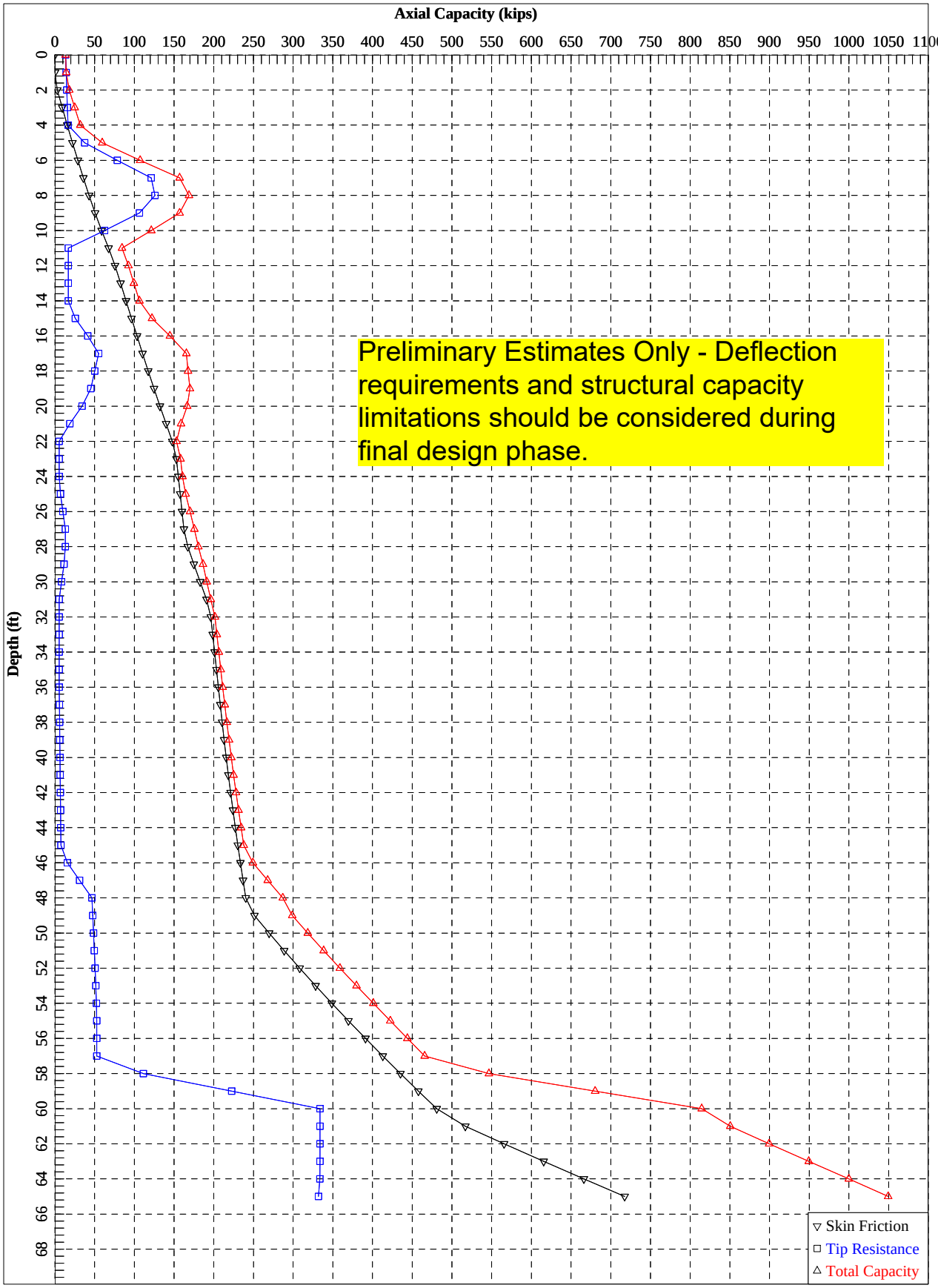
Matrix: **Solids**
Sampled:

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method	
Soluble Sulfate Ion	<0.010	%	0.010	1	12/14/18 14:34	BTH	MT-58	~

Qualifiers/ Definitions

DF Dilution Factor
MQL Method Quantitation Limit
L Limit Exceeded

ULTIMATE VERTICAL COMPRESSIVE CAPACITY
HP12x53
GENERALIZED SUBSURFACE CONDITIONS



ULTIMATE VERTICAL COMPRESSIVE CAPACITY
AUGERCAST PILES
GENERALIZED SUBSURFACE CONDITIONS