Final Report of Geotechnical Exploration
For

JEA Beverly Hills Septic Tank Phase Out Project
Proposed Sanitary Sewer Force Main
Duval County, Florida

MAE Project No. 0006-0033
June 4, 2020

Prepared for:

England-Thims & Miller, Inc.
VISION ▪ EXPERIENCE ▪ RESULTS

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June 4, 2020

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Reference: Final Report of Geotechnical Exploration
JEA Beverly Hills Septic Tank Phase Out Project
Proposed Sanitary Sewer Force Main
Jacksonville, Florida
MAE Project No. 0006-0033

Dear Mr. Kermitz:

Meskel & Associates Engineering, PLLC (MAE) has completed a geotechnical exploration for the subject project. Our work was authorized through a Technical Consulting Services Agreement effective July 3, 2019 and performed in general accordance with our revised proposal dated April 22, 2019. The purpose of the exploration was to evaluate the general subsurface conditions encountered along the proposed underground pipeline route, and to provide recommendations for pipe bedding and backfilling and site preparation. This report has been updated from the Draft report submitted November 1, 2019.

As further discussed in this report, the borings generally encountered either a topsoil layer or pavement section (asphalt surface course and limerock or Sand-Asphalt Hot Mix base course), underlain by loose to medium dense fine sands and fine sands with silt (A-3) to the boring termination depths. As exceptions, some of the borings along Oriole Street, Grant Avenue, and Ida Street encountered silty fine sands (A-2-4), clayey fine sands to sandy clays (A-2-6, A-6) near the assumed invert elevation of the proposed pipeline. These silty and clayey soils are unsuitable for pipe bedding and backfill material and will need to be removed to a minimum depth of 24 inches beneath the planned pipe invert elevation and replaced with suitable fill. However, as an alternative, a graded aggregate, conforming to ASTM No. 67 stone, with a geo fabric at the gravel/silty or clayey soil interface may be used for pipe bedding. This method is further discussed in Section 5.2 of this report. Groundwater was encountered at depths varying from 3 feet to 9 feet 9 inches at the time of drilling below the existing ground surface.

Based on our evaluation of the encountered subsurface conditions, it is our opinion that the soils encountered are adaptable to support the proposed pipeline provided the site preparation recommendations in this report are followed.

We appreciate this opportunity to be of service as your geotechnical consultant on this phase of the project. If you have any questions, or if we may be of any further service, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC
MAE FL Certificate of Authorization No. 28142

P. Rodney Mank, State of Florida, Professional Engineer, License No. 41986. This item has been electronically signed and sealed by P. Rodney Mank, P.E. on 06/04/2020 using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

W. Josh Mele, E.I.
Staff Engineer

Philip R Mank Digitally signed by Philip R Mank Date: 2020.06.04 15:50:12 -04'00'

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1.0 PROJECT INFORMATION

1.1 General

General project information contained within the JEA Solicitation No. 082-17 was reviewed for this project. In addition, specific project details and proposed utility force main routes were provided in several emails from Robert Kermitz, P.E. with England, Thims & Miller, Inc. (ETM).

1.2 Project Description

The site for the subject project is located in the neighborhood of Beverly Hills, starting at Lake Park Drive and continuing to the intersection of Ida Street and Calvin Street, in Jacksonville, Florida. The general site location is shown on Figure 1.

Based on the provided information, we understand that the Beverly Hills Septic Tank Phase-Out project will include construction of a sanitary sewer force main beginning at its connection with an existing force main on Lake Park Drive. We have assumed the pipe material will be PVC and that the embedment depth (pipe invert) will be 5 feet or less below existing grade.

From the Lake Park Drive beginning, the new pipeline continues south to Palmdale Street and then continues east to Oriole Street. The pipeline then turns south along Oriole Street to Rowe Avenue, and then continues east along Rowe Avenue to Grant Avenue where it turns south. The pipeline continues south on Grant Avenue to Ida Street and turns east. The pipeline continues along Ida Street to connect to an existing force main at the intersection of Ida Street and Calvin Street. It is also understood that the Edgewood Avenue and Lem Turner Road crossings will be accomplished with HDD methods.

If the force main alignment or other details change during development of final plans, then the recommendations in this report may need to be re-evaluated. Any changes in these conditions should be provided so the need for re-evaluation of our recommendations can be assessed prior to final design.

2.0 FIELD EXPLORATION

A field exploration was performed during the period of August 27 to September 12, 2019. Aerials obtained from Google Earth, which show the approximate boring locations, are included as the *Boring and Pavement Core Location Plan*, Figures 2A through 2E. The boring locations were determined by us and GPS coordinates were obtained from Google Earth. These locations were then submitted to ETM for approval. Once approved, our field crew marked the locations for each boring and utility locate requests were submitted to the Sunshine State One-Call Center. Once the site utilities were located and marked, our field crew mobilized to the site. Any borings that conflicted with marked utility locations were moved to resolve the conflict. The final boring locations as shown on Figures 2A through 2E should be considered accurate only to the degree implied by the method of measurement used.

2.1 Standard Penetration Test Borings

To explore the subsurface conditions along the proposed pipeline route, we located and performed 40 Standard Penetration Test (SPT) borings, drilled to depths of approximately 10 and 40 feet below the existing ground surface, in general accordance with the methodology outlined in ASTM D 1586. Upon completion, the borings were backfilled with soil cuttings or a cementitious grout and capped with an

asphaltic patch (where applicable). Split-spoon soil samples recovered during performance of the borings were visually described in the field and representative portions of the samples were transported to our laboratory for further evaluation. A summary of the field procedures is included in Appendix A.

2.2 Pavement Cores

Eight core samples of the existing pavement structure (asphalt surface, base course) were obtained at the locations shown on the *Boring and Pavement Core Location Plan* sheets, Figures 2A through 2E. Each core was drilled using a 4-inch diameter diamond coated core barrel connected to free standing mechanical drill equipment. Water was used during core sampling to cool the core barrel and to limit dust and debris generated from the coring process. The pavement layers (asphalt and base courses) were measured in the field by the field crew, and the recovered asphalt surface core samples were transported to our laboratory. Once the cores were complete, the holes were backfilled with an asphalt cold-patch material in compacted lifts. Photographs of the recovered asphalt core samples are included in Appendix C.

3.0 LABORATORY TESTING

Representative soil samples obtained during our field exploration were visually classified by a geotechnical engineer using the AASHTO Soil Classification System in general accordance with ASTM D 3282. A *Key to the Soil Classification System* is included in Appendix A.

Quantitative laboratory testing was performed on selected soil samples obtained during the field exploration to better define the composition of the soils encountered and to provide data for correlation to their anticipated strength and compressibility characteristics. The laboratory testing determined the natural moisture and percent passing a U.S. sieve (percent fines) contents of selected soil samples. The results of the laboratory testing are shown in the *Summary of Laboratory Index Test Results* included in Appendix B. Also, these results are shown on the *Generalized Soil Profiles*, Figures 3 through 12, and on the *Log of Boring* records at the respective depths from which the tested samples were recovered.

4.0 GENERAL SUBSURFACE CONDITIONS

4.1 General Soil Profile

Graphical presentation of the generalized subsurface conditions is presented on Figures 3 through 12. Detailed boring records are included in Appendix A. When reviewing the soil profiles and boring records, it should be understood that the soil conditions will vary between the boring locations.

In general, the borings encountered a surficial topsoil layer or pavement section (asphalt surface course and base course material). The encountered topsoil thicknesses ranged from 3 to 8 inches. The pavement section consisted of an asphalt surface course, approximately 1 inch to 6 ½ inches in thickness, underlain by a base course measuring 4.5 to 12 inches thick. The base course material consisted of an apparent Sand-Asphalt Hot Mix at most locations. Three locations (B-11, B-12 and B-39) encountered a commercial limerock base material. As an exception, a surficial gravel layer (rock fragments), approximately 6 inches thick, was encountered at boring B-29, which was underlain by Sand-Asphalt Hot Mix base material, also approximately 6 inches thick.

Underlying the topsoil layers and pavement sections, the borings generally encountered loose to medium dense fine sands to fine sands with silt (A-3) to the boring termination depths. Dense sands were

encountered at boring B-21 (Rowe Street) below the base material to a depth of about 6 feet below existing grade. In addition, very dense sands were encountered at boring B-33 (Ida Street) beginning at a depth of 8 feet to the boring termination depth of 10 feet below existing grade.

As exceptions, several borings along Oriole Street (B-9), Grant Street (B-28, B-29, B-30), and Ida Street (B-31, B-32, B-33, B-34, B-35, B-36, B-28, B-40) encountered clayey sands to very sandy clays (A-2-6, A-6) between depths of approximately 4 to 10 feet below the existing grade. Borings B-9 and B-14 (Oriole Street) and B-28 (Grant Avenue) encountered silty fine sands (A-2-4) from approximately 4 to 6 feet, 2 to 3 feet and 6 to 8 feet, respectively, below the existing ground surface. The relative density or consistency of the clayey sands and sandy clays was generally medium dense or firm to stiff, respectively. The silty sands were encountered with a medium dense relative density.

At the deeper boring locations, borings B-11 and B-12 (along Oriole Street) encountered firm to stiff clays with sand to very sandy clays (A-6) at depths ranging from 18.5 to 38.5 feet below the existing grade. Boring B-11 (Oriole Street) encountered medium dense silty fine sands (A-2-4) between depths of approximately 13 and 23 feet below existing grade. Boring B-37 (Ida Street) encountered medium dense to loose silty fine sands (A-2-4) between depths of approximately 23 and 33 feet below existing grade.

4.2 Groundwater Level

The groundwater level was encountered at each of the boring locations and recorded at the time of drilling at depths varying from 3 feet to 9 feet 9 inches below the existing ground surface. We note that clayey soils were encountered within several of the borings along the eastern alignment that likely inhibited stabilization of the groundwater level at the time of drilling. As a result, the stabilized groundwater level at these locations may be several inches to a foot or more higher than the groundwater levels shown on the boring logs and soil profiles. In addition, it should be anticipated that the groundwater levels will fluctuate seasonally and with changes in climate. As such, we recommend that the water table be remeasured prior to construction. Measured groundwater levels are shown the boring profiles and boring logs.

4.3 Review of the USDA Web Soil Survey Map

The results of a review of the USDA Soil Survey Conservation Service (SSCS) Web Soil Survey of Duval County are shown in the table below. There are 15 predominant soil map units at the project site. The soil drainage class, hydrological group, and estimated seasonal high groundwater levels reported in the Soil Survey are as follows:

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Depth to the Water Table[(1)] (inches)
2	Albany fine sand, 0 to 5 percent slopes	Somewhat Poorly Drained	A/D	12 to 30
7	Arents, nearly level	Somewhat Poorly Drained	A	18 to 36
14	Boulogne fine sand, 0 to 2 percent slopes	Poorly Drained	C/D	6 to 18

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Depth to the Water Table[1] (inches)
22	Evergreen-Wesconnett complex[2], depressional, 0 to 2 percent slopes	Very Poorly Drained	A/D	0
24	Hurricane and Ridgewood soils, 0 to 5 percent slopes	Somewhat Poorly Drained	A	18 to 42
32	Leon fine sand, 0 to 2 percent slopes	Poorly Drained	A/D	6 to 18
38	Mascotte fine sand, 0 to 2 percent slopes	Poorly Drained	C/D	6 to 18
40	Maurepas muck, 0 to 1 percent slopes, frequently flooded	Very Poorly Drained	A/D	0 to 6
46	Ortega fine sand, 0 to 5 percent slopes	Moderately Well Drained	A	42 to 72
58	Pottsburg fine sand, high, 0 to 3 percent slopes	Somewhat Poorly Drained	A/D	12 to 24
69	Urban land[3]	---	---	---
71	Urban land-Leon-Boulogne complex, 0 to 2 percent slopes	Poorly Drained	A/D, C/D	6 to 18
72	Urban land-Ortega-Kershaw complex, 0 to 8 percent slopes	Moderately Well to Excessively Drained	A	42 to more than 80
74	Pelham-Urban land complex, 0 to 2 percent slopes	Poorly Drained	B/D	6 to 12
75	Urban land-Hurricane-Albany complex, 0 to 5 percent slopes	Somewhat Poorly Drained	A, A/D	12 to 42

[1] The "Water table" above refers to a saturated zone in the soil which occurs during specified months, typically the summer wet season. Estimates of the upper limit shown in the Web Soil Survey are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

[2] The term "complex", as defined by the USDA, refers to a map unit consisting of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the map.

[3] The Urban land classification does not have an associated soil type, drainage class, hydrologic group, and estimated

seasonal high groundwater levels typically reported in the Soil Survey.

4.4 Seasonal High Groundwater Level

In estimating seasonal high groundwater level, a number of factors are taken into consideration including antecedent rainfall, soil redoximorphic features (i.e., soil mottling), stratigraphy (including presence of hydraulically restrictive layers), vegetative indicators, effects of development, and relief points such as drainage ditches, low-lying areas, etc.

Based on our interpretation of the current site conditions, including the boring logs and review of published data, we estimate the seasonal high groundwater levels at the boring locations to be generally 24 to 30 inches below the existing grades.

It is possible that higher groundwater levels may exceed the estimated seasonal high groundwater level as a result of significant or prolonged rains, particularly in the eastern portion of the site where the clayey soils were encountered. Therefore, we recommend that design drawings and specifications account for the possibility of groundwater level variations, and construction planning should be based on the assumption that such variations will occur.

4.5 Pavement Core Samples

The pavement section (asphalt and base courses) as encountered at the core locations were measured in the field. The recovered asphalt core samples were returned to our laboratory to verify the thickness of the asphalt layers as measured in the field, and to observe the overall condition of the asphalt samples. The measured asphalt and base thicknesses at each of the described core locations are shown in the table below:

Core No.	GPS Coordinates: Latitude and Longitude		Asphalt Thickness (in.)	Base Thickness (in) / Type
C-1	30°23'26.13"N	81°41'22.56"W	2	9 / SAHM[(1)] Base
C-6	30°23'21.10"N	81°41'13.89"W	6	8 / SAHM Base
C-10	30°23'17.31"N	81°41'8.66"W	3 ¼	6 ¼ / SAHM Base
C-16	30°23'8.29"N	81°41'1.96"W	6	6 / SAHM Base
C-21	30°23'6.19"N	81°40'54.78"W	6 ¼	6/ SAHM Base
C-27	30°23'6.79"N	81°40'46.45"W	3	6/ SAHM Base
C-33	30°23'5.38"N	81°40'37.35"W	3 ½	6 ½ / SAHM Base
C-39	30°23'9.97"N	81°40'27.07"W	1 ½	9 / Limerock

[(1)] SAHM = Sand-Asphalt Hot Mix

Based on our observations, descriptions of the obtained asphalt layer core samples are as follows:

Core No.	Comments
C-1	Core consists of one apparent layer, 2 inches thick, consisting of fine aggregate. No cracks

Core No.	Comments
	or voids were observed along the top or sides of the core.
C-6	Core consists of three apparent layers, consisting primarily of fine aggregate. The top layer measured at 1 ½ inches, the middle layer at 2 ¼ inches, and the bottom at 2 ½ inches. Small void spaces were observed along the sides of the core in the middle layer.
C-10	Core consists of three apparent layers, consisting primarily of fine aggregate. The top layer measured at ¾ inch, the middle layer at 1-inch, and the bottom at 1 ½ inches. Small void spaces were observed along the sides of the core in the middle layer.
C-16	Core consists of three apparent layers, consisting primarily of fine aggregate. The top layer measured at 1 ½ inches, the middle layer at 1 ¾ inches, and the bottom at 2 ¾ inches. Small void spaces were observed along the sides of the core at the interface of the layers.
C-21	Core consists of three apparent layers, consisting primarily of fine aggregate. The top layer measured at 1 ½ inches, the middle layer at 2 ¼ inches, and the bottom at 2 ½ inches. Small void spaces were observed along the sides of the core in the middle layer.
C-27	Core consists of two apparent layers, consisting primarily of fine aggregate. The top layer measured at 1 ⅜ inches and the bottom at 1 ¾ inches. Small void spaces were observed along the sides of the core in the bottom layer.
C-33	Core consists of two apparent layers, consisting primarily of fine aggregate. The top layer measured at 1 ¼ inches and the bottom at 2 inches. Small void spaces were observed along the sides of the core in the top layer.
C-39	Core consists of one apparent layer, consisting primarily of fine aggregate, 1 ½ inches thick, consisting of fine aggregate. No cracks or voids were observed along the top or sides of the core.

At all but two locations, the base material observed below the asphalt surface course appeared to be a Sand-Asphalt Hot Mix material. Core location C-39 encountered a commercially produced limerock material. The base materials at all core locations appeared to be relatively dry at the time of our exploration.

5.0 DESIGN RECOMMENDATIONS

5.1 General

The following geotechnical engineering evaluation and recommendations are based on the results of the field and laboratory testing performed, our experience with similar soil conditions, and our understanding of the provided project information as presented in this report. If the project information presented in this report is incorrect, please contact us so that these recommendations can be reviewed. Also, the discovery of any site or subsurface conditions during construction that deviate from the data presented herein should be reported to us for evaluation. We recommend that we be provided the opportunity to review the plans and earthwork specifications before construction to verify that our recommendations have been properly interpreted and implemented.

5.2 Pipeline and Manhole Support Recommendations

We have assumed that the planned force main will be constructed with PVC pipe material and will have an invert elevation approximately 5 feet below the existing ground surface to allow for the minimum cover requirement of 30 to 36 inches. We have assumed that manhole structures will have bottom elevations that will be 5 to 7 feet below existing grade. Based on the results of the subsurface exploration and laboratory testing as discussed in this report, we consider the subsurface conditions at the site adaptable for supporting the proposed pipeline and manhole structures when constructed upon properly prepared subgrade soils.

As discussed earlier in the report, the borings predominately encountered fine sands and fine sands with silt (A-3). However, silty sands (A-2-4), clayey fine sands (A-2-6) and sandy clays (A-6) were encountered at several boring locations along Oriole Street (B-9, B-14), Grant Avenue (B-28, B-29, B-30), and Ida Street (B-31, B-32, B-33, B-34, B-35, B-36, B-28, B-40) between depths of approximately 4 to 10 feet below the existing grade. The A-3 soils are suitable for use as pipe and structure backfill and as pipe and manhole bedding soils. These soils should be placed and compacted as discussed in Section 6.0 below.

Several borings encountered varying amounts of root fragments and organic fines. We note that excavated soils with excessive root/wood contents should be separately stockpiled for removal or sieved to remove the organics prior to reuse. The soils containing surficial organic material will require removal and are unsuitable as structural fill. The organic soils could be used in landscape berms.

The A-2-4, A-2-6 and A-6 soils are not considered suitable for support of the pipeline at the invert elevation (pipe bedding) or at the manhole structure bottom elevation, nor as backfill of the pipe or manhole excavation. It should be expected that these soils will be encountered during excavation for the pipeline and manhole structures, as well as at or near the planned pipe invert and manhole structure bottom elevations. The silty (A-2-4) and clayey (A-2-6, A-6) soils should be excavated to a depth of at least 24 inches below the pipe invert or manhole bottom elevation and should be replaced with suitable structural fill soil as described in Section 6.0 below. The silty and clayey soils should be separated from the other soils during excavation and stockpiled for removal from the site.

Alternatively, a graded aggregate conforming to ASTM No. 67 stone as noted in the JEA *Water & Wastewater Standards Manual*, latest edition, may be used and should be compacted to form a stable working surface. If the ASTM No. 67 stone will be adjacent to the silty (A-2-4) or clayey (A-2-6, A-6) soils, then a non-woven geotextile should be placed at the gravel/silty or clayey soil interface to function as a separation layer to reduce the potential for infiltration of the silt or clay fines into the gravel material.

Assuming the project information as understood at the beginning of this report is correct and provided the site preparation and earthwork construction recommendations outlined in Section 6.0 of this report are performed, the following parameters may be used for design.

5.2.1 Lateral Pressure Design Parameters

Walls for any underground structures that are backfilled on one side and restrained against rotation at the top, should be designed to resist lateral pressures from soil and groundwater based on the following equivalent fluid unit weights:

- Above Water Table - Equivalent Fluid Density 60 lb/ ft^3
- Below Water Table - Equivalent Fluid Density 90 lb/ ft^3

For the design of lateral loads on underground walls, we recommend that the groundwater level be assumed to be at the ground surface. Lateral pressure distributions in accordance with the above do not take into account forces from construction equipment, wheel loads or other surcharge loads. To account for this loading, a pressure equal to 0.5 times the anticipated surface surcharge should be applied over the full height of all walls.

5.2.2 Resisting Lateral Forces

Horizontal forces that act on pipeline structures such as thrust and anchor blocks can be resisted to some extent by the earth pressures that develop in contact with the buried perpendicular face of the block structure, and by shearing resistance mobilized along the block structures base and subgrade interface. Allowable passive earth pressure resistance may be determined using the following equivalent fluid densities:

- Above Water Table - Equivalent Fluid Density 100 lb/ft^3
- Below Water Table - Equivalent Fluid Density 60 lb/ft^3

A factor of safety of 3 was used for the above values. It is assumed the block structures are surrounded by well compacted structural backfill, as described in Section 6.4 below, extending at least 5 feet horizontally beyond the vertical bearing face. In addition, it is presumed that the block structures can withstand horizontal movements on the order of 0.5-inch before mobilizing full passive resistance.

The allowable sliding shearing resistance mobilized along the base of the block structure may be determined by the following formula:

$$P = {}^{1}/_{3} V \tan({}^{2}/_{3}\,\phi)$$

Where: P = Allowable shearing resistance force
V = Net vertical force (total weight of block and soil overlying the structure minus hydrostatic uplift forces)
ϕ = Angle of internal friction = 30°

The following unit weights can be used to calculate the weight of the overburden soil:

- Compacted Moist Soil 110 lb/ ft^3
- Saturated Soil 120 lb/ ft^3

5.2.3 Hydrostatic Uplift Resistance

It is anticipated that the buried structures will exert little or no net downward pressure on the soils; rather, the structures may be subject to hydrostatic uplift pressure when empty. Underground structures should be designed to resist hydrostatic uplift pressures appropriate for their depth below final grade and the seasonal high groundwater table. Hydrostatic uplift forces can be resisted in several ways including:

1. Addition of dead weight to the structure.
2. Mobilizing the dead weight of the soil surrounding the structure through extension of footings outside the perimeter of the structure.

A moist compacted soil unit weight of 110 lb/ft^3 may be used in designing structures to resist buoyancy.

5.2.4 Thrust Block Soil Bearing Pressure

The maximum allowable net soil bearing pressure for use in design of thrust blocks should not exceed 2,000 psf. Net bearing pressure is defined as the soil bearing pressure at the foundation bearing level in excess of the natural overburden pressure at that level. The structure should be designed based on the maximum load that could be imposed by all loading conditions.

The structure should bear in either compacted suitable natural soils or compacted structural fill. The bearing level soils, after compaction, should exhibit densities equivalent to 95 percent of the modified Proctor maximum dry density (AASHTO T-180), to a depth of at least one foot below the bearing level.

6.0 SITE PREPARATION AND EARTHWORK RECOMMENDATIONS

Site preparation as outlined in this section should be performed to provide more uniform foundation bearing conditions and to reduce the potential for post-construction settlements of the planned pipelines and associated structures.

6.1 Clearing

Prior to construction, the location of existing underground utility lines within the construction area should be established. Provisions should then be made to relocate interfering utilities to appropriate locations. It should be noted that if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion which may subsequently lead to excessive settlement of overlying structures.

It should be anticipated that up to about 6 inches of topsoil and soils containing significant amounts of organic materials, as encountered in the borings, may be encountered along the planned pipeline route. The actual depths of topsoil and surficial organic soils should be determined by MAE using visual observation and judgment during earthwork operations. The topsoil and surficial organic soils should not be reused as backfill material within the pipeline or structure excavations. However, they may be stockpiled and used subsequently in areas to be grassed.

The total thickness of the asphalt surface course varied from 1 inch to 6 ½ inches. Underlaying the asphalt layers, where encountered, the base course material was typically a Sand-Asphalt Hot Mix base 4 ½ to 10 inches thick; however, a limerock base course was encountered at four boring locations (B-10, B-11, B-12, B-39) with thicknesses varying between 6 to 12 inches. We do not recommend use of any of the pavement materials (asphalt or base) as backfill within the pipeline or structure excavations.

6.2 Temporary Groundwater Control

The groundwater level was encountered at the boring locations at depths varying from 3 feet to 9 feet 9 inches below the existing ground surface at the time of our exploration. Because of the need for excavation to the pipeline invert and manhole bottom elevations, followed by compaction of the bedding and backfill soils, it may be necessary to install temporary groundwater control measures to dewater the area to facilitate the excavation and compaction processes.

The groundwater control measures should be determined by the contractor but can consist of sumps or wellpoints (or a combination of these or other methods) capable of lowering the groundwater level to at least 2 feet below the required depth of excavation. The dewatering system should not be decommissioned until excavation, compaction, and fill placement is complete, and sufficient deadweight

exists on the structures to prevent uplift. It should be anticipated that well point installation into the dense to very dense soils, such as encountered at borings B-21 and B-33, may be difficult, and additional efforts may be necessary to adequately dewater excavations in these soils.

6.3 Preparation of Foundation Soils

As discussed earlier in the report, silty sands (A-2-4), clayey sands (A-2-6) and very clayey sands to clays (A-6) were encountered at several boring locations within depths between 4 and 10 feet below existing grade. It should be expected that these soils will be encountered during excavation for the pipeline, as well as at or near the planned pipe and manhole structure invert elevations. These soils are not considered suitable for support of the pipeline or manhole structures at the invert elevation (pipe bedding) or at the structure bottom elevation, respectively, nor as backfill of the pipe or manhole excavation. The silty and clayey soils as encountered in the borings that are within 24 inches of the pipe invert or manhole bottom should be removed to a depth of at least 24 inches below the pipe invert or manhole bottom elevation, and should be replaced with compacted structural fill soil as described in Section 6.6 below. The purpose of this is to provide more uniform bearing conditions, and to reduce the potential for post construction settlements of the pipeline and structures.

Where the pipeline or manhole structures bear in sand soils (A-3), these soils should be excavated to the proposed bearing elevation and the exposed excavation surface should be compacted as outlined in Section 6.4 below.

An alternative bedding material for the pipe or manhole structures is a graded aggregate conforming to ASTM No. 67 stone as noted in the JEA *Water & Wastewater Standards Manual*, latest edition. If the gravel will be placed adjacent to the silty (A-2-4) or clayey (A-2-6, A-6) soils as encountered in the borings, a non-woven geotextile fabric should be placed against the silty or clayey soils to function as a separation layer between the silty or clayey soil and the graded aggregate. The gravel should be placed in equal lifts not exceeding 6 inches in thickness, with each lift compacted to form a stable working surface. Once the pipe or structure is installed, the excavation should be backfilled with compacted structural backfill to final grades.

6.4 Compaction of Excavation Bottom

After installing the temporary groundwater control measures and achieving the required depth of excavation, the exposed sand soil surface should be compacted by the use of hand-operated equipment. Typically, the material should exhibit moisture contents within ±2 percent of the modified Proctor optimum moisture content (AASHTO T-180) during compaction. Compaction should continue until densities of at least 98 percent of the modified Proctor maximum dry density (AASHTO T-180) have been achieved within the upper one foot below the exposed surface within the pipeline excavation.

In areas where the clayey soils are over-excavated and backfilled with sand soils or aggregate, this initial compaction of the excavation bottom soils is not necessary.

Should the bearing level soils experience pumping and soil strength loss during the compaction operations, compaction work should be immediately terminated and (1) the disturbed soils removed and backfilled with dry structural fill soils that are then compacted, or (2) the excess moisture content within the disturbed soils allowed to dissipate before recompacting.

Care should be exercised to avoid damaging any nearby structures while the compaction operations are underway. Compaction should cease if deemed detrimental to adjacent structures.

6.5 Excavation Protection

Excavation work for the force main construction, including any manhole structures, will be required to meet OSHA Excavation Standard Subpart P regulations for Type C Soils. The use of excavation support systems will be necessary where there is not sufficient space to allow the side slopes of the excavation to be laidback to at least 2H:1V (2 horizontal to 1 vertical) to provide a safe and stable working area and to facilitate adequate compaction along the sides of the excavation. In addition, it should be anticipated that an excavation support system may be necessary to protect adjacent existing structures, pavement and/or utilities that are located along the proposed pipeline alignment.

The method of excavation support should be determined by the contractor but can consist of a trench box, drilled-in soldier piles with lagging, interlocking steel sheeting or other methods. The support structure should be designed according to OSHA sheeting and bracing requirements by a Florida licensed Professional Engineer. Where pipeline excavations and the construction of excavation support systems are within 50 feet of existing structures, the existing structures should be monitored for adverse reactions to construction vibrations and dewatering activities.

6.6 Structural Backfill and Compaction of Structural Backfill

Structural backfill placed within the pipeline excavation, and in areas in which over-excavation of unsuitable soils is required below the pipeline elevation, should be placed in loose lifts not exceeding six inches in thickness and compacted using hand-operated compaction equipment. This procedure should continue until the backfill elevation is 12 inches above the top of the pipe. At backfill elevations greater than 12 inches above the top of pipe, structural backfill may be placed in loose lifts not exceeding 12 inches in thickness and compacted by hand-operated compaction equipment.

Structural backfill placed around structures should be placed in 6-inch lifts and compacted with hand-operated compaction equipment. Heavy compaction equipment should not be used within 5 feet of structures to prevent overstressing of the structure walls.

Structural backfill is defined as a non-plastic, granular soil having less than 10 percent material passing the No. 200 mesh sieve and containing less than 4 percent organic material. The sandy soils (A-3) meeting the properties given above, as encountered in the borings, may be used as backfill.

The backfill soils should exhibit moisture contents within ±2 percent of the modified Proctor optimum moisture content (AASHTO T-180) during the compaction operations. Compaction should continue until densities of at least 98 percent of the modified Proctor maximum dry density (AASHTO T-180) have been achieved within each lift of compacted structural backfill.

We recommend that soil excavated from the pipeline trenches that will be reused as backfill be stockpiled a safe distance from the excavations and in such a manner that promotes runoff away from the open trenches and limits saturation of the excavated soil.

7.0 QUALITY CONTROL TESTING

A representative number of field in-place density tests should be made in the upper 2 feet of compacted natural soils, in each lift of compacted backfill and fill, and in the upper 12 inches below the bearing levels in the pipeline and manhole excavations. The density tests are considered necessary to verify that satisfactory compaction operations have been performed. We recommend density testing be performed

at a minimum of one location for every 300 feet of pipeline, and on alternating sides of each manhole structure.

8.0 REPORT LIMITATIONS

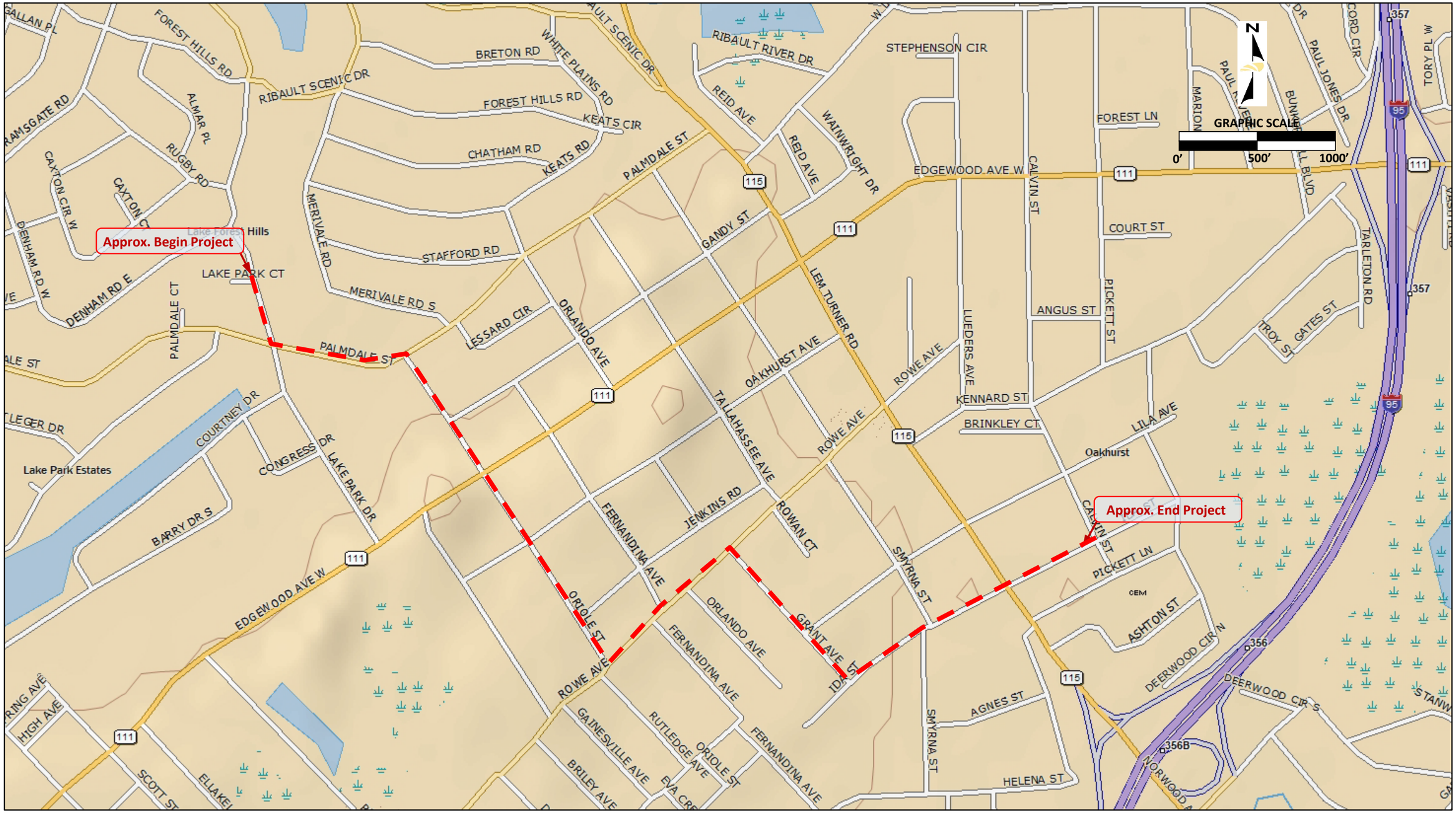
This report has been prepared for the exclusive use of ETM and the JEA for specific application to the design and construction of the *JEA Beverly Hills Septic Tank Phase Out Project*. An electronically signed and sealed version, and a version of our report that is signed and sealed in blue ink, may be considered an original of the report. Copies of an original should not be relied on unless specifically allowed by MAE in writing. Our work for this project was performed in accordance with generally accepted geotechnical engineering practice. No warranty, express or implied, is made.

The analyses and recommendations contained in this report are based on the data obtained from this project. This testing indicates subsurface conditions only at the specific locations and times, and only to the depths explored. These results do not reflect subsurface variations that may exist away from the boring locations and/or at depths below the boring termination depths. Subsurface conditions and water levels at other locations may differ from conditions occurring at the tested locations. In addition, it should be understood that the passage of time may result in a change in the conditions at the tested locations. If variations in subsurface conditions from those described in this report are observed during construction, the recommendations in this report must be re-evaluated.

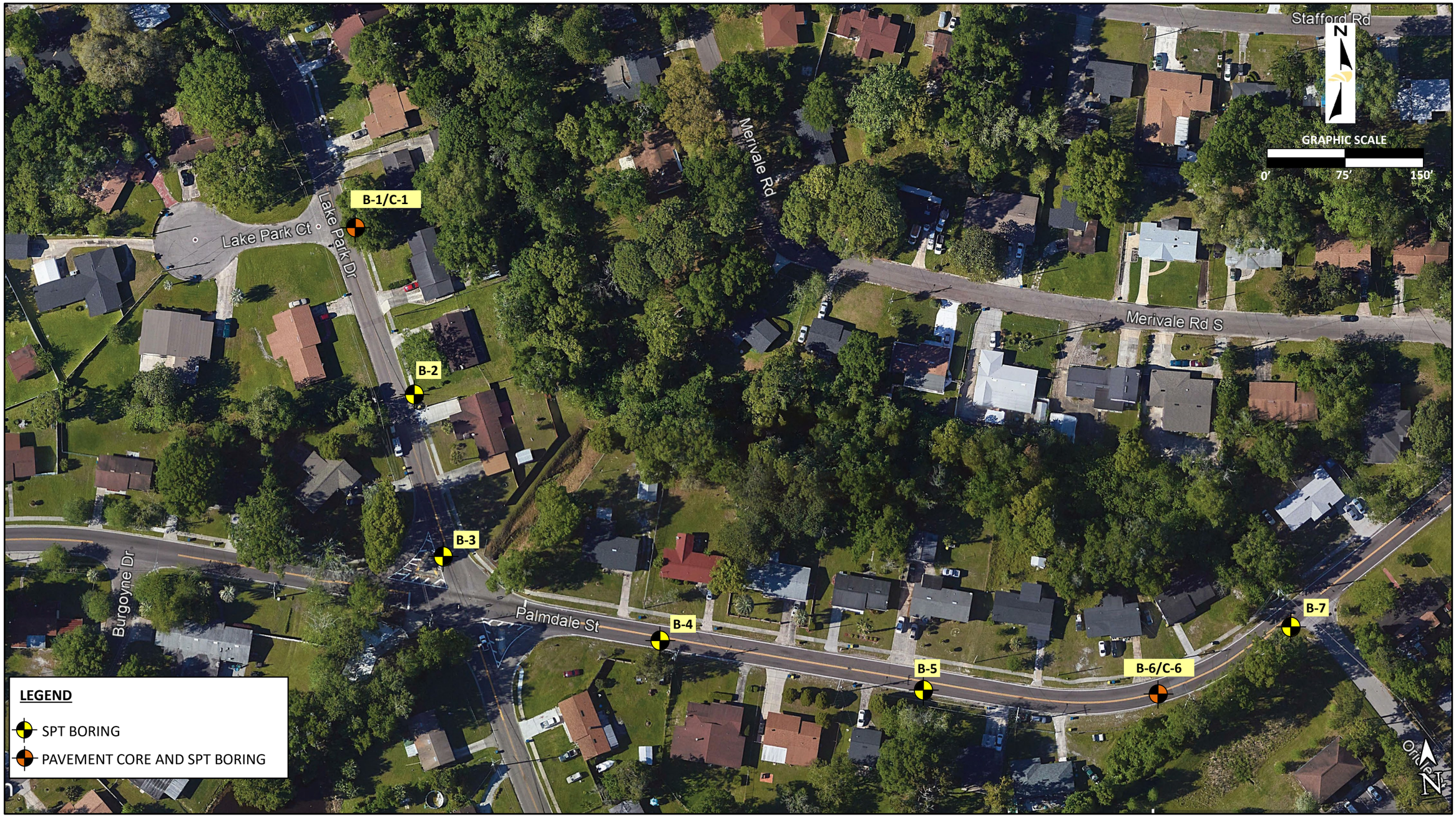
The scope of our services did not include any environmental assessment or testing for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the subject site. Any statements made in this report, and/or notations made on the generalized soil profiles or boring logs, regarding odors or other potential environmental concerns are based on observations made during execution of our scope of services and as such are strictly for the information of our client. No opinion of any environmental concern of such observations is made or implied. Unless complete environmental information regarding the site is already available, an environmental assessment is recommended.

If changes in the design or alignment of the pipeline occur, the conclusions and recommendations contained in this report may need to be modified. We recommend that these changes be provided to us for our consideration. MAE is not responsible for conclusions, interpretations, opinions or recommendations made by others based on the data contained in this report.

Figures



Project Manager:	PRM	Project No.	0006-0033	MAE Meskel & Associates Engineering	SITE LOCATION MAP
Drawn by:	MCV	Scale:	AS SHOWN	3728 PHILIPS HIGHWAY. – SUITE 208 • JACKSONVILLE, FLORIDA 32207 PH. (904) 519-6990 • FAX (904) 519-6992 • www.MeskelEngineering.com	JEA BEVERLY HILLS SEPTIC TANK PHASE OUT PROJECT JACKSONVILLE, FLORIDA
Checked by:	MCV	File Name:	0006-0033.BLP		FIG NO. 1
Approved by:	WJM	Date:	11/1/2019		



Project Manager:	PRM
Drawn by:	MCV
Checked by:	MCV
Approved by:	WJM

Project No.	0006-0033
Scale:	AS SHOWN
File Name:	0006-0033.BLP
Date:	4/22/2020

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BORING AND PAVEMENT CORE LOCATION PLAN

JEA BEVERLY HILLS SEPTIC TANK PHASE OUT PROJECT
JACKSONVILLE, FLORIDA

FIG NO.

2A

Project Manager:	PRM
Drawn by:	MCV
Checked by:	MCV
Approved by:	WJM

Project No.	0006-0033
Scale:	AS SHOWN
File Name:	0006-0033.BLP
Date:	4/22/2020

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BORING AND PAVEMENT CORE LOCATION PLAN

JEA BEVERLY HILLS SEPTIC TANK PHASE OUT PROJECT
JACKSONVILLE, FLORIDA

FIG NO.

2B

Project Manager:	PRM
Drawn by:	MCV
Checked by:	MCV
Approved by:	WJM

Project No.	0006-0033
Scale:	AS SHOWN
File Name:	0006-0033.BLP
Date:	4/22/2020

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BORING AND PAVEMENT CORE LOCATION PLAN

JEA BEVERLY HILLS SEPTIC TANK PHASE OUT PROJECT
JACKSONVILLE, FLORIDA

FIG NO.

2C

Project Manager:	PRM
Drawn by:	MCV
Checked by:	MCV
Approved by:	WJM

Project No.	0006-0033
Scale:	AS SHOWN
File Name:	0006-0033.BLP
Date:	4/22/2020

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BORING AND PAVEMENT CORE LOCATION PLAN

JEA BEVERLY HILLS SEPTIC TANK PHASE OUT PROJECT
JACKSONVILLE, FLORIDA

FIG NO.

2D

Project Manager:	PRM
Drawn by:	MCV
Checked by:	MCV
Approved by:	WJM

Project No.	0006-0033
Scale:	AS SHOWN
File Name:	0006-0033.BLP
Date:	4/22/2020

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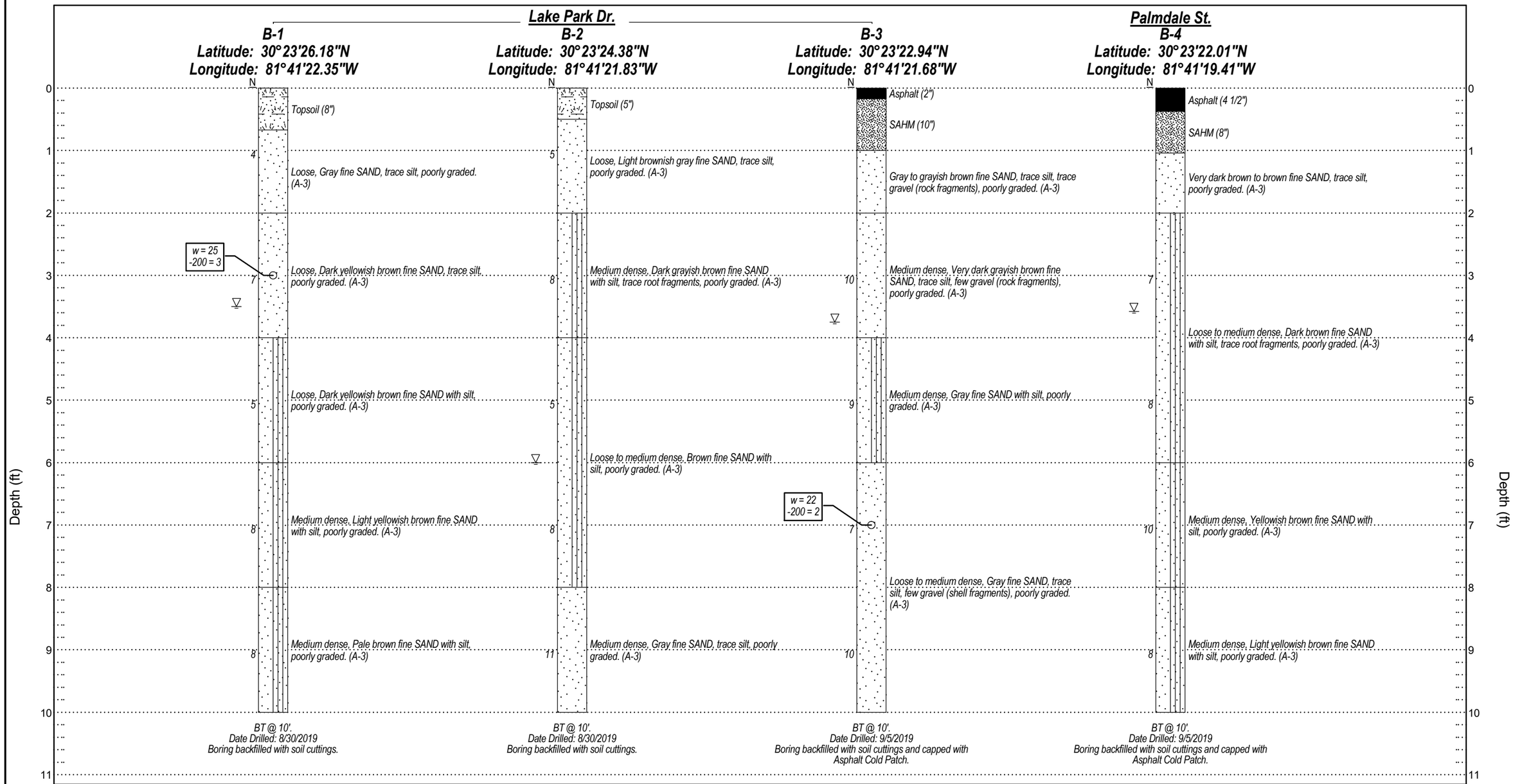
BORING AND PAVEMENT CORE LOCATION PLAN

JEA BEVERLY HILLS SEPTIC TANK PHASE OUT PROJECT
JACKSONVILLE, FLORIDA

FIG NO.

2E



Legend

Topsoil
Asphalt
Fine Sand
Soil Base
Fine Sand with Silt

N	Standard Penetration Resistance, Blows/Foot	(A-3)	AASHTO Soil Classification System	w	Natural Moisture Content (%)
BT	Boring Terminated at Depth Below Existing Grade	▽	Depth to Groundwater at Time of Drilling	-200	% Passing No. 200 U.S. Standard Sieve
SAHM	Sand-Asphalt Hot Mix Base				

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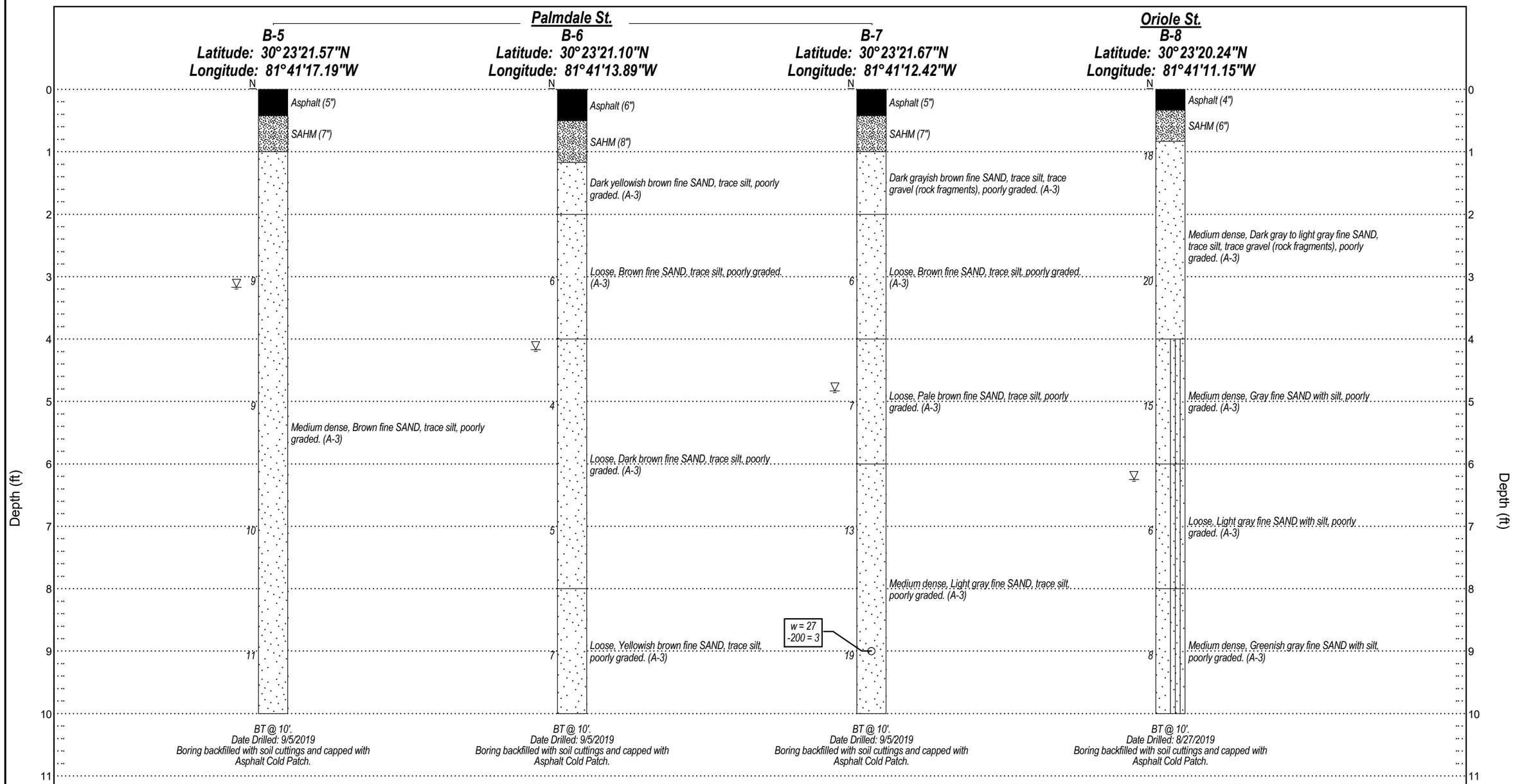
SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *JEA Beverly Hills Septic Tank Phase Out Project*
Jacksonville, Florida

FIGURE NO. 3



Legend

Asphalt

Soil Base

Fine Sand

Fine Sand with Silt

N	Standard Penetration Resistance, Blows/Foot	(A-3)	AASHTO Soil Classification System	w	Natural Moisture Content (%)
BT	Boring Terminated at Depth Below Existing Grade	▽	Depth to Groundwater at Time of Drilling	-200	% Passing No. 200 U.S. Standard Sieve
SAHM	Sand-Asphalt Hot Mix Base				

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Jacksonville, Florida

FIGURE NO. 4

Oriole St.

B-9
Latitude: 30°23'18.80"N
Longitude: 81°41'10.00"W

N	
	Asphalt (3 3/4")
	SAHM (6")
17	Medium dense, Very dark gray to gray fine SAND, trace silt, few gravel (rock fragments), poorly graded. (A-3)
14	Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)
12	Medium dense, Gray silty fine SAND, poorly graded. (A-2-4)
5	Loose, Greenish gray very clayey fine SAND, poorly graded. (A-6)
7	

w = 25
-200 = 46

BT @ 10'.
Date Drilled: 8/27/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-10
Latitude: 30°23'17.31"N
Longitude: 81°41'8.66"W

N	
	Asphalt (3 1/4")
	SAHM (6 1/4")
10	Medium dense, Dark gray fine SAND, trace silt, poorly graded. (A-3)
16	Medium dense, Light yellowish brown fine SAND, trace silt, poorly graded. (A-3)
8	Medium dense, Gray fine SAND with silt, poorly graded. (A-3)
13	
11	Medium dense, Greenish gray fine SAND with clay, poorly graded. (A-3)

BT @ 10'.
Date Drilled: 8/27/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-11
Latitude: 30°23'15.51"N
Longitude: 81°41'7.30"W

N	
	Asphalt (2 1/12")
	Limerock Base (12")
	Gray fine SAND, trace silt, poorly graded. (A-3)
9	Medium dense, Light gray fine SAND, trace silt, poorly graded. (A-3)
10	
11	Medium dense to loose, Light gray fine SAND, trace silt, poorly graded. (A-3)
5	
9	
16	Medium dense, Greenish gray silty fine SAND, poorly graded. (A-2-4)
5	Firm, Greenish gray very sandy CLAY. (A-6)
5	Firm, Gray CLAY with sand. (A-6)
9	Stiff, Greenish gray CLAY with sand. (A-6)
30	Dense, Gray fine SAND with silt, poorly graded. (A-3)

w = 25
-200 = 1

w = 30
-200 = 62

BT @ 40'.
Date Drilled: 9/5/2019
Boring Grouted and Capped with Asphalt Cold Patch.

B-12
Latitude: 30°23'14.38"N
Longitude: 81°41'6.75"W

N	
	Asphalt (5 1/2")
	Limerock Base (6")
	Pale brown fine SAND, trace silt, few gravel (rock fragments), poorly graded. (A-3)
20	Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)
13	
6	Loose, Light olive brown fine SAND, trace silt, poorly graded. (A-3)
5	
10	Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)
10	Medium dense, Light brownish gray fine SAND with clay, poorly graded. (A-3)
8	Stiff, Greenish gray very sandy CLAY. (A-6)
9	Medium dense, Greenish gray fine SAND with clay, poorly graded. (A-3)
5	Firm, Black sandy CLAY. (A-6)
7	Stiff, Dark gray sandy CLAY. (A-6)
12	Medium dense, Olive gray fine SAND with clay, poorly graded. (A-3)

w = 21
-200 = 58

w = 51
-200 = 77

BT @ 40'.
Date Drilled: 9/6/2019
Boring Grouted and Capped with Asphalt Cold Patch.

Depth (ft)

0 5 10 15 20 25 30 35 40 45

Legend

- Asphalt
- Fine Sand with Silt
- Clay
- Soil Base
- Fine Sand with Clay
- Limerock Base
- Fine Sand
- Silty Fine Sand

N — Standard Penetration Resistance, Blows/Foot
BT — Boring Terminated at Depth Below Existing Grade
SAHM — Sand-Asphalt Hot Mix Base
(A-3) — AASHTO Soil Classification System
▽ — Depth to Groundwater at Time of Drilling
w — Natural Moisture Content (%)
-200 — % Passing No. 200 U.S. Standard Sieve

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Jacksonville, Florida

FIGURE NO. 5

Oriole St.

B-13
Latitude: 30°23'13.01"N
Longitude: 81°41'5.64"W

N

- 0–0.4: Asphalt (5")
- 0.4–1: SAHM (6")
- 1–3: Light gray fine SAND with silt, poorly graded. (A-3) — 7
- 3–5: Loose, Very dark brown fine SAND with silt, trace organic fines, poorly graded. (A-3) — 10
- 5–7: Medium dense, Dark brown fine SAND with silt, poorly graded. (A-3) — 10
- 7–9: Medium dense, Yellowish brown fine SAND, trace silt, poorly graded. (A-3) — 13
- 9–11: Medium dense, Yellowish brown fine SAND with silt, poorly graded. (A-3)

BT @ 10'.
Date Drilled: 9/6/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-14
Latitude: 30°23'11.49"N
Longitude: 81°41'4.33"W

N

- 0–0.5: Asphalt (4 1/2")
- 0.5–1: SAHM (6 1/2")
- 1–3: Very dark gray fine SAND, trace silt, little root fragments, trace organic fines, poorly graded. (A-3) — 9
- 2: w = 95, -200 = 11
- 3–5: Medium dense, Very dark gray fine SAND with silt, with organic fines, few root fragments, poorly graded. (A-2-4) — 12
- 5–7: Medium dense, Light brownish gray fine SAND, trace silt, few root fragments, poorly graded. (A-3) — 12
- 7–9: Medium dense, Grayish brown fine SAND with silt, poorly graded. (A-3) — 9
- 9–11: BT @ 10'.

Date Drilled: 8/27/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-15
Latitude: 30°23'10.05"N
Longitude: 81°41'3.44"W

N

- 0–0.5: Asphalt (4 1/2")
- 0.5–1: SAHM (6 1/2")
- 1–3: Very dark brown fine SAND with silt, poorly graded. (A-3) — 11
- 3–5: Medium dense to loose, Gray fine SAND with silt, poorly graded. (A-3) — 9
- 5–7: Medium dense, Gray fine SAND with silt, poorly graded. (A-3) — 13
- 7–9: Loose, Dark gray fine SAND with silt, poorly graded. (A-3) — 7
- 9–11: BT @ 10'.

Date Drilled: 8/27/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-16
Latitude: 30°23'8.29"N
Longitude: 81°41'1.96"W

N

- 0–0.5: Asphalt (6")
- 0.5–1: SAHM (6")
- 1–3: Dark gray fine SAND, trace silt, trace gravel (rock fragments), poorly graded. (A-3) — 7
- 3–5: Loose, Dark gray fine SAND, trace silt, little wood fragments, poorly graded. (A-3) — 15
- 4: w = 25, -200 = 4
- 5–7: Medium dense, Dark gray fine SAND, trace silt, poorly graded. (A-3) — 9
- 7–9: Medium dense, Gray fine SAND with silt, poorly graded. (A-3) — 6
- 9–11: Loose, Dark gray fine SAND with silt, poorly graded. (A-3)

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

Depth (ft)

Legend

Asphalt
Fine Sand
Soil Base
Fine Sand with Silt

N	Standard Penetration Resistance, Blows/Foot	(A-3)	AASHTO Soil Classification System	w	Natural Moisture Content (%)
BT	Boring Terminated at Depth Below Existing Grade	▽	Depth to Groundwater at Time of Drilling	-200	% Passing No. 200 U.S. Standard Sieve
SAHM	Sand-Asphalt Hot Mix Base				

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Jacksonville, Florida

FIGURE NO. 6

Oriole St. | **Rowe Ave.**

B-17
Latitude: 30°23'7.07"N
Longitude: 81°41'0.97"W

N

Asphalt (5 1/2")

SAHM (7")

w = 23
-200 = 3

9 — Loose, Brown fine SAND, trace silt, trace gravel (rock fragments), poorly graded. (A-3)

11 — Medium dense, Brown fine SAND with silt, poorly graded. (A-3)

9 — Medium dense, Grayish brown fine SAND with silt, poorly graded. (A-3)

9

BT @ 10'.
Date Drilled: 9/11/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-18
Latitude: 30°23'5.27"N
Longitude: 81°40'59.72"W

N

Asphalt 4 1/2")

SAHM (6")

8 — Light gray fine SAND, trace silt, poorly graded. (A-3)

10 — Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)

10 — Medium dense, Yellow fine SAND with silt, poorly graded. (A-3)

6 — Loose, Pale brown fine SAND with silt, poorly graded. (A-3)

6

BT @ 10'.
Date Drilled: 9/11/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-19
Latitude: 30°23'3.90"N
Longitude: 81°40'58.69"W

N

Asphalt (4 1/2")

SAHM (6 1/2")

10 — Dark gray fine SAND, trace silt, poorly graded. (A-3)

10 — Medium dense, Grayish brown fine SAND with silt, trace root fragments, poorly graded. (A-3)

16 — Medium dense, Pale brown fine SAND with silt, poorly graded. (A-3)

18

BT @ 10'.
Date Drilled: 9/11/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-20
Latitude: 30°23'4.74"N
Longitude: 81°40'56.49"W

N

Topsoil (3")

8 — Medium dense, Black fine SAND, trace silt, trace organic fines, poorly graded. (A-3)

w = 29
-200 = 2

9 — Medium dense, Very dark gray fine SAND, trace silt, poorly graded. (A-3)

16 — Medium dense, Brown fine SAND, trace silt, poorly graded. (A-3)

14 — Medium dense, Light olive brown fine SAND, trace silt, poorly graded. (A-3)

13 — Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)

BT @ 10'.
Date Drilled: 9/11/2019
Boring backfilled with soil cuttings.

Depth (ft): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Legend

- Asphalt
- Fine Sand with Silt
- Soil Base
- Topsoil
- Fine Sand

N	Standard Penetration Resistance, Blows/Foot	(A-3)	AASHTO Soil Classification System	w	Natural Moisture Content (%)
BT	Boring Terminated at Depth Below Existing Grade	▽	Depth to Groundwater at Time of Drilling	-200	% Passing No. 200 U.S. Standard Sieve
SAHM	Sand-Asphalt Hot Mix Base				

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Jacksonville, Florida

FIGURE NO. 7

Rowe Ave.

B-21
Latitude: 30°23'6.19"N
Longitude: 81°40'54.78"W

N

- 0–0.5: Asphalt (6 1/2")
- 0.5–1: SAHM (6")
- 36 — 3–4.5: Dense to medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)
- 20 ▽ — 5–6: Medium dense, Reddish yellow fine SAND with silt, poorly graded. (A-3)
- 8 — 6–7: Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)
- 5 — 7–10: BT @ 10'.
Date Drilled: 9/6/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-22
Latitude: 30°23'7.54"N
Longitude: 81°40'53.16"W

N

- 0–0.5: Topsoil (3")
- 13 — 0.5–3: Medium dense, Pale brown fine, trace silt, poorly graded. (A-3)
- 15 ▽ — 3–5: Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)
- w = 23, -200 = 5
- 6 — 5–6: Loose, Light brownish gray fine SAND with silt, poorly graded. (A-3)
- 10 — 6–8: Medium dense, Light gray fine SAND, trace silt, poorly graded. (A-3)
- 8 — 8–10: BT @ 10'.
Date Drilled: 9/11/2019
Boring backfilled with soil cuttings.

B-23
Latitude: 30°23'8.53"N
Longitude: 81°40'51.83"W

N

- 0–0.5: Topsoil (3")
- 12 — 0.5–3: Medium dense, Light brownish gray fine SAND with silt, few gravel (shell fragments), poorly graded. (A-3)
- 7 ▽ — 3–5: Loose, Very dark grayish brown fine SAND with silt, trace root fragments, poorly graded. (A-3)
- 11 — 5–6: Medium dense, Light gray fine SAND, trace silt, trace root fragments, poorly graded. (A-3)
- 7 — 6–8: Loose, Brown fine SAND with silt, poorly graded. (A-3)
- 7 — 8–10: BT @ 10'.
Date Drilled: 9/11/2019
Boring backfilled with soil cuttings.

B-24
Latitude: 30°23'9.46"N
Longitude: 81°40'50.86"W

N

- 0–0.5: Asphalt (5")
- 0.5–1: SAHM (6")
- 15 — 1–3: Grayish brown fine SAND with silt, poorly graded. (A-3)
- ▽ — 3–4
- 11 — 4–6: Medium dense, Light gray fine SAND, trace silt, poorly graded. (A-3)
- 16 — 6–8: Loose, Brown fine SAND with silt, poorly graded. (A-3)
- 19 — 8–10: BT @ 10'.
Date Drilled: 9/6/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

Depth (ft)

Legend

Asphalt
Fine Sand with Silt
Soil Base
Topsoil
Fine Sand

N — Standard Penetration Resistance, Blows/Foot
BT — Boring Terminated at Depth Below Existing Grade
SAHM — Sand-Asphalt Hot Mix Base
(A-3) — AASHTO Soil Classification System
▽ — Depth to Groundwater at Time of Drilling
w — Natural Moisture Content (%)
-200 — % Passing No. 200 U.S. Standard Sieve

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

P. RODNEY MANK, P.E. P.E. NO.: 41986
MAE Meskel & Associates Engineering
FL Certificate of Authorization No. 28142
3728 Philips Highway, Suite 208, Jacksonville, FL 32207

England-Thims & Miller, Inc.

DATE:	MAE PROJECT NO.
6/4/2020	0006-0033

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *JEA Beverly Hills Septic Tank Phase Out Project*
Jacksonville, Florida

FIGURE NO. 8

Grant Ave.

B-25
Latitude: 30°23'9.56"N
Longitude: 81°40'49.32"W

N	Description
	Asphalt (4 1/4")
	SAHM (6")
20	Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)
10	
7	Medium dense to loose, Light gray fine SAND, trace silt, poorly graded. (A-3)
7	
8	Medium dense, Dark yellowish brown fine SAND with clay, poorly graded. (A-3)

▽ Groundwater at Time of Drilling

w = 19
-200 = 6

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-26
Latitude: 30°23'7.85"N
Longitude: 81°40'47.58"W

N	Description
	Asphalt (4 1/2")
	SAHM (6")
12	
7	Medium dense to loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)
6	
8	Medium dense, Light gray fine SAND, trace silt, poorly graded. (A-3)

▽ Groundwater at Time of Drilling

w = 19
-200 = 6

N	Description
8	Medium dense, Dark yellowish brown fine SAND with clay, poorly graded. (A-3)

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-27
Latitude: 30°23'6.79"N
Longitude: 81°40'46.45"W

N	Description
	Asphalt (3")
	SAHM (6")
12	Medium dense, Light brownish gray fine SAND with silt, poorly graded. (A-3)
6	
11	Loose to medium dense, Pale brown fine SAND, trace silt, trace root fragments, poorly graded. (A-3)
13	
14	Medium dense, Strong brown fine SAND with clay, poorly graded. (A-3)

▽ Groundwater at Time of Drilling

w = 30
-200 = 6

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-28
Latitude: 30°23'5.32"N
Longitude: 81°40'44.94"W

N	Description
	Asphalt (4")
	SAHM (7")
13	Medium dense, Light brownish gray fine SAND with silt, poorly graded. (A-3)
8	Medium dense, Light gray fine SAND, trace silt, poorly graded. (A-3)
5	Loose, Yellowish brown CLAY with sand. (A-6)
23	Medium dense, Pale brown silty fine SAND, poorly graded. (A-2-4)
23	Medium dense, Light gray fine SAND with clay, poorly graded. (A-3)

▽ Groundwater at Time of Drilling

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

Depth (ft)

Legend

Asphalt
Soil Base
Fine Sand
Fine Sand with Clay
Fine Sand with Silt
Clay

N — Standard Penetration Resistance, Blows/Foot
BT — Boring Terminated at Depth Below Existing Grade
SAHM — Sand-Asphalt Hot Mix Base
(A-3) — AASHTO Soil Classification System
▽ — Depth to Groundwater at Time of Drilling
w — Natural Moisture Content (%)
-200 — % Passing No. 200 U.S. Standard Sieve

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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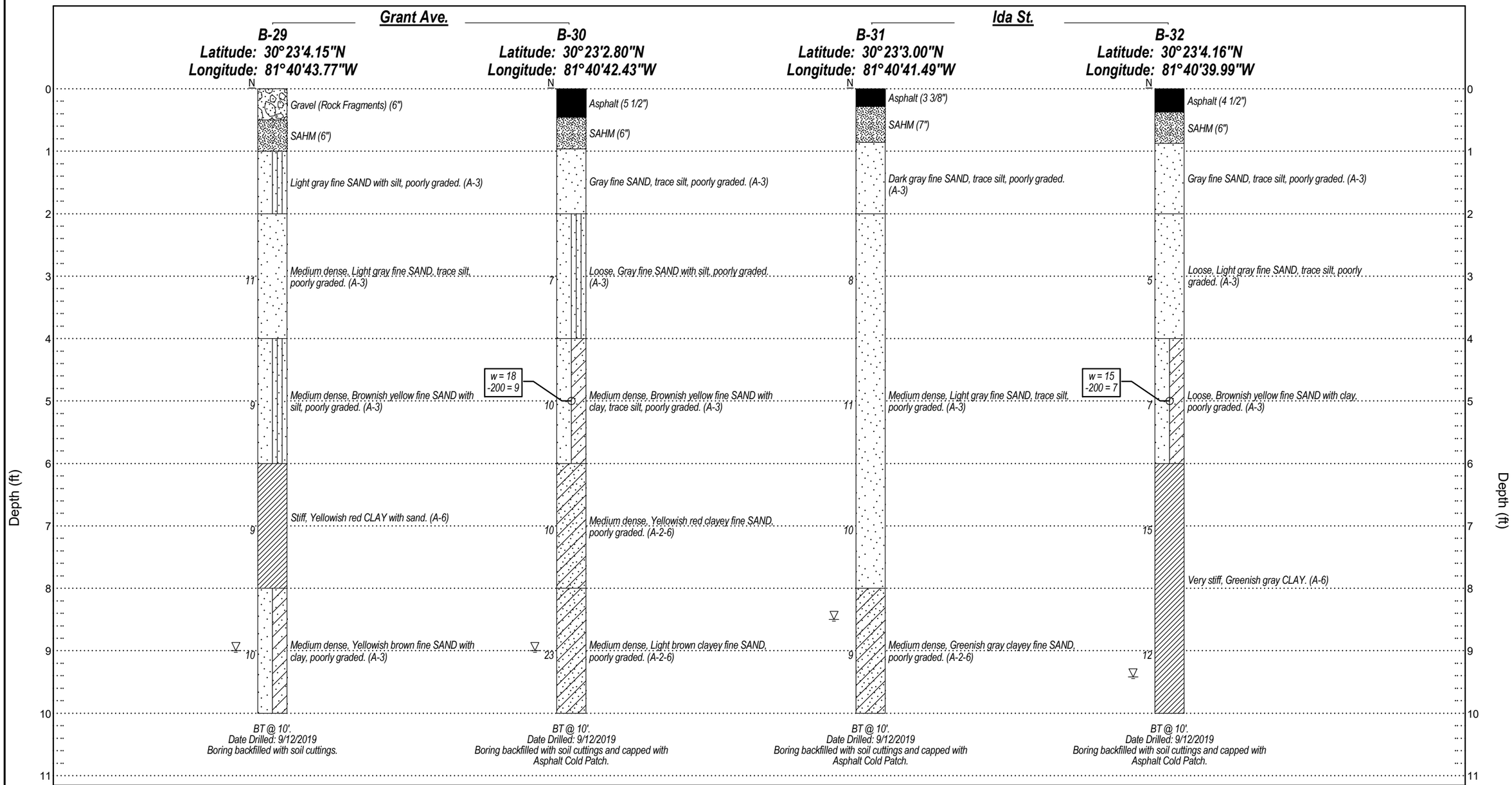
DATE:	MAE PROJECT NO.
6/4/2020	0006-0033

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *JEA Beverly Hills Septic Tank Phase Out Project*
Jacksonville, Florida

FIGURE NO. 9



Legend

Gravel/Rocks
Fine Sand
Soil Base
Clay
Fine Sand with Silt
Fine Sand with Clay

N — Standard Penetration Resistance, Blows/Foot
BT — Boring Terminated at Depth Below Existing Grade
SAHM — Sand-Asphalt Hot Mix Base
(A-3) — AASHTO Soil Classification System
▽ — Depth to Groundwater at Time of Drilling
w — Natural Moisture Content (%)
-200 — % Passing No. 200 U.S. Standard Sieve

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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DATE:	MAE PROJECT NO.
6/4/2020	0006-0033

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *JEA Beverly Hills Septic Tank Phase Out Project*
Jacksonville, Florida

FIGURE NO. 10

Ida St.

B-33
Latitude: 30°23'5.42"N
Longitude: 81°40'37.35"W

N	
	Asphalt (3 1/2")
11	SAHM (6 1/2")
	Medium dense, Dark gray fine SAND, trace silt, poorly graded. (A-3)
10	Medium dense, Brownish yellow fine SAND with clay, poorly graded. (A-3)
18	Very stiff, Reddish yellow CLAY, trace sand. (A-6)
24	Medium dense, Brownish yellow fine SAND with clay, poorly graded. (A-3)
▽ 45	Very dense, Brownish yellow fine SAND with silt, poorly graded. (A-3)

w = 17
-200 = 10

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-34
Latitude: 30°23'6.28"N
Longitude: 81°40'35.55"W

N	
	Asphalt (5")
	SAHM (6")
8	Medium dense, Pale brown fine SAND, trace silt, poorly graded. (A-3)
8	Stiff, Light gray CLAY with sand. (A-6)
14	Very stiff, Light gray CLAY. (A-6)
▽ 22	Very stiff, Yellowish brown CLAY. (A-6)

BT @ 10'.
Date Drilled: 9/12/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-35
Latitude: 30°23'7.31"N
Longitude: 81°40'33.37"W

N	
	Asphalt (4")
	SAHM (6")
	Very dark grayish brown fine SAND with silt, poorly graded. (A-3)
4	Firm, Yellowish brown CLAY. (A-6)
▽ 4	Firm, Yellowish brown CLAY, trace sand, trace root fragments. (A-6)
4	
6	Firm, Light gray CLAY, trace root fragments. (A-6)

BT @ 10'.
Date Drilled: 9/6/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-36
Latitude: 30°23'7.80"N
Longitude: 81°40'32.42"W

N	
	Asphalt (3 1/2")
7	SAHM (6")
	Loose, Gray fine SAND with clay, poorly graded. (A-3)
▽ 5	Loose, Grayish brown fine SAND, trace silt, poorly graded. (A-3)
4	Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)
7	Loose, Greenish gray fine SAND, trace clay, poorly graded. (A-3)
4	
	Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)
8	Stiff, Greenish gray sandy CLAY. (A-6)
10	Medium dense, Pale brown silty fine SAND, poorly graded. (A-2-4)
11	Medium dense, Yellow silty fine SAND, poorly graded. (A-2-4)
5	Loose, Light gray silty fine SAND, poorly graded. (A-2-4)
5	Loose to medium dense, Very pale brown fine SAND with silt, few gravel (shell fragments), poorly graded. (A-3)
20	

w = 24
-200 = 3

w = 24
-200 = 2

BT @ 40'.
Date Drilled: 9/6/2019
Boring Grouted and Capped with Asphalt Cold Patch.

Depth (ft)

0 5 10 15 20 25 30 35 40 45

Legend

Asphalt
Fine Sand with Clay
Soil Base
Clay
Fine Sand
Fine Sand with Silt

N — Standard Penetration Resistance, Blows/Foot
BT — Boring Terminated at Depth Below Existing Grade
SAHM — Sand-Asphalt Hot Mix Base
(A-3) — AASHTO Soil Classification System
▽ — Depth to Groundwater at Time of Drilling
w — Natural Moisture Content (%)
-200 — % Passing No. 200 U.S. Standard Sieve

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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6/4/2020	0006-0033

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PROJECT NAME: *JEA Beverly Hills Septic Tank Phase Out Project*
Jacksonville, Florida

FIGURE NO. 11

Ida St.

B-37
Latitude: 30°23'8.65"N
Longitude: 81°40'30.43"W

N

- 4 — *Asphalt (4")*
- *SAHM (7")*
- *Grayish brown fine SAND, poorly graded. (A-3)*
- 7 — *Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)*
- 10 — *Loose to medium dense, Brownish yellow fine SAND, trace clay, poorly graded. (A-3)*
- w = 20, -200 = 2
- 14 — *Medium dense, Brownish yellow fine SAND, trace clay, poorly graded. (A-3)*
- 5 — *Loose, Dark gray clayey fine SAND, poorly graded. (A-2-6)*
- 5 — *Loose, Pale brown fine SAND with clay, poorly graded. (A-3)*
- 10 — *Medium dense, Pale brown silty fine SAND, poorly graded. (A-2-4)*
- 6 — *Loose, Pale brown silty fine SAND, poorly graded. (A-2-4)*
- 7 — *Loose, Reddish brown fine SAND with silt, few gravel (shell fragments), poorly graded. (A-3)*
- 13 — *Medium dense, Greenish gray fine SAND with silt, few gravel (shell fragments), poorly graded. (A-3)*

BT @ 40'.
Date Drilled: 9/9/2019
Boring Grouted and Capped with Asphalt Cold Patch.

B-38
Latitude: 30°23'9.24"N
Longitude: 81°40'28.87"W

N

- 7 — *Asphalt (1")*
- *SAHM (4 1/2")*
- *Loose, Olive brown fine SAND with clay, trace silt and gravel (rock fragments), poorly graded. (A-3)*
- 7 — *Loose, Light olive brown fine SAND with silt, trace clay and gravel (rock fragments), poorly graded. (A-3)*
- 6 — *Loose, Yellowish brown fine SAND with silt, trace clay and gravel (rock fragments), poorly graded. (A-3)*
- 5 — *Loose, Strong brown clayey fine SAND, poorly graded. (A-2-6)*
- 9 — *Stiff, Strong brown sandy CLAY. (A-6)*

BT @ 10'.
Date Drilled: 9/9/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-39
Latitude: 30°23'9.97"N
Longitude: 81°40'27.07"W

N

- w = 11, -200 = 3
- 8 — *Asphalt (2")*
- *Limerock Base (9")*
- *Dark grayish brown fine SAND, trace silt and clay, poorly graded. (A-3)*
- 4 — *Medium dense to loose, Brown fine SAND, trace silt, with clay nodules, poorly graded. (A-3)*
- 2 — *Very loose, Pale brown fine SAND with silt and clay nodules, trace organic fines, poorly graded. (A-3)*
- 5 — *Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)*

BT @ 10'.
Date Drilled: 9/9/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

B-40
Latitude: 30°23'10.68"N
Longitude: 81°40'25.48"W

N

- 9 — *Asphalt (2")*
- *SAHM (6 1/2")*
- *Brown fine SAND with silt, trace clay, poorly graded. (A-3)*
- *Medium dense, Dark yellowish brown clayey fine SAND with silt, poorly graded. (A-3)*
- 5 — *Loose, Olive brown fine SAND with silt, trace clay, poorly graded. (A-3)*
- 5 — *Loose, Pale brown fine SAND, trace silt, poorly graded. (A-3)*
- 6 — *Stiff, Yellowish red sandy CLAY. (A-6)*

BT @ 10'.
Date Drilled: 9/9/2019
Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

Depth (ft): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Legend

Asphalt	Soil Base	Fine Sand	N	Standard Penetration Resistance, Blows/Foot	(A-3) AASHTO Soil Classification System	w	Natural Moisture Content (%)
Clayey Fine Sand	Fine Sand with Clay	Silty Fine Sand	BT	Boring Terminated at Depth Below Existing Grade	▽ Depth to Groundwater at Time of Drilling	-200	% Passing No. 200 U.S. Standard Sieve
Clay	Limerock Base		SAHM	Sand-Asphalt Hot Mix Base			

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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England-Thims & Miller, Inc.

DATE:	MAE PROJECT NO.
6/4/2020	0006-0033

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *JEA Beverly Hills Septic Tank Phase Out Project*
Jacksonville, Florida

FIGURE NO. 12

Appendix A

Meskel & Associates Engineering, PLLC
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Meskel & Associates Engineering

BORING B-1

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/30/19 **COMPLETED** 8/30/19 **LATITUDE** 30°23'26.18"N **LONGITUDE** 81°41'22.35"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Topsoil (8")												
	1	Loose, Gray fine SAND, trace silt, poorly graded.	A-3		1 1 3 4	4								
	2	▽ Loose, Dark yellowish brown fine SAND, trace silt, poorly graded.	A-3		3 3 4 3	7	25	3						
5	3	Loose, Dark yellowish brown fine SAND with silt, poorly graded.	A-3		2 3 2 3	5								
	4	Medium dense, Light yellowish brown fine SAND with silt, poorly graded.	A-3		5 4 4 7	8								
10	5	Medium dense, Pale brown fine SAND with silt, poorly graded.	A-3		3 4 4 5	8								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 6 in *▽ **END OF DAY** ---

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BORING B-2

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/30/19 **COMPLETED** 8/30/19 **LATITUDE** 30°23'24.38"N **LONGITUDE** 81°41'21.83"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Topsoil (5")												
	1	Loose, Light brownish gray fine SAND, trace silt, poorly graded.	A-3		2 2 3 4	5								
	2	Medium dense, Dark grayish brown fine SAND with silt, trace root fragments, poorly graded.	A-3		3 4 4 4	8								
5	3	▽ Loose to medium dense, Brown fine SAND with silt, poorly graded.	A-3		2 2 3 3	5								
	4				3 3 5 5	8								
	5	Medium dense, Gray fine SAND, trace silt, poorly graded.	A-3		5 6 5 5	11								
10		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 6 ft 0 in *▽ **END OF DAY** ---

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BORING B-3

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/5/19 **COMPLETED** 9/5/19 **LATITUDE** 30°23'22.94"N **LONGITUDE** 81°41'21.68"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (2") SAHM (10")			3 3									
	2	Gray to grayish brown fine SAND, trace silt, trace gravel (rock fragments), poorly graded.	A-3											
	3	Medium dense, Very dark grayish brown fine SAND, trace silt, few gravel (rock fragments), poorly graded. ▽	A-3		3 4 6 4	10								
5	4	Medium dense, Gray fine SAND with silt, poorly graded.	A-3		4 5 4 4	9								
	5	Loose to medium dense, Gray fine SAND, trace silt, few gravel (shell fragments), poorly graded.	A-3		3 3 4 6	7	22	2						
10	6				4 5 5 5	10								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 9 in *▽ **END OF DAY** ---

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BORING B-4

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/5/19 **COMPLETED** 9/5/19 **LATITUDE** 30°23'22.01"N **LONGITUDE** 81°41'19.41"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (4 1/2")												
		SAHM (8")			11									
	2	Very dark brown to brown fine SAND, trace silt, poorly graded.	A-3		10									
	3	▽ Loose to medium dense, Dark brown fine SAND with silt, trace root fragments, poorly grade.	A-3		4 3 4 4	7								
5	4				3 4 4 5	8								
	5	Medium dense, Yellowish brown fine SAND with silt, poorly graded.	A-3		3 4 6 6	10								
10	6	Medium dense, Light yellowish brown fine SAND with silt, poorly graded.	A-3		3 4 4 6	8								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 7 in *▽ **END OF DAY** ---

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BORING B-5

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/5/19 **COMPLETED** 9/5/19 **LATITUDE** 30°23'21.57"N **LONGITUDE** 81°41'17.19"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (5")												
	1	SAHM Base (7")			3 3									
	2 ▽				3 3 6 7	9								
5	3	Medium dense, Brown fine SAND, trace silt, poorly graded.	A-3		3 4 5 5	9								
	4				5 5 5 6	10								
	5				3 5 6 7	11								
10		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 2 in *▽ **END OF DAY** ---

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BORING B-6

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/5/19 **COMPLETED** 9/5/19 **LATITUDE** 30°23'21.10"N **LONGITUDE** 81°41'13.89"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0														
	1	Asphalt (6") SAHM (8") Dark yellowish brown fine SAND, trace silt, poorly graded.	A-3		3 5									
	2	Loose, Brown fine SAND, trace silt, poorly graded.	A-3		2 3 3 3	6								
5	3	Loose, Dark brown fine SAND, trace silt, poorly graded.	A-3		1 2 2 2	4								
	4				2 2 3 3	5								
	5	Loose, Yellowish brown fine SAND, trace silt, poorly graded.	A-3		2 3 4 6	7								
10		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 2 in *▽ **END OF DAY** ---

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BORING B-7

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/5/19 **COMPLETED** 9/5/19 **LATITUDE** 30°23'21.67"N **LONGITUDE** 81°41'12.42"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (5")												
	1	SAHM (7")												
		Dark grayish brown fine SAND, trace silt, trace gravel (rock fragments), poorly graded.	A-3		3 4									
	2	Loose, Brown fine SAND, trace silt, poorly graded.	A-3		3 3 3 3	6								
5	3	▽ Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 3 4 3	7								
	4	Medium dense, Light gray fine SAND, trace silt, poorly graded.	A-3		3 6 7 9	13								
10	5				5 9 10 9	19	27	3						
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 10 in *▽ **END OF DAY** ---

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BORING B-8

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/27/19 **COMPLETED** 8/27/19 **LATITUDE** 30°23'20.24"N **LONGITUDE** 81°41'11.15"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY P.R.Young **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (4") SAHM (6")			6 7 11	18								
	2	Medium dense, Dark gray to light gray fine SAND, trace silt, trace gravel (rock fragments), poorly graded.	A-3											
	3				6 10 10 10	20								
5	4	Medium dense, Gray fine SAND with silt, poorly graded.	A-3		6 7 8 8	15								
	5	▽ Loose, Light gray fine SAND with silt, poorly graded.	A-3		2 3 3 4	6								
10	6	Medium dense, Greenish gray fine SAND with silt, poorly graded.	A-3		3 4 4 6	8								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 6 ft 3 in *▽ **END OF DAY** ---

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BORING B-9

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/27/19 **COMPLETED** 8/27/19 **LATITUDE** 81°41'10.00"W **LONGITUDE** 81°41'10.05"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY P.R.Young **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (3 3/4") SAHM (6")			11	17	25	46						
	2	Medium dense, Very dark gray to gray fine SAND, trace silt, few gravel (rock fragments), poorly graded.	A-3		9 8									
	3	Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		4 7 7 9	14								
5	4	Medium dense, Gray silty fine SAND, poorly graded.	A-2-4		3 5 7 11	12								
	5	▽ Loose, Greenish gray very clayey fine SAND, poorly graded.	A-6		2 3 2 2	5								
10	6				2 3 4 4	7								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 6 ft 6 in *▽ **END OF DAY** ---

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BORING B-10

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/27/19 **COMPLETED** 8/27/19 **LATITUDE** 30°23'17.31"N **LONGITUDE** 81°41'8.66"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY P.R.Young **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (3 1/4")												
		SAHM (6 1/4")												
	1	Medium dense, Dark gray fine SAND, trace silt, poorly graded.	A-3		2 4 6	10								
	2	Medium dense, Light yellowish brown fine SAND, trace silt, poorly graded.	A-3		6 7 9 13	16								
5	3				3 4 4 5	8								
	4	▽ Medium dense, Gray fine SAND with silt, poorly graded.	A-3		2 6 7 9	13								
10		Medium dense, Greenish gray fine SAND with clay, poorly graded.	A-3		3 6 5 5	11								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 6 ft 4 in *▽ **END OF DAY** ---

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BORING B-11

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/5/19 **COMPLETED** 9/5/19 **LATITUDE** 30°23'15.51"N **LONGITUDE** 81°41'7.30"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (2 1/12")												
	1	Limerock Base (12")			3 4									
		Gray fine SAND, trace silt, poorly graded.	A-3											
	2	Medium dense, Light gray fine SAND, trace silt, poorly graded.	A-3		4 4 5 6	9								
5	3	▽			4 5 5 5	10	25	1						
	4				3 5 6 5	11								
10	5	Medium dense to loose, Light gray fine SAND, trace silt, poorly graded.	A-3		2 3 2 3	5								
15	6				5 4 5	9								
		Medium dense, Greenish gray silty fine SAND, poorly graded.	A-2-4											
20	7	Medium dense, Greenish gray silty fine SAND, trace clay, poorly graded.	A-2-4		3 6 10	16								

NOTES Boring Grouted and Capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 9 in *▽ **END OF DAY** ---

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BORING B-11

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
20		Medium dense, Greenish gray silty fine SAND, trace clay, poorly graded.	A-2-4											
25	8	Firm, Greenish gray very sandy CLAY.	A-6		2 2 3	5	30	62						
30	9	Firm, Gray CLAY with sand.	A-6		1 2 3	5								
35	10	Stiff, Greenish gray CLAY with sand.	A-6		4 4 5	9								
40	11	Dense, Gray fine SAND with silt, poorly graded.	A-3		5 15 15	30								

Bottom of borehole at 40 feet.

NOTES Boring Grouted and Capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 9 in *▽ **END OF DAY** ---

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BORING B-12

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/6/19 **COMPLETED** 9/6/19 **LATITUDE** 30°23'14.38"N **LONGITUDE** 81°41'6.75"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (5 1/2") Limerock Base (6") Pale brown fine SAND, few gravel (rock fragments), trace silt, poorly graded.	A-3		6 6									
	2	Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		6 10 10 12	20								
5	3				6 8 5 6	13								
	4	▽ Loose, Light olive brown fine SAND, trace silt, poorly graded.	A-3		2 2 4 4	6								
	5				3 3 2 2	5								
10		Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3											
	6				3 5 5	10								
15		Medium dense, Light brownish gray fine SAND with clay, poorly graded.	A-3											
20	7	Stiff, Greenish gray very sandy CLAY.	A-6		3 4 4	8	21	58						

NOTES Boring Grouted and Capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 6 ft 2 in *▽ **END OF DAY** ---

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BORING B-12

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
20		Stiff, Greenish gray very sandy CLAY.	A-6											
25	8	Medium dense, Greenish gray fine SAND with clay, poorly graded.	A-3		4 5 4	9								
30	9	Firm, Black sandy CLAY.	A-6		2 2 3	5	51	77						
35	10	Stiff, Dark gray sandy CLAY.	A-6		3 4 3	7								
40	11	Medium dense, Olive gray fine SAND with clay, poorly graded.	A-3		5 6 6	12								

Bottom of borehole at 40 feet.

NOTES Boring Grouted and Capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 6 ft 2 in *▽ **END OF DAY** ---

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BORING B-13

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/6/19 **COMPLETED** 9/6/19 **LATITUDE** 30°23'13.01"N **LONGITUDE** 81°41'5.64"

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (5")												
		SAHM (6")												
	1	Light gray fine SAND with silt, poorly graded.	A-3		4 3									
	2	Loose, Very dark brown fine SAND with silt, trace organic fines, poorly graded.	A-3		3 4 3 2	7								
5	3	▽ Medium dense, Dark brown fine SAND with silt, poorly graded.	A-3		3 4 6 6	10								
	4	Medium dense, Yellowish brown fine SAND, trace silt, poorly graded.	A-3		2 4 6 6	10								
10	5	Medium dense, Yellowish brown fine SAND with silt, poorly graded.	A-3		5 6 7 7	13								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 6 in *▽ **END OF DAY** ---

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BORING B-14

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/27/19 **COMPLETED** 8/27/19 **LATITUDE** 30°23'11.49"N **LONGITUDE** 81°41'4.33"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY P.R.Young **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (4 1/2") SAHM (6 1/2") Very dark gray fine SAND, trace silt, little root fragments, trace organic fines, poorly graded.	A-3		2 4									
	2	Medium dense, Very dark gray fine SAND with silt, with organic fines, few root fragments, poorly graded.	A-2-4		2 3 6 8	9	95	11						
	3	Medium dense, Light brownish gray fine SAND, trace silt, few root fragments, poorly graded.	A-3											
5	4	▽			4 5 7 9	12								
	5	Medium dense, Grayish brown fine SAND with silt, poorly graded.	A-3		4 6 6 2	12								
10	6				2 4 5 7	9								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 4 in *▽ **END OF DAY** ---

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BORING B-15

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 8/27/19 **COMPLETED** 8/27/19 **LATITUDE** 30°23'10.05"N **LONGITUDE** 81°41'3.44"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (4 1/2") SAHM (6 1/2") Very dark brown fine SAND with silt, poorly graded.	A-3		5 4									
	2 ▽				5 5 6 3	11								
5	3	Medium dense to loose, Gray fine SAND with silt, poorly graded.	A-3		2 3 6 9	9								
	4				4 5 8 11	13								
10	5				2 3 4 5	7								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 2 in *▽ **END OF DAY** ---

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BORING B-16

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'8.29"N **LONGITUDE** 81°41'1.96"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0														
	1	Asphalt (6") SAHM (6") Dark gray fine SAND, trace silt, trace gravel (rock fragments), poorly graded.	A-3		3 4									
	2	Loose, Dark gray fine SAND, trace silt, little wood fragments, poorly graded.	A-3		2 3 4 8	7								
5	3	Medium dense, Dark gray fine SAND, trace silt, poorly graded.	A-3		6 8 7 10	15	25	4						
	4	Medium dense, Gray fine SAND with silt, poorly graded.	A-3		5 5 4 5	9								
10	5	Loose, Dark gray fine SAND with silt, poorly graded.	A-3		3 2 4 6	6								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 6 in *▽ **END OF DAY** ---

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BORING B-17

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/11/19 **COMPLETED** 9/11/19 **LATITUDE** 30°23'7.07"N **LONGITUDE** 81°41'0.97"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (5 1/2")												
	1	SAHM (7")			3 4									
	2	Loose, Brown fine SAND, trace silt, trace gravel (rock fragments), poorly graded. ▽	A-3		4 5 4 7	9	23	3						
5	3	Medium dense, Brown fine SAND with silt, poorly graded.	A-3		4 6 5 8	11								
	4	Medium dense, Grayish brown fine SAND with silt, poorly graded.	A-3		3 4 5 5	9								
	5				4 6 3 4	9								
10		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 11 in *▽ **END OF DAY** ---

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BORING B-18

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/11/19 **COMPLETED** 9/11/19 **LATITUDE** 30°23'5.27"N **LONGITUDE** 81°40'59.72"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt 4 1/2")												
		SAHM (6")												
	1	Light gray fine SAND, trace silt, poorly graded.	A-3		6 5									
	2	▽ Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 4 4 3	8								
5	3	Medium dense, Yellow fine SAND with silt, poorly graded.	A-3		3 4 6 6	10								
	4	Loose, Pale brown fine SAND with silt, poorly graded.	A-3		2 3 3 2	6								
10	5				3 3 3 3	6								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 3 in *▽ **END OF DAY** ---

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BORING B-19

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/11/19 **COMPLETED** 9/11/19 **LATITUDE** 30°23'3.90"N **LONGITUDE** 81°40'58.69"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4 1/2")												
		SAHM (6 1/2")												
	1	Dark gray fine SAND, trace silt, poorly graded.	A-3		5 5									
	2	▽ Medium dense, Grayish brown fine SAND with silt, trace root fragments, poorly graded.	A-3		3 4 6 7	10								
5	3				5 4 6 7	10								
	4	Medium dense, Pale brown fine SAND with silt, poorly graded.	A-3		6 8 8 9	16								
	5				7 8 10 10	18								
10		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 6 in *▽ **END OF DAY** ---

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BORING B-20

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/11/19 **COMPLETED** 9/11/19 **LATITUDE** 30°23'4.74"N **LONGITUDE** 81°40'56.49"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Topsoil (3")												
	1	Medium dense, Black fine SAND, trace silt, trace organic fines, poorly graded.	A-3		3 4 4 3	8								
	2	Medium dense, Very dark gray fine SAND, trace silt, poorly graded.	A-3		3 4 5 4	9	29	2						
5	3	▽ Medium dense, Brown fine SAND, trace silt, poorly graded.	A-3		2 8 8 8	16								
	4	Medium dense, Light olive brown fine SAND, trace silt, poorly graded.	A-3		7 8 6 8	14								
10	5	Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		6 6 7 6	13								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 2 in *▽ **END OF DAY** ---

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BORING B-21

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/6/19 **COMPLETED** 9/6/19 **LATITUDE** 30°23'6.19"N **LONGITUDE** 81°40'54.78"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (6 1/2")												
	1	SAHM (6")			12 16									
	2	Dense to medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		10 19 17 17	36								
5	3	▽			9 9 11 13	20								
	4	Medium dense, Reddish yellow fine SAND with silt, poorly graded.	A-3		3 4 4 3	8								
10	5	Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 3 2 3	5								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 5 in *▽ **END OF DAY** ---

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BORING B-22

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/11/19 **COMPLETED** 9/11/19 **LATITUDE** 30°23'7.54"N **LONGITUDE** 81°40'53.16"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Topsoil (3")												
	1	Medium dense, Pale brown fine, trace silt, poorly graded.	A-3		6 6 7 10	13								
	2	▽ Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		6 7 8 6	15								
5	3	Loose, Light brownish gray fine SAND with silt, poorly graded.	A-3		2 3 3 2	6	23	5						
	4	Medium dense, Light gray fine SAND, trace silt, poorly graded.	A-3		4 6 4 4	10								
10	5				3 3 5 4	8								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 2 in *▽ **END OF DAY** ---

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BORING B-23

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/11/19 **COMPLETED** 9/11/19 **LATITUDE** 30°23'8.53"N **LONGITUDE** 81°40'51.83"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Topsoil (3") Medium dense, Light brownish gray fine SAND with silt, few gravel (shell fragments), poorly graded.	A-3		8 6 6 5	12								
	2	▽ Loose, Very dark grayish brown fine SAND with silt, trace root fragments, poorly graded.	A-3		2 3 4 4	7								
5	3	Medium dense, Light gray fine SAND, trace silt, trace root fragments, poorly graded.	A-3		3 5 6 6	11								
	4	Loose, Brown fine SAND with silt, poorly graded.	A-3		3 3 4 3	7								
10	5				4 3 4 4	7								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 0 in *▽ **END OF DAY** ---

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BORING B-24

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/6/19 **COMPLETED** 9/6/19 **LATITUDE** 30°23'9.46"N **LONGITUDE** 81°40'50.86"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (5") SAHM (6") Grayish brown fine SAND with silt, poorly graded.	A-3		8 7									
	2	▽			5 7 8 8	15								
5	3	Medium dense, Light gray fine SAND, trace silt, poorly graded.	A-3		7 5 6 6	11								
	4				5 7 9 9	16								
10	5				8 10 9 12	19								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 2 in *▽ **END OF DAY** ---

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BORING B-25

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'9.56"N **LONGITUDE** 81°40'49.32"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4 1/4")												
		SAHM (6")												
	1	Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		10 11 9	20								
	2	▽			3 4 6 6	10								
5	3				3 3 4 4	7								
	4	Medium dense to loose, Light gray fine SAND, trace silt, poorly graded.	A-3		2 3 4 4	7								
	5				3 4 4 4	8								
10		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 3 ft 6 in *▽ **END OF DAY** ---

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BORING B-26

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'7.85"N **LONGITUDE** 81°40'47.58"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4 1/2")												
		SAHM (6")												
	1				11 6 6 7	12								
	2	Medium dense to loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		4 4 3 4	7								
5	3				2 3 3 4	6								
	4	Medium dense, Light gray fine SAND, trace silt, poorly graded. ▽	A-3		2 3 5 6	8								
10	5	Medium dense, Dark yellowish brown fine SAND with clay, poorly graded.	A-3		3 3 5 5	8	19	6						
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 8 ft 0 in *▽ **END OF DAY** ---

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BORING B-27

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'6.79"N **LONGITUDE** 81°40'46.45"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (3") SAHM (6") Medium dense, Light brownish gray fine SAND with silt, poorly graded.	A-3		6 6 6 6	12								
	2	Loose to medium dense, Pale brown fine SAND, trace silt, trace root fragments, poorly graded.	A-3		3 3 3 3	6								
5	3				3 5 6 8	11								
	4	Medium dense, Strong brown fine SAND with clay, poorly graded.	A-3		3 5 8 8	13	30	6						
10	5				3 6 8 10	14								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 8 ft 6 in *▽ **END OF DAY** ---

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BORING B-28

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'5.32"N **LONGITUDE** 81°40'44.94"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4")												
	1	SAHM (7") Medium dense, Light brownish gray fine SAND with silt, poorly graded.	A-3		7 7 6 5	13								
	2	Medium dense, Light gray fine SAND, poorly graded.	A-3		3 4 4 4	8								
5	3	Loose, Yellowish brown CLAY with sand.	A-6		2 2 3 5	5								
	4	Medium dense, Pale brown silty fine SAND, poorly graded.	A-2-4		4 8 15 15	23								
10	5	▽ Medium dense, Light gray fine SAND with clay, poorly graded.	A-3		6 10 13 13	23								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 8 ft 3 in *▽ **END OF DAY** ---

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BORING B-29

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'4.15"N **LONGITUDE** 81°40'43.77"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Gravel (Rock Fragments) (6") SAHM (6") Light gray fine SAND with silt, poorly graded.	A-3		3 3									
	2	Medium dense, Light gray fine SAND, trace silt, poorly graded.	A-3		2 4 7 10	11								
5	3	Medium dense, Brownish yellow fine SAND with silt, poorly graded.	A-3		3 4 5 5	9								
	4	Stiff, Yellowish red CLAY with sand.	A-6		3 4 5 6	9								
10	5	▽ Medium dense, Yellowish brown fine SAND with clay, poorly graded.	A-3		4 6 4 13	10								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 0 in *▽ **END OF DAY** ---

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BORING B-30

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'2.80"N **LONGITUDE** 81°40'42.43"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (5 1/2")												
	1	SAHM (6") Gray fine SAND, trace silt, poorly graded.	A-3		4 4									
	2	Loose, Gray fine SAND with silt, poorly graded.	A-3		3 3 4 2	7								
5	3	Medium dense, Brownish yellow fine SAND with clay, trace silt, poorly graded.	A-3		4 4 6 6	10	18	9						
	4	Medium dense, Yellowish red clayey fine SAND, poorly graded.	A-2-6		4 4 6 6	10								
10	5	▽ Medium dense, Light brown clayey fine SAND, poorly graded.	A-2-6		10 11 12 13	23								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 0 in *▽ **END OF DAY** ---

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BORING B-31

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'3.00"N **LONGITUDE** 81°40'41.49"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (3 3/8")												
		SAHM (7")												
	1	Dark gray fine SAND, trace silt, poorly graded.	A-3		8 8									
	2				5 4 4 5	8								
5	3	Medium dense, Light gray fine SAND, trace silt, poorly graded.	A-3		3 5 6 6	11								
	4				3 5 5 5	10								
10	5	▽ Medium dense, Greenish gray clayey fine SAND, poorly graded.	A-2-6		3 4 5 7	9								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 8 ft 6 in *▽ **END OF DAY** ---

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BORING B-32

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'4.16"N **LONGITUDE** 81°40'39.99"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4 1/2")												
		SAHM (6")												
	1	Gray fine SAND, trace silt, poorly graded.	A-3		3 4									
	2	Loose, Light gray fine SAND, trace silt, poorly graded.	A-3		2 2 3 4	5								
5	3	Loose, Brownish yellow fine SAND with clay, poorly graded.	A-3		2 3 4 6	7	15	7						
	4	Very stiff, Greenish gray CLAY.	A-6		3 6 9 13	15								
10	5	▽			5 5 7 10	12								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 5 in *▽ **END OF DAY** ---

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BORING B-33

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'5.42"N **LONGITUDE** 81°40'37.35"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (3 1/2")												
		SAHM(6 1/2")												
	1	Medium dense, Dark gray fine SAND, trace silt, poorly graded.	A-3		3 4 7	11								
	2	Medium dense, Brownish yellow fine SAND with clay, poorly graded.	A-3		5 5 5 6	10	17	10						
5	3	Very stiff, Reddish yellow CLAY, trace sand.	A-6		4 8 10 10	18								
	4	Medium dense, Brownish yellow fine SAND with clay, poorly graded.	A-3		8 11 13 12	24								
10	5	Very dense, Brownish yellow fine SAND with silt, poorly graded. ▽	A-3		16 21 24 30	45								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 9 in *▽ **END OF DAY** ---

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BORING B-34

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/12/19 **COMPLETED** 9/12/19 **LATITUDE** 30°23'6.28"N **LONGITUDE** 81°40'35.55"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (5")												
		SAHM (6")												
	1				3 4									
	2	Medium dense, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 4 4 3	8								
5	3	Stiff, Light gray CLAY with sand.	A-6		2 3 5 6	8								
	4	Very stiff, Light gray CLAY.	A-6		5 6 8 8	14								
10	5	▽ Very stiff, Yellowish brown CLAY.	A-6		7 9 13 15	22								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 3 in *▽ **END OF DAY** ---

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BORING B-35

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/6/19 **COMPLETED** 9/6/19 **LATITUDE** 30°23'7.31"N **LONGITUDE** 81°40'33.37"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.Hayward **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4")												
		SAHM (6")												
	1	Very dark grayish brown fine SAND with silt, poorly graded.	A-3		6 7									
	2	Firm, Yellowish brown CLAY.	A-6		2 2 2 2	4								
5	3	▽ Firm, Yellowish brown CLAY, trace sand, trace root fragments.	A-6		2 2 2 2	4								
	4	Firm, Light gray CLAY, trace root fragments.	A-6		2 2 2 3	4								
10	5				1 3 3 3	6								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 6 in *▽ **END OF DAY** ---

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BORING B-36

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/6/19 **COMPLETED** 9/6/19 **LATITUDE** 30°23'7.80"N **LONGITUDE** 81°40'32.42"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (3 1/2")												
		SAHM (6")												
	1	Loose, Gray fine SAND, trace clay, poorly graded.	A-3		2 4 3	7								
	2	Loose, Grayish brown fine SAND, trace silt, poorly graded.	A-3		2 2 3 7	5								
5	3	Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 2 2 3	4								
	4	Loose, Greenish gray fine SAND, trace clay, poorly graded.	A-3		3 3 4 3	7	24	3						
10	5	Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 2 2 2	4	24	2						
15	6	Stiff, Greenish gray sandy CLAY.	A-6		2 3 5	8								
20	7	Medium dense, Pale brown silty fine SAND, poorly graded.	A-2-4		5 5 5	10								

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 1 in *▽ **END OF DAY** ---

(Continued Next Page)

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BORING B-36

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
20		Medium dense, Pale brown silty fine SAND, poorly graded.	A-2-4											
25	8	Medium dense, Yellow silty fine SAND, poorly graded.	A-2-4		1 3 8	11								
30	9	Loose, Light gray silty fine SAND, poorly graded.	A-2-4		1 2 3	5								
35	10	Loose to medium dense, Very pale brown fine SAND with silt, few gravel (shell fragments), poorly graded.	A-3		1 3 2	5								
40	11				10 11 9	20								

Bottom of borehole at 40 feet.

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 4 ft 1 in *▽ **END OF DAY** ---

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BORING B-37

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/9/19 **COMPLETED** 9/9/19 **LATITUDE** 30°23'8.65"N **LONGITUDE** 81°40'30.43"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (4")												
		SAHM (7")												
	1	Grayish brown fine SAND, trace silt, poorly graded.	A-3		5 5									
	2	Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		3 2 2 2	4								
5	3	▽			2 3 4 4	7								
	4	Loose to medium dense, Brownish yellow fine SAND, trace clay, poorly graded.	A-3		4 5 5 8	10								
	5				5 8 6 6	14	20	2						
10		Medium dense, Brownish yellow fine SAND, trace clay, poorly graded.	A-3											
	6				2 2 3	5								
15		Loose, Dark gray clayey fine SAND, poorly graded.	A-2-6											
	7	Loose, Pale brown fine SAND with clay, poorly graded.	A-3		1 2 3	5								
20														

NOTES Boring Grouted and Capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 0 in *▽ **END OF DAY** ---

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BORING B-37

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
20		Loose, Pale brown fine SAND with clay, poorly graded.	A-3											
25	8	Medium dense, Pale brown silty fine SAND, poorly graded.	A-2-4		2 4 6	10								
30	9	Loose, Pale brown silty fine SAND, poorly graded.	A-2-4		1 3 3	6								
35	10	Loose, Reddish brown fine SAND with silt, few gravel (shell fragments), poorly graded.	A-3		2 3 4	7								
40	11	Medium dense, Greenish gray fine SAND with silt, few gravel (shell fragments), poorly graded.	A-3		3 4 9	13								

Bottom of borehole at 40 feet.

NOTES Boring Grouted and Capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 5 ft 0 in *▽ **END OF DAY** ---

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BORING B-38

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/9/19 **COMPLETED** 9/9/19 **LATITUDE** 30°23'9.24"N **LONGITUDE** 81°40'28.87"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (1") SAHM (4 1/2")												
	1	Loose, Olive brown fine SAND with clay, trace silt and gravel (rock fragments), poorly graded.	A-3		2 3 4	7								
	2	Loose, Light olive brown fine SAND with silt, trace clay and gravel (rock fragments), poorly graded.	A-3		4 4 3 3	7								
5	3	Loose, Yellowish brown fine SAND with silt, trace clay and gravel (rock fragments), poorly graded.	A-3		2 3 3 4	6								
	4	Loose, Strong brown clayey fine SAND, poorly graded.	A-2-6		5 2 3 3	5								
10	5	▽ Stiff, Strong brown sandy CLAY.	A-6		3 4 5 7	9								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 6 in *▽ **END OF DAY** ---

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BORING B-39

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/9/19 **COMPLETED** 9/9/19 **LATITUDE** 30°23'9.97"N **LONGITUDE** 81°40'27.07"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0	1	Asphalt (2") Limerock Base (9") Dark grayish brown fine SAND, trace silt and clay, poorly graded.	A-3		6 6									
	2	Medium dense to loose, Brown fine SAND, trace silt, with clay nodules, poorly graded.	A-3		5 4 4 5	8	11	3						
5	3				2 2 2 2	4								
	4	Very loose, Pale brown fine SAND with silt and clay nodules, trace organic fines, poorly graded.	A-3		1 1 1 1	2								
10	5	Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		1 2 3 2	5								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 8 ft 2 in *▽ **END OF DAY** ---

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BORING B-40

PROJECT NO. 0006-0033

PROJECT NAME JEA Beverly Hills Septic Tank Phase Out Project

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 9/9/19 **COMPLETED** 9/9/19 **LATITUDE** 30°23'10.68"N **LONGITUDE** 81°40'25.48"W

DRILLING CONTRACTOR MAE, PLLC **DRILLING METHOD** Standard Penetration Test

LOGGED BY D.McLellan **CHECKED BY** W. Josh Mele **GROUND ELEVATION** — **HAMMER TYPE** Automatic

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	AASHTO	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0		Asphalt (2") SAHM (6 1/2")												
	1	Brown fine SAND with silt, trace clay, poorly graded.	A-3		7 8									
	2	Medium dense, Dark yellowish brown clayey fine SAND with silt, poorly graded.	A-3		3 4 5 5	9								
5	3	Loose, Olive brown fine SAND with silt, trace clay, poorly graded.	A-3		3 3 2 3	5								
	4	Loose, Pale brown fine SAND, trace silt, poorly graded.	A-3		2 3 2 2	5								
10	5	▽ Stiff, Yellowish red sandy CLAY.	A-6		2 3 3 2	6								
		Bottom of borehole at 10 feet.												

NOTES Boring backfilled with soil cuttings and capped with Asphalt Cold Patch.

GROUND WATER LEVELS

▽ **AT TIME OF DRILLING** 9 ft 0 in *▽ **END OF DAY** ---

FIELD EXPLORATION PROCEDURES

Standard Penetration Test (SPT) Borings

The Standard Penetration Test (SPT) boring(s) are performed in general accordance with the latest revision of ASTM D1586, "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils." In some cases, the borings are advanced manually from the ground surface using a hand-held bucket auger to a depth of approximately 5 feet if there are possible shallow utility conflicts. Otherwise, the borings are advanced using rotary drilling techniques. A split-barrel sampler is inserted to the bottom of the borehole at each sampling interval. The sampler is driven 18 to 24 inches into the soil using a 140-pound hammer falling an average height of 30 inches per hammer blow. The number of hammer blows for the final 12 inches of penetration (18" sample) or for the sum of the middle 12 inches of penetration (24" sample) is termed the "penetration resistance, blow count, or N-value." This value is an index to several in-situ geotechnical properties of the material tested, such as relative density and Young's Modulus.

After driving the sampler, it was retrieved from the borehole and representative samples of the material within the split-barrel were containerized and sealed. After completing the drilling operations, the samples for each boring were transported to the laboratory where they were examined by our engineer in order to verify the field descriptions.

Once the boring is complete and the groundwater level is measured, the borehole is backfilled with soil, or it is backfilled from bottom to top with a lean cementitious grout.

KEY TO BORING LOGS – AASHTO

Soil Classification

Soil classification of samples obtained at the boring locations is based on the American Association of State Highway and Transportation Officials (AASHTO) Classification System. Coarse grained soils have more than 50% of their dry weight retained on a #200 sieve. Their principal descriptors are: sand, cobbles and boulders. Fine grained soils have less than 50% of their dry weight retained on a #200 sieve. They are principally described as clays if they are plastic and silts if they are slightly to non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

BORING LOG LEGEND

Symbol	Description
N	Standard Penetration Resistance, the number of blows required to advance a standard spoon sampler 12" when driven by a 140-lb hammer dropping 30".
WOR	Split Spoon sampler advanced under the weight of the drill rods
WOH	Split Spoon sampler advanced under the weight of the SPT hammer
50/2"	Indicates 50 hammer blows drove the split spoon 2 inches; 50 Hammer blows for less than 6-inches of split spoon driving is considered "Refusal".
(SP)	Unified Soil Classification System
-200	Fines content, % Passing No. 200 U.S. Standard Sieve
w	Natural Moisture Content (%)
OC	Organic Content (%)
LL	Liquid Limit
PI	Plasticity Index
NP	Non-Plastic
PP	Pocket Penetrometer in tons per square foot (tsf)

MODIFIERS

SECONDARY CONSTITUENTS
(Sand, Silt or Clay)

Trace	Less than 5%
With	5% to 12%
Sandy, Silty or Clayey	12% to 35%
Very Sandy, Very Silty or Very Clayey	35% to 50%

ORGANIC CONTENT

Trace	2% or less
With	3% to 5%
Organic Soils	5% to 20%
Highly Organic Soils (Muck)	20% to 75%
PEAT	Greater than 75%

MINOR COMPONENTS
(Shell, Rock, Debris, Roots, etc.)

Trace	Less than 5%
Few	5% to 10%
Little	15% to 25%
Some	30% to 45%

RELATIVE DENSITY (Coarse-Grained Soils)

Relative Density	N-Value *
Very Loose	Less than 3
Loose	3 to 8
Medium Dense	8 to 24
Dense	24 to 40
Very Dense	Greater than 40

CONSISTENCY (Fine-Grained Soils)

Consistency	N-Value *
Very Soft	Less than 1
Soft	1 to 3
Firm	3 to 6
Stiff	6 to 12
Very Stiff	12 to 24
Hard	Greater than 24

RELATIVE HARDNESS (Limestone)

Relative Hardness	N-Value *
Soft	Less than 50
Hard	Greater than 50

* Using Automatic Hammer

AASHTO Soil Classification System
(from AASHTO M 145 or ASTM D 3282)

General Classification	***Granular Materials*** *(35% or less passing the 0.075 mm sieve)*							***Silt-Clay Materials*** *(>35% passing the 0.075 mm sieve)*			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5* A-7-6*
Sieve Analysis, % passing:											
2.00 mm (No. 10)	50 max	…	…	…	…	…	…	…	…	…	…
0.425 (No. 40)	30 max	50 max	51 min	…	…	…	…	…	…	…	…
0.075 (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
Characteristics of fraction passing 0.425 mm (No. 40):											
Liquid Limit	…		…	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
Plasticity Index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min
Usual types of significant constituent materials	stone fragments, gravel and sand		fine sand	silty or clayey gravel and sand				silty soils		clayey soils	
General ***local*** rating as a subgrade	excellent to good			fair to poor							

* Plasticity index of A-7-5 subgroup is equal to or less than the LL - 30. Plasticity index of A-7-6 subgroup is greater than LL – 30

** *Northeast Florida*

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Appendix B

TABLE 1
Summary of Laboratory Index Test Results
JEA Beverly Hills Septic Tank Phase Out Project
MAE Project No.: 0006-0033

Boring No.	Sample No.	Approximate Depth (ft) (1)	Natural Moisture Content (%)	Percent Passing #200 (%)	Liquid Limit	Plasticity Index	Organic Content (%)	AASHTO Classification
B-1	2	2 to 4	25	3	---	---	---	A-3
B-3	4	6 to 8	22	2	---	---	---	A-3
B-7	5	8 to 10	27	3	---	---	---	A-3
B-9	5	7 to 8	25	46	---	---	---	A-6
B-11	3	4 to 6	25	1	---	---	---	A-3
B-11	8	23.5 to 25	30	62	---	---	---	A-6
B-12	7	18.5 to 20	21	58	---	---	---	A-6
B-12	9	28.5 to 30	51	77	---	---	---	A-6
B14	2	2 to 4	95	11	---	---	---	A-2-4
B-16	3	4 to 6	25	4	---	---	---	A-3
B-17	2	2 to 4	23	3	---	---	---	A-3
B-20	2	2 to 4	29	2	---	---	---	A-3
B-22	3	4 to 6	23	5	---	---	---	A-3
B-26	5	8 to 10	19	6	---	---	---	A-3
B-27	4	6 to 8	30	6	---	---	---	A-3
B-28	3	4 to 6	19	3	---	---	---	A-3
B-30	3	4 to 6	18	9	---	---	---	A-3
B-32	3	4 to 6	15	7	---	---	---	A-3
B-33	2	2 to 4	17	10	---	---	---	A-3

TABLE 1
Summary of Laboratory Index Test Results
JEA Beverly Hills Septic Tank Phase Out Project
MAE Project No.: 0006-0033

Boring No.	Sample No.	Approximate Depth (ft) (1)	Natural Moisture Content (%)	Percent Passing #200 (%)	Liquid Limit	Plasticity Index	Organic Content (%)	AASHTO Classification
B-35	2	2 to 4	46	3	---	---	---	A-3
B-36	4	6 to 8	24	3	---	---	---	A-3
B-36	9	28.5 to 30	24	2	---	---	---	A-3
B-37	5	8 to 10	20	2	---	---	---	A-3
B-39	2	2 to 4	11	3	---	---	---	A-3
(1) Feet below existing ground surface.								

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LABORATORY TEST PROCEDURES

Percent Fines Content

The percent fines or material passing the No. 200 mesh sieve of the sample tested was determined in general accordance with the latest revision of ASTM D 1140. The percent fines are the soil particles in the silt and clay size range.

Natural Moisture Content

The water content of the tested sample was determined in general accordance with the latest revision of ASTM D 2216. The water content is defined as the ratio of “pore” or “free” water in a given mass of material to the mass of solid material particles.

Appendix C

Pavement Core Photographs