2023-1068M

GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF A SUPPLEMENTAL GEOTECHNICAL SITE EXPLORATION

PROPOSED UF HEALTH EASTSIDE URGENT CARE GAINESVILLE, ALACHUA COUNTY, FLORIDA

GSE PROJECT NO. 15579A

Prepared For:

CHW PROFESSIONAL CONSULTANTS, INC.

NOVEMBER 2022

GSE Engineering & Consulting, Inc.

November 4, 2022

Robert J. Walpole, P.E.
CHW Professional Consultants, Inc.
11801 Research Drive
Alachua, Florida 32615

Subject: Summary Report of a Supplemental Geotechnical Site Exploration
Proposed UF Health Eastside Urgent Care
Gainesville, Alachua County, Florida
GSE Project No. 15579A

GSE Engineering & Consulting, Inc. (GSE) is pleased to submit this geotechnical site exploration report for the above referenced project.

Presented herein are the findings and conclusions of our exploration, including the geotechnical parameters and recommendations to assist with roadway and stormwater management facility designs.

GSE appreciates this opportunity to have assisted you on this project. If you have any questions or comments concerning this report, please contact us.

Sincerely,

GSE Engineering & Consulting, Inc.

Angelina X. Liu, E.I.
Staff Engineer

JASON E. GOWLAND LICENSE No.66467 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by Jason Eric Gowland
Digitally signed by Jason Eric Gowland
Date: 2022.11.07 11:14:02 -05'00'
on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Jason E. Gowland, P.E.
Principal Engineer
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1.0 INTRODUCTION

1.1 General

GSE Engineering & Consulting, Inc. (GSE) has completed this supplemental geotechnical exploration for the proposed UF Health Eastside Urgent Care facility located in Gainesville, Alachua County, Florida. This exploration was performed in accordance with GSE Proposal No. 2022-541 dated September 22, 2022. You authorized our services on September 22, 2022.

1.2 Project Description

This project consists of the UF Health Eastside Urgent Care facility and will include medical facility buildings, roadways and parking lots and stormwater management facilities. The site is located on the south side of S.R. 20 (SE Hawthorne Road) at the SE 20th Street intersection in Gainesville, Alachua County, Florida. GSE previously performed a geotechnical exploration at the site and issued a report (GSE Project No. 15579) dated June 28, 2022. Please refer to this report for additional background information.

Since that report was issued, the design has progressed and you requested additional borings to complete the design. You provided information about the project and a site plan illustrating the locations of the proposed improvements and the requested boring locations. We have incorporated the previous information into this supplemental report.

A recent aerial photograph of the site was obtained and reviewed. The site plan and aerial photograph were used in preparation of this exploration and report.

1.3 Purpose

The purpose of this geotechnical exploration was to determine the general subsurface conditions, evaluate these conditions with respect to the proposed construction, and prepare geotechnical parameters and recommendations to assist with roadway and stormwater management facility designs.

2.0 FIELD AND LABORATORY TESTS

2.1 General Description

The procedures used for field sampling and testing are in general accordance with industry standards of care and established geotechnical engineering practices for this geographic region. This exploration consisted of performing four (4) auger borings to a depth of 5 feet below land surface along the roadway alignment, and seven (7) auger borings to a depth of 15 feet below land surface within the proposed stormwater management facilities.

The soil borings were performed at the approximate locations as shown on Figure 2. The borings were located at the site using the provided site plan, Global Positioning System (GPS) coordinates, and obvious site features as reference. The boring locations should be considered approximate. The soil borings were performed on October 10, 2022.

2.2 Auger Borings

The auger borings were performed in accordance with ASTM D1452. The borings were performed with flight auger equipment that was rotated into the ground in a manner that reduces soil disturbance. After penetrating to the required depth, the auger was retracted and the soils collected on the auger flights were field classified and placed in sealed containers. Representative samples of each stratum were retained from the auger boring. Results from the auger borings are provided in Section 5.1.

2.3 Soil Laboratory Tests

The soil samples recovered from the soil borings were returned to our laboratory, and examined to confirm the field descriptions. Representative samples were then selected for laboratory testing. The laboratory tests consisted of ten (10) percent soil fines passing the No. 20 sieve, ten (10) natural moisture content determinations, one (1) organic content test, and five (5) constant head hydraulic conductivity tests. These tests were performed in order to aid in classifying the soils and to further evaluate their engineering properties. The laboratory tests are provided in Section 5.2.

3.0 FINDINGS

3.1 Surface Conditions

Angelina X. Liu, E.I. visited the site on October 7, 2022 to observe the site conditions and mark the boring locations. Mr. Jason Kite with Jason Kite, LLC was retained by GSE to clear lanes to allow access to the boring locations for drilling equipment.

The majority of the site is partially wooded with large trees that is mowed under the tree canopy. The eastern and western limits of the site are more heavily wooded with dense underbrush. There are the remains of a concrete building slab at the north end of the site and a mound of limestone boulders at the south end of the site.

The topography at the site is gently sloping down toward the southeast from the northwest. Regional topography is relatively flat. The Gainesville East USGS Topographic Map indicates the ground surface elevations at the site are near elevations 128 to 139 feet[1] NAVD88.

3.2 Subsurface Conditions

The locations of the auger borings are provided on Figure 2. Complete logs for the borings are provided in Section 5.1. Descriptions for the soils encountered are accompanied by the Unified Soil Classification System symbol (SM, SP-SM, etc.) and are based on visual examination of the recovered soil samples and the laboratory tests performed. Stratification boundaries between the soil types should be considered approximate, as the actual transition between soil types may be gradual.

The auger borings located in the proposed stormwater management facilities indicate the soils across these areas are relatively consistent. The auger borings initially penetrated 2.5 to 11 feet of a near-surface sandy stratum consisting of poorly graded sand, sand with silt, and silty sand with organics (SP, SP-SM, SM-PT). This was underlain by sand with clay, and clayey to very clayey sand (SP-SC, SC, SC/CL) to the explored depths of 15 feet bls.

The auger borings located in the proposed roadways generally encountered a near-surface sandy stratum consisting of poorly graded sand, and sand with silt (SP, SP-SM) to the boring termination depths of 5 feet bls.

The groundwater table was encountered in the auger borings at depths of 2.8 to 6 feet bls at the time of our investigation.

3.3 Review of Published Data

The majority of the site is mapped as four soil series by the Soil Conservation Service (SCS) Soil Survey for Alachua County[2]. The following soil descriptions are from the Soil Survey.

Millhopper-Urban land complex, 0 to 5 percent slopes **–** This complex consists of moderately well-drained, nearly level to gently sloping Millhopper soils and Urban land. The areas are irregular in shape and range from about 15 to 250 acres. This complex is within most urbanized areas of the county.

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[1] United States Geological Survey, Gainesville East, 2022.

[2] Soil Survey of Alachua County, Florida. Soil Conservation Service, U.S. Department of Agriculture.

About 50 to 85 percent of each delineation is open areas of Millhopper soils. These open areas are vacant lots or are used for gardens, lawns, parks, or playgrounds. They are either too small or so intermingled with areas of Urban land that it is impractical to map them separately. About 20 to 30 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil material during urban related construction and development.

About 15 to 50 percent of each delineation is Urban land. Urban land consists of areas covered with buildings, streets, parking lots, sidewalks, and other structures. The Urban land of this map unit is generally developed on Millhopper sand or fine sand.

Typically, the surface layer of Millhopper soils is dark grayish brown sand about 9 inches thick. The subsurface layer is yellowish brown to pale brown sand about 49 inches thick. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is yellowish brown, mottled loamy sand, and the lower 16 inches is gray, mottled sandy clay loam.

The Millhopper soils have a water table that is 40 to 60 inches below the surface for 1 to 4 months and is at a depth of 60 to 72 inches for 2 to 4 months during most years. The available water capacity is low in the surface and subsurface layers and low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, and it is slow to moderate in the subsoil. Natural fertility is low. Organic matter content is low to moderately low.

Pompano sand – This nearly level, poorly drained soil is on poorly defined flats in the broad flatwoods and in shallow depressions in the sandy, rolling uplands. Slopes are nearly smooth on the broad flats and are slightly concave in the shallow depressions. They range from 0 to 2 percent. The shape of the areas is variable. They are usually relatively small in size and range from about 10 to 45 acres.

Typically, the surface layer is very dark gray sand about 15 inches thick. The underlying layers are sand to a depth of 82 inches or more. The upper 20 inches is light brownish gray and has pale brown mottles, the next 45 inches is gray and has mottles, and the lower 12 inches is gray and has no mottles.

Included with this soil in mapping are a few small areas of soils that have a black or very dark gray, sandy surface layer 6 to 10 inches thick. In a few areas are small inclusions of Chipley, Placid, Plummer, and Myakka soils. A few small areas of Pompano soils have 2 to 5 percent slopes. About 250 acres mapped as Pompano soil adjacent to the Santa Fe River along the northern boundary of the county is occasionally flooded for periods of about 1 to 3 weeks. Total included areas are about 15 percent or less.

This Pompano soil has a water table that is less than 10 inches from the surface for 2 to 6 months during most years. Surface runoff is slow. The available water capacity is very low. Permeability is very rapid. The natural fertility is low. Organic matter content of the surface layer is moderately low to moderate.

Wauchula-Urban land complex – This complex consists of poorly drained, nearly level Wauchula soils and Urban land. It is in irregularly shaped, relatively small to large areas. Slopes range from 0 to 2 percent. Most of this complex is within the eastern and northern parts of Gainesville. Small acreages are in the urban sections of Micanopy, Waldo, and Hawthorne.

About 50 to 85 percent of each delineation is open areas of Wauchula soils. These open areas are gardens, vacant lots, lawns, and playgrounds. They are so small or so intermingled with areas of Urban land that it is impractical to map them separately. About 10 to 20 percent of the soils in these open areas have been modified by cutting, grading, and spreading of soil materials during urban construction.

About 15 to 50 percent of each delineation is Urban land. Urban land consists of areas covered with houses, streets, parking lots, sidewalks, industrial buildings, airports, and other structures. The Urban land of this map unit is generally developed on Wauchula sand.

Typically, the surface layer of Wauchula soils is black to dark gray sand about 8 inches thick. The subsurface layer is sand about 20 inches thick. The upper 6 inches is light brownish gray, the next 4 inches, in which many sand grains have organic coatings, is dark reddish brown; the next 5 inches is dark brown, and the lower 5 inches is pale brown. The subsoil extends to a depth of 62 inches. The upper 9 inches is gray fine sandy loam; the next 19 inches is light brownish gray loamy sand; and the lower 6 inches is light gray fine sandy loam. Between depths of 62 and 80 inches, the underlying material is light gray sandy clay loam.

Included with the unit in mapping are small areas of Pomona, Pelham, Mulat, Newnan, Sparr, and Surrency soils. These included areas make up about 10 to 20 percent of the open areas in some delineations.

In the Wauchula soils, the water table is within 10 inches of the surface for about 1 to 3 months during most years. During dry periods, it recedes to a depth of more than 40 inches. Natural fertility and organic matter content are low. Permeability of the sandy surface and subsurface layers is rapid. It is slow to moderately slow in the loamy subsoil. Available water capacity is low to medium in the surface layer, very low to low in the subsurface layer, and low to high in the subsoil.

Myakka-Myakka, wet, sands, 0 to 2 percent slopes – This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth to slightly convex and range from 0 to 2 percent. The areas are irregular or elongated in shape and range from about 10 to 100 acres.

Typically, the surface layer is dark grayish brown sand about 8 inches thick. The underlying layers are sand.to a depth of 82 inches or more. In sequence from the top, the upper 16 inches is light gray, the next 6 inches is very dark brown and has sand grains wen coated with organic materials; the next 5 inches is dark brown; the next 18·inches is very pale brown and has mottles; and the next 29·inches is light brownish gray.

Included with this soil are small areas of Pomona, Sparr, and Pompano soils. Included are small areas of poorly drained soils that have a stained layer that does not meet the requirement of a spodic horizon. Also included are few areas of soils that are similar to the Myakka soil except that they have a well coated, organic stained layer 14 to 19 inches below the surface. Total included areas are about 20 percent.

This Myakka soil has a water table that is at a depth of less than 10 inches for 1 to 4 months and at a depth of 10 to 40 inches for 2 to 4 months during most years. The water table recedes to a depth of more than 40 inches during drier seasons. Surface runoff is slow. The available water capacity is very low from 0 to 24 inches, medium to high from 24 to 30 inches, and very low to low below a depth of.30 inches. Permeability is rapid to a depth of about 24 inches, moderate to moderately rapid from 24 to 30 inches, and rapid below a depth of 30 inches. Natural fertility and organic matter content are low.

3.4 Laboratory Soil Analysis

Selected soil samples recovered from the soil borings were analyzed for the percent soil fines passing the No. 200 sieve, natural moisture content, Atterberg Limits, and hydraulic conductivity. Samples selected for laboratory testing were collected at depths ranging from 1 to 7 feet bls. These tests were performed to confirm visual soil classification and evaluate their engineering properties. The complete laboratory report is provided in Section 5.2.

The laboratory tests indicate the tested soils consist of poorly graded sand, sand with silt, silty sand with organics, and clayey sand (SP, SP-SM, SM-PT, SC). The tested poorly graded sand (SP) contains approximately 3 percent soil fines passing the No. 200 sieve with a natural moisture content of about 6 percent. The tested sand with silt (SP-SM) contains approximately 7 to 8 percent soil fines passing the No. 200 sieve with natural moisture contents of about 5 to 16 percent. The tested silty sand with organics (SM-PT) contains approximately 13 percent soil fines passing the No. 200 sieve with a natural moisture content of about 26 percent. The tested clayey sand (SC) contains approximately 21 percent soil fines passing the No. 200 sieve with a natural moisture content of about 15 percent.

The constant head hydraulic conductivity test results indicate the near-surface poorly graded sand, and sand with silt (SP, SP-SM) has hydraulic conductivity values of 0.2 to 8 feet per day. Tests were not conducted on the deeper clayey sand due to the limitations of the test method on soils having moderate to high fines content, but these soils are expected to have permeability values at least one order of magnitude lower than the sandy soils.

The organic content determinations indicate the tested silty sand with organics (SM-PT) contains approximately 10 percent organic matter. Typically, soils with greater than 5 percent organic content are considered unsuitable for roadway support.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General

The following recommendations are made based upon our understanding of the proposed construction, a review of the attached soil borings and laboratory test data, and experience with similar projects and subsurface conditions. If plans or the location of proposed construction changes from those discussed previously, GSE requests the opportunity to review and possibly amend our recommendations with respect to those changes.

The performance of site improvements may be sensitive to their post-construction relationship to site groundwater levels, seepage zones, or soil/rock characteristics exposed at final site grades. GSE recommends that use of boring information for final design of all site improvements be predicated on proper horizontal and vertical control of borings.

In this section of the report, we present our geotechnical parameters and recommendations to assist with roadway and stormwater management facility designs as well as our general site preparation guidelines.

4.2 Groundwater

The groundwater table was encountered in the auger borings at depths of 2.8 to 6 feet bls at the time of our investigation. Estimates for the seasonal high groundwater tables are presented on the individual boring logs.

4.3 Flexible Pavement

Overall soil conditions encountered by our borings at this site are suitable for supporting conventional limerock base and asphalt wearing surface pavements. We have not been provided the anticipated traffic loading conditions; therefore, the following pavement component recommendations should be used only as guidelines. The below recommendations are intended to be minimums. Increasing base course and asphalt thicknesses would increase the design life of the pavement.

4.3.1 Stabilized Subgrade

If a crushed limerock or recycled concrete base is used, we recommend a stabilized subgrade be located beneath the base. The stabilized subgrade should have a minimum Limerock Bearing Ratio (LBR) of 40, with minimum thicknesses of 6 inches for automobile parking areas and 12 inches for driveways.

The stabilized subgrade can be imported material or a mixture of imported and on-site material. If a mix is proposed, a mix design should be performed to determine the optimum mix proportions. The stabilized subgrade should be compacted to a minimum of 98 percent of the Modified Proctor maximum dry density (ASTM D1557) for soils with less than 15 percent fines content. Soils with 15 percent or greater fines content should be compacted to 100 percent of the Standard Proctor maximum dry density (ASTM D698).

4.3.2 Base Course

The base course can consist of either crushed limerock, soil cement, or recycled concrete. If you should use a soil cement base course, a stabilized subgrade is not required.

Limerock should have a LBR of at least 100, be obtained from a FDOT approved source and meet FDOT gradation requirements. The base course thickness should be a minimum of 6 inches in automobile parking areas, and 8 inches in driveway areas. The base course should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D1557). We recommend a minimum 24 inches separation between the bottom of the limerock base course and the estimated seasonal high-water table. If site grading does not allow for this separation, we recommend underdrains be considered.

Soil cement can consist of an imported material or a blend of the on-site soils and cement. A mix design should be performed to determine the optimum cement content. We recommend the soil cement have a minimum 28-day compressive strength of 500 psi. Soil cement can be blended off-site (in a pug mill) or on site. Soil cement pills should be cast from each day's production to verify the recommended compressive strength has been achieved at 28 days. We recommend the soil cement base course be a minimum of 8 inches thick throughout the project. We recommend a minimum 18 inches separation between the bottom of the soil cement base course and the estimated seasonal high water table. If site grading does not allow for this separation, we recommend underdrains be considered.

Recycled concrete should have an LBR of at least 150, be obtained from a FDOT approved source and meet FDOT gradation requirements. The base course thickness should be a minimum of 8 inches. The base course should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D1557). We recommend a minimum 12 inches separation between the bottom of the recycled concrete base course and the estimated seasonal high water table. If site grading does not allow for this separation, we recommend underdrains be considered.

4.3.3 Wearing Surface

The asphalt-wearing surface should consist of an FDOT Type SP Hot Mix Asphalt mixture. For automobile parking areas, the thickness should be a minimum of 1.5 inches. For driveway areas, the thickness should be a minimum of 2 inches. The asphalt-wearing surface should consist of an SP-12.5 mix. The asphalt should be compacted to at least 95 percent of the mix design density.

The constructability of differing asphalt thicknesses may be difficult, and having a uniform 2-inch-thick asphalt wearing surface may be more practical.

4.4 Site Preparation

The soils at this site should be suitable for supporting the proposed construction using normal, good practice site preparation procedures. The following recommendations are our general guidelines for site preparation.

4.4.1 Stripping

Strip the construction limits and 10 feet beyond the perimeter of all grass, roots, topsoil, and other deleterious materials. You should expect to strip to depths of 12 or more inches. Deeper stripping will likely be necessary due to major root systems present at the site.

4.4.2 Dewatering

Temporary dewatering may be necessary for this project. If needed, we anticipate dewatering can be accomplished with sumps placed near the construction area, or with underdrains connected to a vacuum pump.

In any case, the site should always be graded to promote runoff and limit the amount of ponding. Localized ponding of stormwater is expected without proper grading during construction, and could render previously acceptable surfaces unacceptable.

4.4.3 Proof-Rolling

Proof-roll the subgrade with heavy rubber-tired equipment, such as a loaded front-end loader or dump truck, to identify any loose or soft zones not found by the soil borings. The proof-rolling should be monitored by a geotechnical engineer or qualified technician. Undercut or otherwise treat these zones as recommended by the geotechnical engineer in this report.

4.4.4 Proof Compaction

Compact the subgrade to a density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). The specified compaction should be obtained to a depth of 1 foot below the existing grade prior to placing fill. Vibratory roller equipment should not be used within approximately 100 feet of existing structures. Lighter "walk-behind" compaction equipment may be used to achieve the degree of compaction.

Should clayey sand be encountered at the bearing surface, this material should be probed and visually confirmed to be unyielding in the upper 12 inches in lieu of density testing. If the foundation excavations penetrate the clayey sand, the excavation should be performed in a manner that reduces soil disturbance. Clayey sand soils (with fines content in excess of 15 percent) that are removed and replaced or appreciably disturbed need to be re-compacted to 98 percent of the Standard Proctor maximum dry density (ASTM D698).

4.4.5 Fill Placement

Imported fill placed to raise the site grades should consist of clean sand having less than 10 percent passing the No. 200 sieve. On-site soils meeting the requirements of Section 4.7 may also be used as structural fill. The fill should be placed in maximum 12-inch loose lifts that are compacted to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). If lighter "walk-behind" compaction equipment is used, this may require lifts of 4 inches or less to achieve the required degree of compaction.

4.5 Quality Control and Construction Materials Testing

It should be noted that the geotechnical engineering design does not end with the advertisement of the construction documents. As the geotechnical engineer of record, GSE is the most qualified to perform the construction materials testing that will be required for this project. The benefits of having the geotechnical engineer of record also perform the construction materials testing are numerous. If GSE continues to be involved with the project through construction, we will be able to constantly re-evaluate and possibly alter our geotechnical recommendations in a timely and cost-effective manner once final design and construction techniques are developed. This often results in cost savings for the project.

We recommend a compaction test be performed for each 10,000 square feet of pavement area per foot of fill or native material, or a minimum of three tests each, whichever is greater.

4.6 Stormwater Management

The soil conditions at the stormwater management facility are relatively consistent; initially penetrated 2.5 to 11 feet of a near-surface sandy stratum consisting of poorly graded sand, sand with silt, and silty sand with organics (SP, SP-SM, SM-PT). This was underlain by sand with clay, and clayey to very clayey sand (SP-SC, SC, SC/CL) to the explored depths of 15 feet bls.

The water table was encountered in the auger borings at depths of 2.8 to 6 feet bls at the time of our exploration. Estimates for the seasonal high groundwater tables are presented on the individual boring logs.

The laboratory permeability tests indicate the near-surface poorly graded sand, and sand with silt (SP, SP-SM) has hydraulic conductivity values of 0.2 to 8 feet per day. The deeper clayey sand encountered below the surficial sandy material is friable and will have permeability values at least one order of magnitude lower than the sandy soils. The underlying very clayey sand are expected to be confining soils.

Based upon our findings and test results, our recommended soil parameters for the stormwater management design in the explored areas are presented below. The recommended parameters consider the results of the permeability tests, wash 200 determinations, and our experience with these types of soils. The parameters below do not consider a factor of safety.

Proposed Northwestern Stormwater Management Facility (P-7 to P-8)

1. Base elevation of effective or mobilized aquifer (average depth of confining layer) equal to 5.5 feet bls.
2. Unsaturated vertical infiltration rate of 6 feet per day.
3. Horizontal hydraulic conductivity equal to 8 feet per day.
4. Specific yield (fillable porosity) of 20 percent.
5. Average seasonal high groundwater table depth equal to 2.5 feet bls.
6. Average seasonal low groundwater table depth equal to 5 feet bls.

Proposed Northeastern Stormwater Management Facility (P-9 to P-10)

1. Base elevation of effective or mobilized aquifer (average depth of confining layer) greater than 15 feet bls.
2. Unsaturated vertical infiltration rate of 3 feet per day.
3. Horizontal hydraulic conductivity equal to 5 feet per day.
4. Specific yield (fillable porosity) of 20 percent.
5. Average seasonal high groundwater table depth equal to 2.5 feet bls.
6. Average seasonal low groundwater table depth equal to 6 feet bls.

Proposed Southwestern Stormwater Management Facility (P-11 to P-13)

1. Base elevation of effective or mobilized aquifer (average depth of confining layer) equal to 15 feet bls.
2. Unsaturated vertical infiltration rate of 1 feet per day.
3. Horizontal hydraulic conductivity equal to 2 feet per day.
4. Specific yield (fillable porosity) of 20 percent.
5. Average seasonal high groundwater table depth equal to 2.5 feet bls.
6. Average seasonal low groundwater table depth equal to 6 feet bls.

4.7 Fill Suitability

The soils encountered at this site within the explored depths range from sands (SP) to sandy clays (CL/CH). A discussion of the suitability for reuse as structural fill for each soil classification according to the Unified Soil Classification System (USCS) designation is provided below.

SP, SP/SM – Sands (SP) and sand with silt (SP/SM) have less than 5 percent and 12 percent soil fines passing the No. 200 sieve, respectively, and are typically well draining soils that are suitable for reuse as structural fill. The sands with silt may require moisture conditioning (drying) to make the material more workable. These soils will require stockpiling and drying before they are reused if they are excavated from below the water table.

SM – Silty sands (SM) can have between 12 percent and 50 percent soil fines passing the No. 200 sieve. Silty sands are typically non-plastic or have low plasticity, and can be reused as structural fill with precautions. Silty sands can be moisture sensitive and difficult to work and compact and can rut if the moisture content is near or above the optimum moisture content. We recommend these soils be moisture conditioned (dried) so that the moisture content during use is at or below the optimum moisture content. Aerating and exposure to the sun is typically the most effective methods of drying these soils. It may not be practical to reuse these materials during the wet season, as frequent rain showers may not allow these soils to dry to a workable moisture content. Suitable silty sands are limited to soil having less than 30 percent soil fines passing the No. 200 sieve. Silty sands with more than 30 percent soil fines are especially moisture sensitive, and are not recommended for reuse as structural fill. These soils will behave more as sandy silt, and for this reason, very silty sands having more than 30 percent soil fines passing the No. 200 sieve have been assigned a dual classification of SM/ML. Silty sand soils that are excavated from below the water table are not recommended for reuse as structural fill due to the amount of time that will be required to dry these soils to a workable condition.

SC – Clayey sand (SC) soils can have between 12 percent and 50 percent soil fines passing the No. 200 sieve. Clayey sands can have a high range of plasticity, varying from a PI of 7 or greater and plotting above the A-line to highly plastic. Friable clayey sands are typically suitable for use as structural fill with precautions. Clayey sands will be moisture sensitive and difficult to work and compact and can rut during placement if the moisture content is near or above the natural moisture content. We recommend these soils be moisture conditioned (dried) so that the moisture content during use is at or below the optimum moisture content. Aerating and exposure to the sun is typically the most effective methods of drying these soils. It may not be practical to reuse these materials during the wet season, as frequent rain showers may not allow these soils to dry to a workable moisture content. Suitable clayey sands are limited to soil having less than 30 percent soil fines passing the No. 200 sieve. Clayey sands with more than 30 percent soil fines passing the No. 200 sieve are especially moisture sensitive and are typically highly plastic, and are not recommended for reuse as structural fill. These soils will behave more as sandy clay, and for this reason, very clayey sands having more than 30 percent soil fines passing the No. 200 sieve have been assigned a dual classification of SC/CH or SC/CL. Clayey sand soils that are excavated from below the water table are not recommended for reuse as structural fill due to the amount of time that will be required to dry these soils to a workable condition.

ML, MH, CL, CH – Silts and clays are not suitable materials for reuse as structural fill.

PT-Soils with greater than 5 percent organic content should not be used as structural fill.

When using on-site soils as fill materials, we recommend the silty and clayey sand soils (SM, SC) be used in the lower depths of the fill. Sand and sand with silt (SP, SP-SM) should be used in the upper portions of the fill. We recommend a minimum of 2 feet of sand (SP, SP-SM) cover the silty and clayey sand fill materials to reduce the potential for soggy surface conditions due to the low permeability characteristics of the silty and clayey sand materials.

5.0 FIELD DATA

5.1 Auger Boring Logs

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GSE Engineering
5590 SW 64th St
Gainesville, FL 32608
Telephone: 3523773233

CLIENT CHW Professional Consultants, Inc.
PROJECT NAME Proposed UF Health Eastside Urgent Care
PROJECT NUMBER 15579A
PROJECT LOCATION Gainesville, Alachua County, Florida

BORING NUMBER P-7

DATE PERFORMED 10/25/2022
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 3.6 ft
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0	AU 1	(SP) Pale brown SAND
2.5	AU 2 PS	(SP) Pale brown and gray SAND *%PASS-200 = 3* *MC = 6* *k_h = 8 ft/day*
5.0		
5.5		(SC) Gray and brown clayey SAND
7.5	AU 3	
10.0		
11.0		(SC) Red and brown clayey SAND
12.5	AU 4	
15.0		Bottom of borehole at 15.0 feet.

BORING NUMBER P-8

DATE PERFORMED 10/25/2022
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 3.5 ft
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0	AU 1	(SP-SM) Dark gray SAND with silt
2.5	AU 2	(SP) Pale brown and gray SAND
5.0		(SC/CL) Gray very clayey SAND
7.5	AU 3	
10.0		
12.5	AU 4	
15.0		Bottom of borehole at 15.0 feet.

(Continued Next Page)

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CLIENT CHW Professional Consultants, Inc.
PROJECT NAME Proposed UF Health Eastside Urgent Care
PROJECT NUMBER 15579A
PROJECT LOCATION Gainesville, Alachua County, Florida

BORING NUMBER P-9

DATE PERFORMED 10/25/2022
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 6.0 ft
ESTIMATED SEASONAL HIGH 3.0 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP-SM) Dark brown SAND with silt
	AU 1	
2.5		2.5
	AU 2 PS	(SP-SM) Brown SAND with silt *%PASS-200 = 7* *MC = 6* *k_h = 8 ft/day*
5.0		
		6.0
	AU 3	(SC) Gray and brown clayey SAND *%PASS-200 = 21* *MC = 15*
7.5		
10.0		11.0
	AU 4	(SP-SC) Pale brown and gray SAND with clay
12.5		
15.0		15.0
		Bottom of borehole at 15.0 feet.

BORING NUMBER P-10

DATE PERFORMED 10/25/2022
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING NR
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP-SM) Dark gray and brown SAND with silt
2.5	AU 1 PS	*%PASS-200 = 7* *MC = 12* *k_h = 0.7 ft/day*
5.0		6.0
	AU 2	(SP) Gray and brown SAND
7.5		
10.0		11.0
	AU 3	(SC) Gray and brown clayey SAND
12.5		
15.0		15.0
		Bottom of borehole at 15.0 feet.

(Continued Next Page)

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PROJECT NUMBER 15579A
PROJECT LOCATION Gainesville, Alachua County, Florida

BORING NUMBER P-11

DATE PERFORMED 10/25/2022
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 2.8 ft
ESTIMATED SEASONAL HIGH 2.0 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SM-PT) Gray silty SAND with organics
	AU 1	*%PASS-200 = 13* *MC = 26* *ORG = 10*
2.5		2.5
	AU 2	(SP-SC) Gray and brown SAND with silt
5.0		
		5.5
	AU 3	(SC) Gray clayey SAND
7.5		
10.0		10.0
		(SC) Gray and brown clayey SAND
	AU 4	
12.5		
15.0		15.0
		Bottom of borehole at 15.0 feet.

BORING NUMBER P-12

DATE PERFORMED 10/25/2022
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 3.7 ft
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP-SM) Dark brown SAND with silt
	AU 1	*%PASS-200 = 7* *MC = 14*
2.5	AU 2 PS	*%PASS-200 = 8* *MC = 14* *k_h = 0.2 ft/day*
5.0		
7.5	AU 3	
		8.5
10.0		(SC) Gray clayey SAND
	AU 4	
12.5		
15.0		15.0
		Bottom of borehole at 15.0 feet.

(Continued Next Page)

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CLIENT CHW Professional Consultants, Inc.
PROJECT NAME Proposed UF Health Eastside Urgent Care
PROJECT NUMBER 15579A
PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 10/25/2022 **BORING NUMBER P-13**
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS: LOGGED BY WDI
AT TIME OF DRILLING 3.7 ft CHECKED BY AXL
ESTIMATED SEASONAL HIGH 2.5 ft
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP) Pale gray SAND
			1.5
		AU 1 PS	(SP-SM) Dark gray SAND with silt
2.5			*%PASS-200 = 8*
			MC = 16
			k_h = 0.2 ft/day
		AU 2	
5.0			
			7.0
7.5		AU 3	(SC) Gray clayey SAND
			10.0
10.0			(SP-SC) Gray SAND with clay
		AU 4	
12.5			
			15.0
15.0			Bottom of borehole at 15.0 feet.

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CLIENT CHW Professional Consultants, Inc.
PROJECT NAME Proposed UF Health Eastside Urgent Care
PROJECT NUMBER 15579A
PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 10/25/2022 **BORING NUMBER R-8**
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 3.5 ft
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0			(SP-SM) Dark brown SAND with silt
1		AU 1	*%PASS-200 = 7* *MC = 6*
2			
3			3.0 (SP) Pale brown SAND
4		AU 2	
5			5.0 Bottom of borehole at 5.0 feet.

DATE PERFORMED 10/25/2022 **BORING NUMBER R-9**
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 3.8 ft
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0			(SP-SM) Dark brown and gray SAND with silt
1		AU 1	
2			2.5 (SP) Pale gray and brown SAND
3			
4		AU 2	
5			5.0 Bottom of borehole at 5.0 feet.

(Continued Next Page)

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CLIENT CHW Professional Consultants, Inc.
PROJECT NAME Proposed UF Health Eastside Urgent Care
PROJECT NUMBER 15579A
PROJECT LOCATION Gainesville, Alachua County, Florida

DATE PERFORMED 10/25/2022 **BORING NUMBER R-10**
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING 3.5 ft
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0			(SP-SM) Dark gray and brown SAND with silt
1		AU 1	*%PASS-200 = 7* *MC = 5*
2			2.0 (SP) Pale gray and brown SAND
3		AU 2	▽
4			▼
5			5.0 Bottom of borehole at 5.0 feet.

DATE PERFORMED 10/25/2022 **BORING NUMBER R-11**
DRILLING CONTRACTOR Whitaker Drilling
GROUND WATER LEVELS:
AT TIME OF DRILLING NR
ESTIMATED SEASONAL HIGH 2.5 ft
LOGGED BY WDI
CHECKED BY AXL
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0			(SP-SM) Gray SAND with silt
1		AU 1	
2			▽ 2.5 (SP) Brown SAND
3			
4		AU 2	
5			5.0 Bottom of borehole at 5.0 feet.

5.2 Laboratory Results

GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 15579A

Project Name: Proposed UF Health Eastside Urgent Care

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Hydraulic Conductivity (ft/day)	Unified Soil Classification
R-8	1-1.5	Dark brown SAND with silt	6				7			SP-SM
R-10	1-1.5	Dark gray and brown SAND with silt	5				7			SP-SM
P-9	6.5-7	Gray and brown clayey SAND	15				21			SC
P-11	1-1.5	Gray silty SAND with organic	26				13	10		SM-PT
P-12	1-1.5	Dark brown SAND with silt	14				7			SP-SM
P-7	2-4	Pale brown and gray SAND	6				3		8	SP
P-9	2-4	Brown SAND with silt	6				7		8	SP-SM
P-10	2-4	Dark gray and brown SAND with silt	12				7		0.7	SP-SM
P-12	2-4	Dark brown SAND with silt	14				8		0.2	SP-SM
P-13	1-3	Dark gray SAND with silt	16				8		0.2	SP-SM

5.3 Key to Soil Classification

KEY TO SOIL CLASSIFICATION CHART

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests				SYMBOLS		GROUP NAME
				GRAPHIC	LETTER	
COARSE-GRAINED SOILS	Gravels	Clean Gravels	Cu ≥ 4 and 1 ≤ Cc ≤ 3		GW	Well graded GRAVEL
More than 50% retained on No. 200 sieve	More than 50% of coarse fraction retained on No. 4 sieve	Less than 5% fines	Cu < 4 and/or 1 > Cc > 3		GP	Poorly graded GRAVEL
		Gravels with fines	Fines classify as ML or MH		GM	Silty GRAVEL
		More than 12% fines	Fines classify as CL or CH		GC	Clayey GRAVEL
	Sands	Clean Sands	Cu ≥ 6 and 1 ≤ Cc ≤ 3		SW	Well graded SAND
	50% or more of coarse fraction passes No. 4 sieve	Less than 5% fines	Cu < 6 and/or 1 > Cc > 3		SP	Poorly graded SAND
		Sand with fines	Fines classify as ML or MH		SP-SM	SAND with silt
		5% ≤ fines < 12%	Fines classify as CL or CH		SP-SC	SAND with clay
		Sand with fines	Fines classify as ML or MH		SM	Silty SAND
		12% ≤ fines < 30%	Fines classify as CL or CH		SC	Clayey SAND
		Sand with fines	Fines classify as ML or MH		SM	Very silty SAND
		30% fines or more	Fines classify as CL or CH		SC	Very clayey SAND
FINE-GRAINED SOILS	Clays	inorganic	50% ≤ fines < 70%		CL/CH	Sandy CLAY
50% or more passes the No. 200 sieve			70% ≤ fines < 85%		CL/CH	CLAY with sand
			fines ≥ 85%		CL/CH	CLAY
	Silts and Clays	inorganic	PI > 7 and plots on/above "A" line		CL	Lean CLAY
	Liquid Limit less than 50		PI < 4 or plots below "A" line		ML	SILT
		organic	Liquid Limit - oven dried / Liquid Limit - not dried < 0.75		OL	Organic clay / Organic silt
	Silts and Clays	inorganic	PI plots on or above "A" line		CH	Fat CLAY
	Liquid Limit 50 or more		PI plots below "A" line		MH	Elastic SILT
		organic	Liquid Limit - oven dried / Liquid Limit - not dried < 0.75		OH	Organic clay / Organic silt
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor				PT	PEAT

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	No. OF BLOWS, N	RELATIVE DENSITY
	0 - 4	Very Loose
	5 - 10	Loose
SANDS:	11 - 30	Medium dense
	31 - 50	Dense
	OVER 50	Very Dense

	No. OF BLOWS, N	CONSISTENCY
	0 - 2	Very Soft
SILTS	3 - 4	Soft
&	5 - 8	Firm
CLAYS:	9 - 15	Stiff
	16 - 30	Very Stiff
	31 - 50	Hard
	OVER 50	Very Hard

	No. OF BLOWS, N	RELATIVE DENSITY
	0 - 8	Very Soft
	9 - 18	Soft
LIMESTONE:	19 - 32	Moderately Hard
	33 - 50	Hard
	OVER 50	Very Hard

SAMPLE GRAPHIC TYPE LEGEND

Location of SPT Sample

Location of Auger Sample

PARTICLE SIZE IDENTIFICATION

BOULDERS:		Greater than 300 mm
COBBLES:		75 mm to 300 mm
GRAVEL:	Coarse -	19.0 mm to 75 mm
	Fine -	4.75 mm to 19.0 mm
SANDS:	Coarse -	2.00 mm to 4.75 mm
	Medium -	0.425 mm to 2.00 mm
	Fine -	0.075 mm to 0.425 mm
SILTS & CLAYS:		Less than 0.075 mm

LABORATORY TEST LEGEND

LL	=	Liquid Limit, %
PL	=	Plastic Limit, %
PI	=	Plasticity Index, %
% PASS - 200	=	Percent Passing the No. 200 Sieve
MC	=	Moisture Content, %
ORG	=	Organic Content, %
k_h	=	Horizontal Hydraulic Conductivity, ft/day

6.0 LIMITATIONS

6.1 Warranty

This report has been prepared for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

6.2 Auger Borings

The determination of soil type and conditions was performed from the ground surface to the maximum depth of the borings, only. Any changes in subsurface conditions that occur between or below the borings would not have been detected or reflected in this report.

Soil classifications that were made in the field are based upon identifiable textural changes, color changes, changes in composition or changes in resistance to penetration in the intervals from which the samples were collected. Abrupt changes in soil type, as reflected in boring logs and/or cross sections may not actually occur, but instead, be transitional.

Depth to the water table is based upon observations made during the performance of the auger borings. This depth is an estimate and does not reflect the annual variations that would be expected in this area due to fluctuations in rainfall and rates of evapotranspiration.

6.3 Site Figures

The measurements used for the preparation of the figures in this report were made using the provided site plan and by estimating distances from existing structures and site features. Figures in this report were not prepared by a licensed land surveyor and should not be interpreted as such.

6.4 Unanticipated Soil Conditions

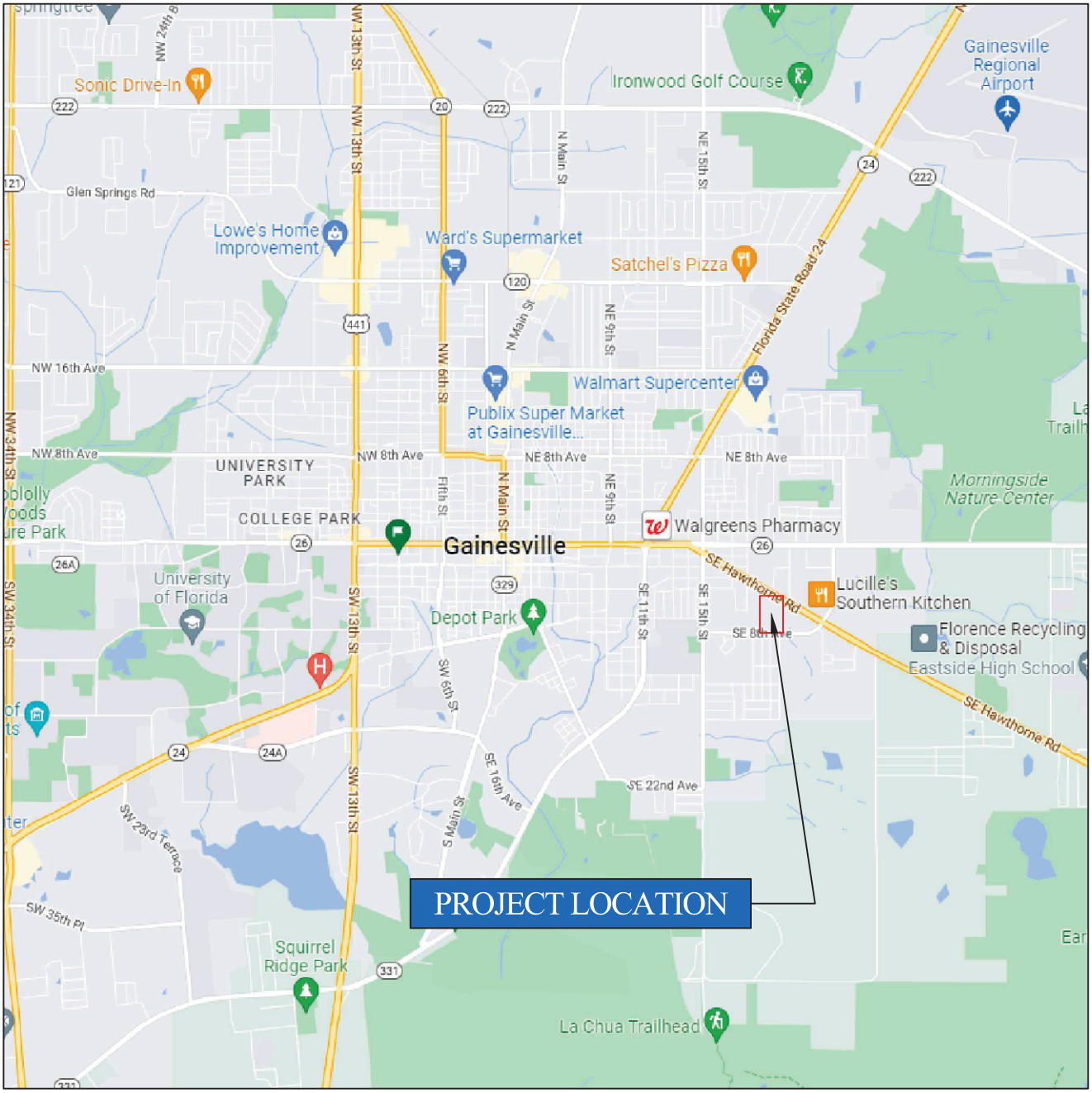
The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on Figure 2. This report does not reflect any variations that may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

6.5 Misinterpretation of Soil Engineering Report

GSE Engineering & Consulting, Inc. is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If others make the conclusions or recommendations based upon the data presented, those conclusions or recommendations are not the responsibility of GSE.

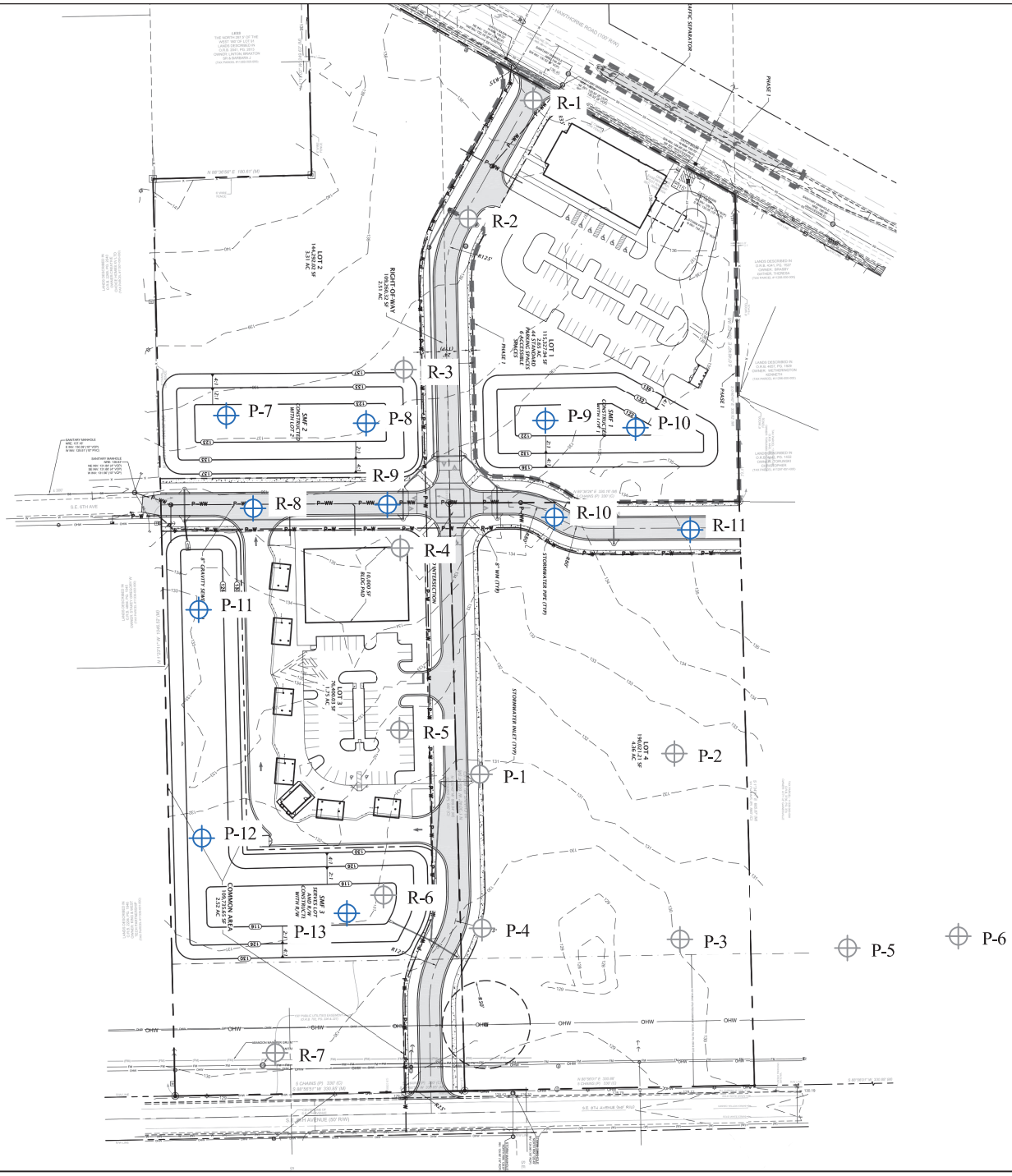
FIGURES



NORTH

NOT TO SCALE

PROPOSED UF HEALTH EASTSIDE URGENT CARE GAINESVILLE, ALACHUA COUNTY, FLORIDA GSE PROJECT NO. 15579A	PROJECT SITE LOCATION MAP		
	DESIGNED BY: JEG CHECKED BY : KLH DRAWN BY : AXL	GSE Engineering & Consulting, Inc.	FIGURE 1



LEGEND:

- AUGER BORING
- PREVIOUSLY PERFORMED AUGER BORING

NORTH

0 180'

SCALE: 1" = 180' APPROX.

PROPOSED UF HEALTH EASTSIDE URGENT CARE
GAINESVILLE, ALACHUA COUNTY, FLORIDA
GSE PROJECT NO. 15579A

SITE PLAN SHOWING APPROXIMATE LOCATIONS OF FIELD TESTS

DESIGNED BY: JEG
CHECKED BY : KLH
DRAWN BY : AXL

GSE Engineering & Consulting, Inc.

FIGURE 2