5801 Benjamin Center Drive, Suite 112
Tampa, Florida 33634
phone: 813.886.1075
fax: 813.249.4916
intertek.com/building
psiusa.com

May 26, 2022

Michael Baker International
12740 Gran Bay Parkway West, Suite 2110
Jacksonville, Florida 32258

Attn: Ms. Kaitlin Davidson

Re: Geotechnical Exploration Services Data Report
Wekiwa Springs State Park
Apopka, Florida
PSI Project No.: 0775-3281

Dear Ms. Davidson:

Professional Service Industries, Inc. (PSI), an Intertek Company, has completed a geotechnical exploration for the above-referenced project. Our services were performed in general accordance with our proposal (PSI Proposal #0775-352857) dated August 30, 2021. This data report presents the results of our field exploration program to guide design and construction of the project.

PROJECT DESCRIPTION

Based on information provided to PSI through email correspondence on August 25, 2021, we understand that an area (named Focus Area 1 on the provided site plan) of approximately 0.4 acres in the Wekiwa Springs State Park is being considered for re-grading. Furthermore, another area (Focus Area 2) of approximately 0.4 acres is being considered for grading and stabilization. In order to evaluate the shallower subsurface conditions, Michael baker International, Inc. (MBI) requested that three (3) hand auger borings be performed within the proposed re-grading area. PSI was not provided with a detailed grading contour plan.

Should any of the above information described above be inconsistent with the planned construction, we request that you contact us promptly to allow us to make any necessary modifications in this geotechnical exploration data report.

SCOPE OF WORK

The purpose of this study has been to obtain information on the subsurface soil and groundwater conditions within the proposed development. In order to achieve this objective, the following scope of services has been performed:

- Three (3) hand auger borings HA-1 to HA-3 as requested and two additional hand auger borings at the double ring infiltration test locations (DRI-1 to DRI-2) with termination depths of approximately 5 feet from the existing ground surface were performed at or in the vicinity of the requested locations.

- Two (2) Double Ring Infiltrometer (DRI) tests were conducted within or near the requested locations.

The borings were located in the field with recreational grade GPS equipment; therefore, the Boring Location Plan presented on **Sheet 1** should be considered approximate.

Drilling and sampling techniques were accomplished in general accordance with ASTM standards. Representative portions of each sample were returned to our Tampa, Florida office where they were visually classified by a geotechnical engineer. Classifications were performed in general accordance with the Unified Soil Classification System (USCS). Soil profiles were prepared for the boreholes indicating lithological materials encountered and any additional pertinent information.

SUBSURFACE CONDITIONS

Subsurface Exploration

The samples recovered from the borings were returned to our Tampa Office for visual stratification in general accordance with the Unified Soil Classification System (USCS). Records of the materials and approximate groundwater table elevations encountered in the hand auger borings are presented as soil profiles on **Sheet 1**. **Sheet 1** also includes a legend describing the subsurface conditions in USCS format.

Published Data: USDA SCS Seminole and Orange County Soil Survey

The "Soil Survey of Seminole County, Florida," and the “Soil Survey of Orange County, Florida”published by the USDA SCS, were reviewed for general near-surface soil information within the project vicinity. The SCS indicates four soil mapping units in the project area, 5 Candler fine sand, 7 Astatula-Apopka fine sands, 12 Emeralda and Holopaw fine sands, and 23 Nittaw, Okeelanta, and Basinger soils. The USDA Seasonal High Groundwater Table (SHWT) depth and general location of those mapping units with respect to the project extents are displayed on the table below.

Soil Mapping Unit	County	General Location	USDA SHWT Depth (feet)
5 Candler	Orange	Southwest, south central (includes HA-1, HA-2 and the areas south and east of those borings)	>6.0
7 Astatula-Apopka	Seminole	Southeast (beginning to the east of HA-2)	>6.0
12 Emeralda, Holopaw	Orange	North central (includes HA-3)	0 – 1.0
23 Nittaw, Okeelanta, Basinger	Seminole	Northeast (beginning to the east of HA-3)	0 – 1.0

Subsurface Conditions

In general, the soil borings relatively clean to slightly silty sand throughout the entirety of each boring. Trace to some roots and trace gravel were encountered in the first 1 to 2 feet below the existing ground surface (bgs) in all borings excluding HA-3.

Groundwater was not observed in any of the borings within the drilled depths except HA-3, where it was encountered at approximately 5 feet below ground surface (bgs). It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will also occur in which higher groundwater levels are normally recorded during rainy seasons.

Based on the results of our soil borings from this project and the aforementioned review of publicly available soil survey data, we estimate the Seasonal High Groundwater Table at HA-3 will be approximately 2 to 3 feet below ground surface. For the remaining HA boring locations, the estimated seasonal high water will be around 3 to 4 feet below ground surface.

In general, the normal seasonal high groundwater level is not intended to define a limit or ensure that future seasonal fluctuations in groundwater levels will not exceed the estimated levels. Groundwater conditions will vary with environmental changes and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as swales, drainage ponds, underdrains and areas of covered soil (buildings, paved parking lots, sidewalks, etc.). It is recommended that the contractor determine the actual groundwater levels at the time of construction to assess groundwater impact on construction procedures.

Infiltration Test Results

It was requested that PSI perform two infiltration tests. Two Double Ring Infiltrometer (DRI) tests were conducted near the requested locations, the results of which are summarized in the following table. Please note that the table below indicates the ultimate value of the infiltration rate based on the field tests. The drainage engineer should use an appropriate factor of safety for using in the design.

Location	Date Tested	Test Depth (inches)	Soil Description (USCS)	Measured Infiltration Rate (ft/day)
DRI-1	5/9/2022	36	SP/SP-SM	16
DRI-2	5/9/2022	36	SP/SP-SM	18

REPORT LIMITATIONS

The Geotechnical Engineer warrants that the findings, specifications or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

The services provided were conventional in nature and did not include any special services that may lessen the risk of conditions that can contribute to moisture, mold or other microbial contaminant growth in buildings. You may be aware that mold is abundant throughout nature and is comprised of a wide variety of microscopic fungi. Due to its nature, the potential for mold infestations cannot be completely eliminated.

The scope of services also does not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

Florida is underlain by a soluble limestone formation, which can dissolve and result in surface subsidence and the formation of sinkholes. A comprehensive assessment of the potential for sinkhole development at this site was not included in our scope of services. Typically, such an assessment would include geophysical surveying methods and the extension of deeper soil borings into the underlying limestone formation.

The data submitted are based on the subsurface information obtained by PSI and available design information furnished by Michael Baker International for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the report are required.

This report has been prepared for the exclusive use of the Florida Department of Environmental Protection and its consultants for the specific application to the proposed grading at Wekiwa Springs State Park in Apopka, Florida.

CLOSURE

We appreciate the opportunity to be of service to you on this assignment and we trust that you find our geotechnical exploration data report responsive to your needs at this time. In the event that you have any questions or if you require additional information, please call.

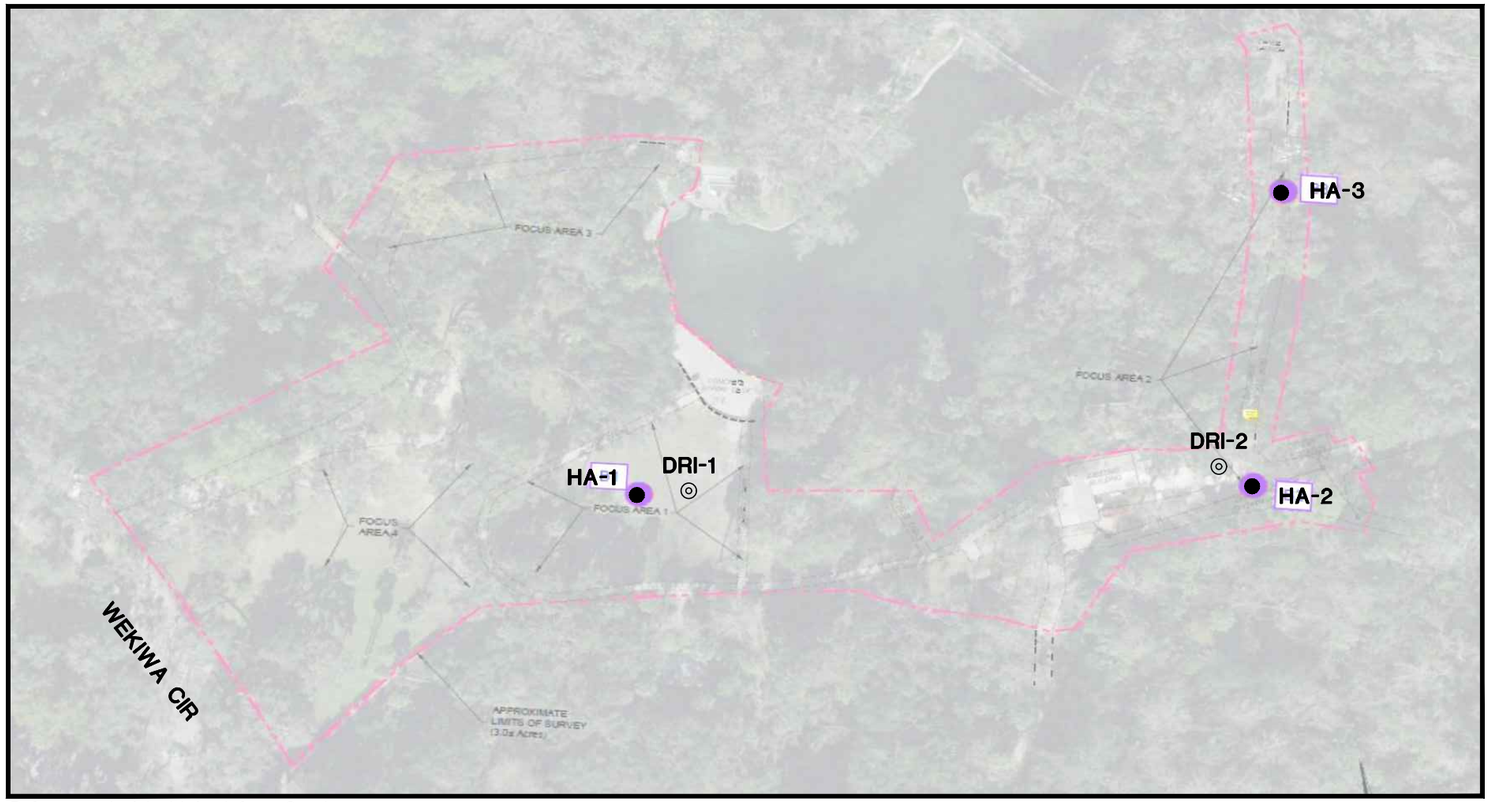
Respectfully Submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.
Certificate of Authorization No: 3684

Cannon Gilbert, E.I.
Staff Engineer Intern

Nayan Saha, P.E.
Senior Geotechnical Engineer
Florida License No. 81635

Courtland Alvies, P.E.
Geotechnical Services Department Manger
Florida License No. 93388

Attachments
- Sheet 1



Reference: Aerial obtained from Google

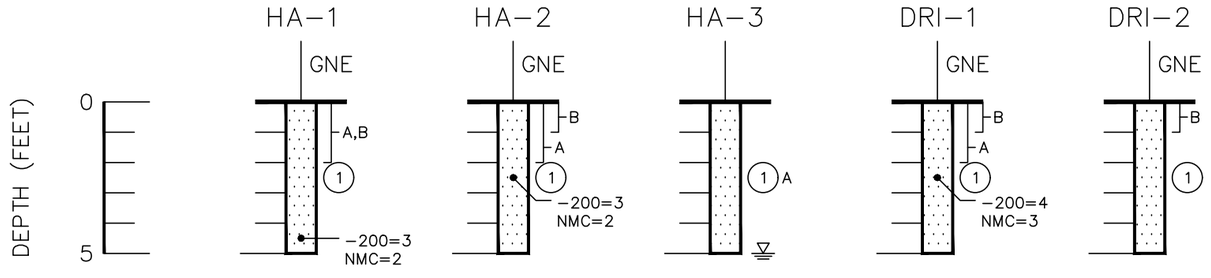
BORING LOCATION PLAN

0 100'

PLAN SCALE

LEGEND

(1)	Brown/gray SAND to slightly silty SAND (SP/SP–SM)
A	With trace to some roots
B	With trace gravel
▽	Groundwater level, May 2022
GNE	Groundwater level not encountered
–200	Fines passing No. 200 sieve (%)
NMC	Natural Moisture Content (%)
●	Approximate Hand Auger boring location
◎	Approximate Double Ring Infiltrometer Test location



SOIL PROFILES

0 5'

VERTICAL SCALE

intertek psi

DRAWN	DJG
CHECKED	CA
APPROVED	LTL
SCALE	NOTED

GEOTECHNICAL SERVICES

WEKIWA SPRINGS STATE PARK

APOPKA, FLORIDA

DATE	PROJ. NO.	SHEET
MAY 22	07753281	SHEET 1