



## **ADDENDUM NO. 3**

Issue Date: August 4, 2022  
Project Name: West Wabasso Septic to Sewer Phase 3  
Bid Number: 2022050  
Bid Opening Date: **August 12, 2022 (UPDATED)**

This addendum is being released to provide the Soil Borings report for this project

The information and documents contained in this addendum are hereby incorporated in the invitation to bid.

### **Attachments**

Soil Boring Report

Headquarters  
11345 U.S. Highway 1  
Sebastian, FL. 32958  
Orlando  
723 Progress Way  
Sanford, FL. 32771



Mailing  
P.O. Box 78-1377  
Sebastian, FL. 32978  
Phone: 772-589-0712  
C.A. # 5693  
KSMengineering.net

August 3, 2022

Robert Tobar, E.I.  
Indian River County Utilities  
1801 27th Street  
Vero Beach, Florida 32960

**Re: West Wabasso Phase 3 Septic to Sewer  
Between 58th Ave & 59th Ave at CR 510  
Wabasso, Florida  
KSM Project #: 2206661-b**

Dear Mr. Tobar:

As requested, KSM Engineering & Testing has performed a subsurface investigation at the referenced site. Presentation of the data gathered during the investigation, together with our geotechnical related opinions, are included in this report.

### The scope of our study consisted of the following:

1. Performed Standard Penetration Test borings and hand auger borings in the proposed construction area to estimate the subsoil relative density.
2. Measured the observed groundwater level at each boring.
3. Evaluated the existing soil conditions with respect to the proposed construction and provided recommendations for site preparation and foundation design.
4. Prepared this report to document our findings.

### Site Investigation:

The site investigation program consisted of performing one (1) Standard Penetration Test (SPT) boring and one (1) hand auger (HA) boring, along with Static Cone Penetrometer (SCPT) Soundings, in the proposed construction area. The SPT boring was terminated at a depth of 25 feet below grade and the HA boring was terminated at a depth of 6 feet below grade. The locations of the borings are indicated on the attached location plan.

Standard Penetration Test Borings – The SPT boring was performed in general accordance with procedures described in ASTM D-1586.

Hand Auger Borings – The HA boring was performed using a bucket auger tool to advance the borehole and to return disturbed samples of the soils. The drilling was performed in general accordance with the procedures delineated in ASTM D1452. A Static Cone Penetrometer Test (SCPT) sounding was performed at 1 foot intervals during the advancement of each hand auger boring to estimate the subsurface soil relative density.

Static Cone Penetrometer Test (SCPT) Soundings – Execution of a SCPT sounding consists of pushing a thin steel shaft, with an attached 60°-conical point, by hand through the soil. The capacity of this tool to measure the relative density of the soil is directly related to the weight that is applied on the shaft by the technician that operates the tool. The thrust required to push the cone tip is measured by an attached proving ring with a calibrated gauge. The value of the bearing pressure exerted by the cone point has been correlated with the relative soil density. The relationship of the SCPT readings to the relative density is listed in the table below:

Penetrometer Table	
Relative Density	Static Penetrometer Reading
Very Loose or Soft	<15
Loose	15-40
Medium Dense	40-70
Dense	>70

In both the SPT and HA borings, the groundwater table (if encountered) was allowed to stabilize, and the depth of the groundwater elevation recorded from existing grade.

The records of the soils encountered, the penetration resistances, SCPT, and groundwater level are shown on the attached logs.

### Engineering Evaluation and Conclusions:

Based on the information obtained from this site investigation, we are pleased to offer the following evaluation:

Subsurface Conditions Summary - The boring logs indicate the subsurface soils discovered and the SPT “N” values recorded during the boring process in the proposed project area consist mostly of the following:

- Deposits of very loose to loose fine-grained sand were discovered from approximate depths of 0 to 2 feet below existing grade, and
- Deposits of loose to medium dense fine-grained sand were discovered from approximate depths of 2 to 25 (SPT boring terminus) feet below grade.

A variation to the general breakdown shown above was discovered in the location of hand auger HA-1, where a dense layer of fine-grained sand with traces of hardpan was encountered from approximately 4 to 6 feet below existing grade (HA boring terminus).

Please refer to the attached soil boring logs for specific information relative to the soil description and the SPT/SCPT resistance record.

Observed Groundwater Table - The observed water table was encountered at an approximate depth of 6.5 feet below existing grade in the location of B-1. The water table was not encountered within a depth of 6 feet from existing grade in the location of HA-1.

Lift Station Foundation Evaluation - Based on the existing soil conditions, it is our professional opinion that the proposed structure can be supported on a shallow foundation system provided that the site is properly prepared.

The fine-grained sands encountered in our subsurface investigation, (below the typical surface vegetation) appears suitable as backfill material. Please refer to the soil boring log for more specific information relative to the soil description.

Clean fill may be used in lieu of stone on the sides of the lift station but must be installed in shallow lifts and be compacted to 95 percent of its modified proctor value if this option is used.

The bottom of the pump station should be compacted and firm. Dewatering will be required to achieve this or  $\frac{3}{4}$ " stone may need to be installed and compacted as a base material. Dewatering is the responsibility of the site contractor.

Any imported backfill around the station should consist of clean fill material with fines with less than 10% passing the #200 sieve. This material should be installed in 12" lifts and compacted to 95 percent of its modified proctor value.

We recommend field density tests be performed at appropriate times during the earth work operations in order to verify that the site has been properly prepared.

## Closure:

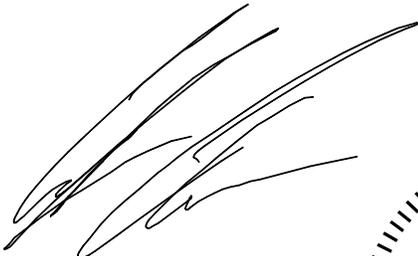
Based upon our subsurface investigation at the above-mentioned project location, the reliance of the recommendations presented within this signed and sealed report is predicated on KSM representative's involvement to verify that not only have the soils been prepared following the indicated recommendations, but the foundations are installed in compliance within the parameters indicated.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices based on the results of the test borings and the assumed loading conditions. No warranties, either expressed or implied, are intended or made. This report does not reflect any variations which may occur between the borings. If variations appear evident during the course of construction, it would be necessary to re-evaluate the recommendations of this project.

Environmental conditions, wetland delineation, water quality, and municipal requirements are not a part of this report.

We are pleased to be of assistance to you on this phase of your project. When we may be of further service to you or should you have any questions, please feel free to contact the office.

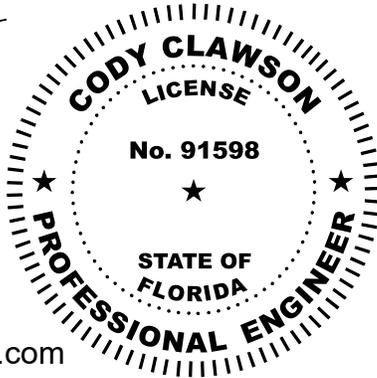
Respectfully,



Cody C. Clawson, P.E.  
Geotechnical Engineer  
Florida Lic. No. 91598

CCC/MDM/cv

Email to: [rtobar@ircgov.com](mailto:rtobar@ircgov.com)



*Maitland Melnyk*  
Maitland D. Melnyk, E.I.  
Geotechnical Engineer  
Florida E.I. No. 1100024241



KSM Engineering & Testing  
 P.O. Box 78-1377  
 Sebastian, FL 32978  
 Tel: (772)-589-0712  
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# BORING NUMBER B-1

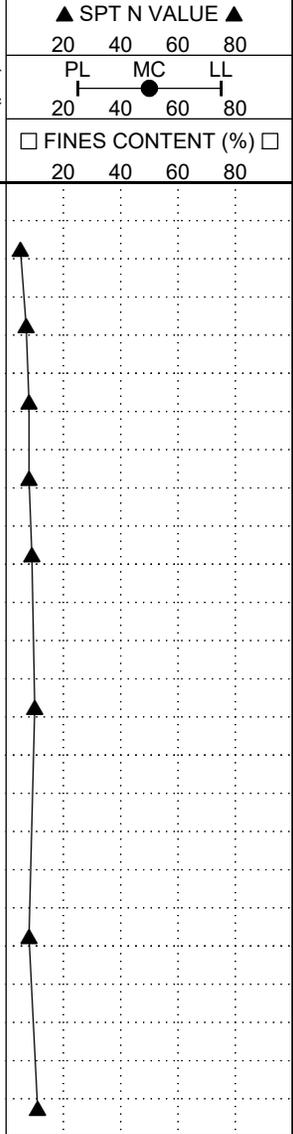
**CLIENT** Indian River County Utilities  
**PROJECT NUMBER** 2206661-b  
**DATE STARTED** 7/25/22 **COMPLETED** 7/25/22  
**DRILLING CONTRACTOR** \_\_\_\_\_  
**DRILLING METHOD** Split Spoon Sample  
**LOGGED BY** MM/MH **CHECKED BY** CCC  
**NOTES** See Attached Location Plan

**PROJECT NAME** West Wabasso Phase 3 Septic to Sewer  
**PROJECT LOCATION** Between 58th Ave & 59th Ave at CR 510  
**GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** \_\_\_\_\_ inches  
**GROUND WATER LEVELS:**  
 ▽ **AT TIME OF DRILLING** 6.5 ft  
**AT END OF DRILLING** ---  
**AFTER DRILLING** ---

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 7/29/22 10:25 - K:\KSM FILES\22 DOCS (KSM-SERVER)\2206661\SOIL INVESTIGATION\2206661-B.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	PENETROMETER	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲				
								20	40	60	80	
0		Light Gray Sand										
1-2			SS		1-2-3 (5)							
3-4			SS		3-3-4 (7)							
5		Dark Brown Sand			3-4-4 (8)							
6-7			SS		4-4-4 (8)							
8-9		Brown Sand			4-4-5 (9)							
10-11			SS									
12-13		Light Brown Sand			3-4-6 (10)							
14-15			SS									
16-17		Brown Sand			5-3-5 (8)							
18-19			SS									
20-21			SS		5-6-5 (11)							
22-23												
24-25												

Bottom of borehole at 25.0 feet.





KSM Engineering & Testing  
 P.O. Box 78-1377  
 Sebastian, FL 32978  
 Tel: (772)-589-0712  
 Fax: (772)-589-6469

# BORING NUMBER HA-1

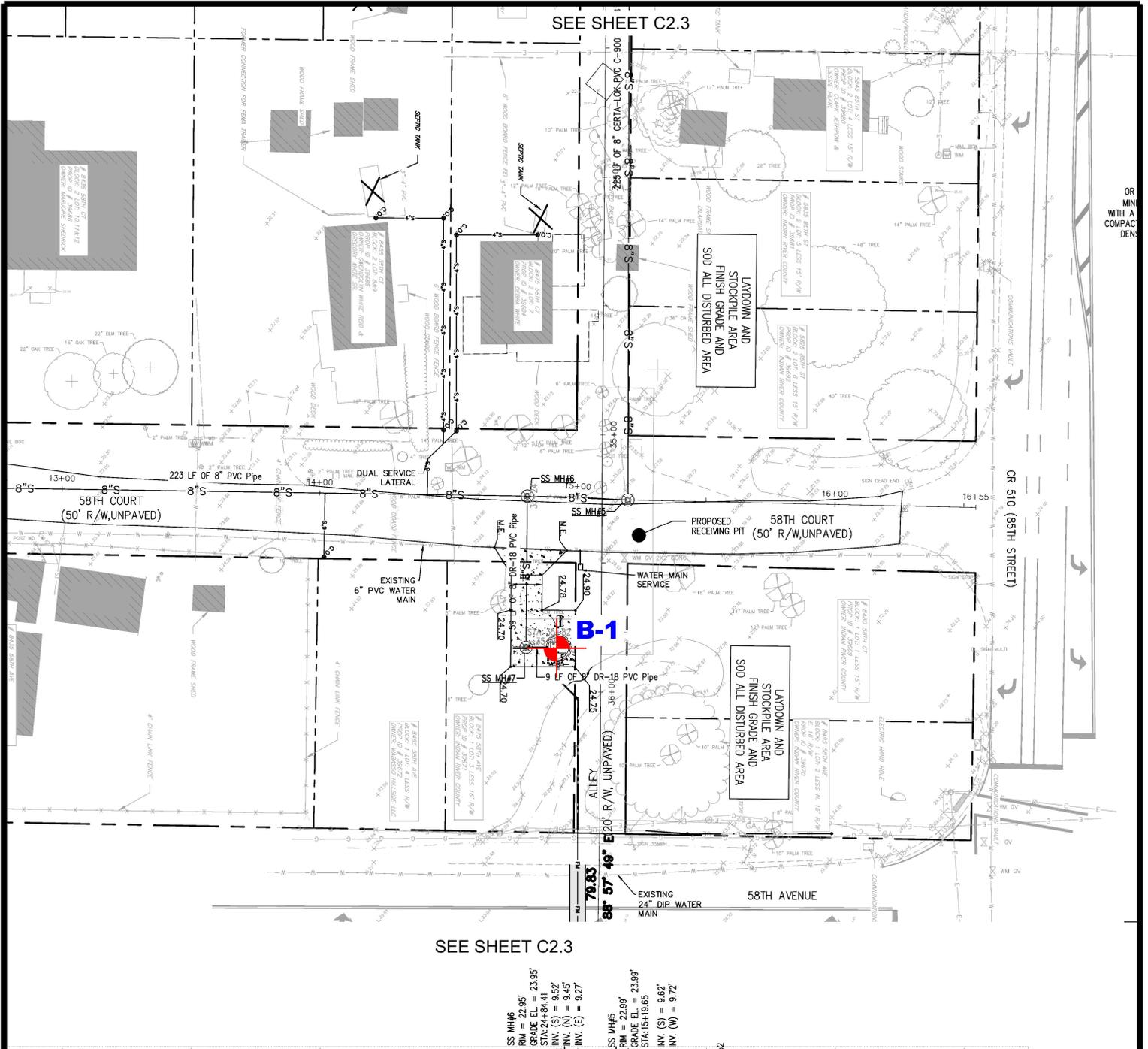
**CLIENT** Indian River County Utilities  
**PROJECT NUMBER** 2206661-b  
**DATE STARTED** 7/26/22 **COMPLETED** 7/26/22  
**DRILLING CONTRACTOR** \_\_\_\_\_  
**DRILLING METHOD** \_\_\_\_\_  
**LOGGED BY** DP **CHECKED BY** CCC  
**NOTES** See Attached Location Plan

**PROJECT NAME** West Wabasso Phase 3 Septic to Sewer  
**PROJECT LOCATION** Between 58th Ave & 59th Ave at CR 510  
**GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** inches  
**GROUND WATER LEVELS:**  
**AT TIME OF DRILLING** -- 6.0 ft +  
**AT END OF DRILLING** ---  
**AFTER DRILLING** ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	PENETROMETER	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
								20	40	60	80
0								PL	MC	LL	
		Gray Sand with Traces of Roots				30		20	40	60	80
		Light Gray Sand				32					
						36					
						44					
5		Dark Brown Sand with Traces of Hardpan				66					
						70					

Bottom of borehole at 6.0 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 7/29/22 10:25 - K:\KSM FILES\22 DOCS (KSM-SERVER)\2206661\SOIL INVESTIGATION\2206661-B.GPJ



SEE SHEET C2.3

SEE SHEET C2.3

SS MH#6  
 RIM = 22.95'  
 GRADE EL. = 23.95'  
 STA: 24+84.41  
 INV. (S) = 9.52'  
 INV. (N) = 9.45'  
 INV. (E) = 9.27'

SS MH#5  
 RIM = 22.99'  
 GRADE EL. = 23.99'  
 STA: 15+19.65  
 INV. (S) = 9.62'  
 INV. (W) = 9.72'



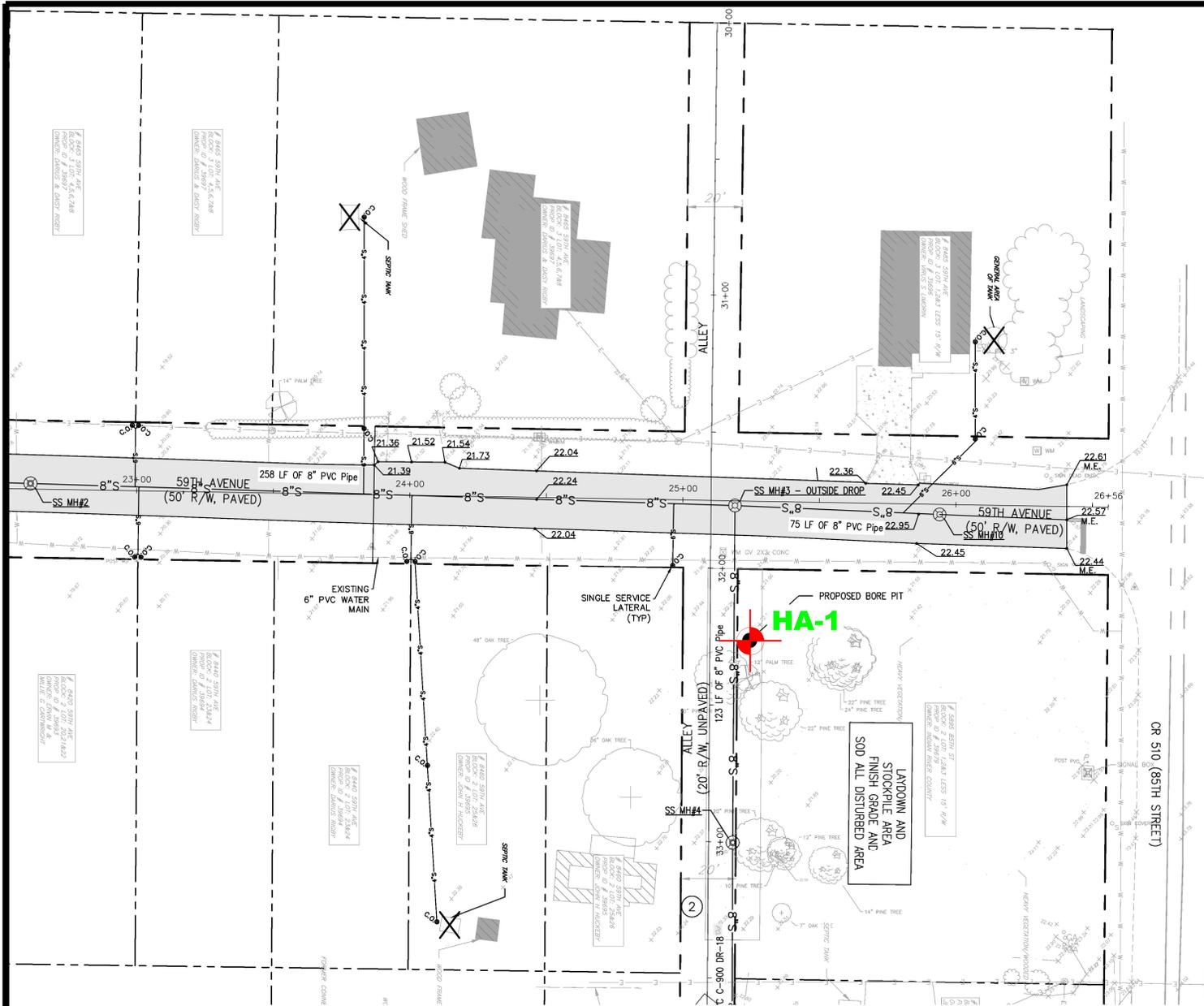
## LOCATION OF SOIL TESTING

PROJECT: West Wabasso Phase 3 Septic to Sewer, Between 58th Ave & 59th Ave at CR 510, Wabasso, Florida

SHEET 1 OF 2  
 PERMIT #:  
 PROJECT #: 2206661-b



DRAWN BY: C.V.  
 DESIGNED BY: C.C.C.  
 DATE: 20220729  
 SCALE: NOT TO SCALE



SEE SHEET C2.3

 **LOCATION OF SOIL TESTING**

<b>PROJECT:</b> West Wabasso Phase 3 Septic to Sewer, Between 58th Ave & 59th Ave at CR 510, Wabasso, Florida		
<b>SHEET 2 OF 2</b> <b>PERMIT #:</b> <b>PROJECT #:</b> 2206661-b		<b>DRAWN BY:</b> C.V. <b>DESIGNED BY:</b> C.C.C. <b>DATE:</b> 20220729 <b>SCALE:</b> NOT TO SCALE