



Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.23

C-HS4 Instrumentation Report

Progress Report

April 2013

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HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with



AET
Applied Environmental Technology

**OTIS
ENVIRONMENTAL
CONSULTANTS, LLC**

Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK C.23 PROGRESS REPORT

C-HS4 Instrumentation Report

Prepared for:

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Environmental Health
Onsite Sewage Programs
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April 2013

Prepared by:

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C-HS4 Instrumentation Report

1.0 Background

Task C of the Florida Onsite Sewage Nitrogen Reduction Strategies Study includes monitoring at field sites in Florida to evaluate nitrogen reduction in soil and groundwater, to assess groundwater impacts from various onsite wastewater systems, and to provide data for parameter estimation, verification, and validation of models developed in Task D. The Task C.5 QAPP documents the objectives, monitoring framework, sample frequency and duration, and analytical methods to be used at the field sites. This report documents the progress for instrumentation of the fourth Task C home site (C-HS4) located in Hillsborough County, Florida.

2.0 Site Description

The C-HS4 field site is also the B-HS2 passive nitrogen reduction system site located in Hillsborough County, FL adjacent to Eagle Lake and [REDACTED] Creek in a rural area. The Task B.6 installation report for the B-HS2 system documents the experimental system design which was installed in September 2012. The existing onsite sewage treatment and disposal system (OSTDS) consisted of a 1,050 gallon concrete septic tank located adjacent to the soil treatment unit which is a mounded drainfield (P.T.I.TM bundles). The new passive treatment system consists of a replacement 1,050 gallon two chamber concrete primary tank; 300 gallon concrete recirculation tank; 900 gallon concrete Stage 1 unsaturated media filter; 300 gallon concrete pump tank; and 1,500 gallon two chamber concrete Stage 2 saturated media biofilter.

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3.0 Installation of Monitoring Points

An initial site investigation was conducted August 30, 2012 and September 4, 2012 to determine groundwater flow direction and to identify the OSTDS plume. Five standpipe piezometers were installed with a hand auger in the vicinity of the drainfield and the property corners to determine the groundwater flow direction. Soil descriptions were noted and samples collected during installation. These standpipe piezometers consist of 1-inch diameter PVC with 5-foot screen (0.01-inch slots). Once a piezometer was in place, 20/30 grade silica sand was poured around the piezometer to a height above the piezometer screen. Approximately 6 to 12 inches of bentonite was placed above the sand pack. Native soil was used to fill the remainder of the borehole around the piezometer. A 7-inch diameter irrigation cover was installed over each standpipe piezometer to protect the monitoring point and decrease disturbance to the homeowner.

Groundwater levels were measured using a flat tape water level meter graduated in feet (measurement accuracy is 0.01 feet). Elevations are based on National Geodetic Vertical Datum of 1929. Table 1 summarizes the piezometer survey information and initial groundwater elevations recorded enabling a determination of groundwater flow direction. As depicted in Figure 1, the general groundwater flow direction was to the southeast.

Table 1
Site C-HS4 Standpipe Piezometers Groundwater Elevation

Identification	Type of Monitoring Point	Top Elevation ¹ (ft)	Groundwater Elevation ¹ (ft) Sept 4, 2012	Groundwater Elevation ¹ (ft) Sept 6, 2012	Groundwater Elevation ¹ (ft) Sept 14, 2012
PZ01-BKG	1" Standpipe Piezometer, 5' screen	19.08	14.93	14.45	15.99
PZ02-BKG	1" Standpipe Piezometer, 5' screen	28.72	21.84	NR	24.10
PZ03-BKG	1" Standpipe Piezometer, 5' screen	24.85	19.27	19.06	21.30
PZ04-BKG	1" Standpipe Piezometer, 5' screen	18.82	13.12	13.83	16.24
PZ05-BKG	1" Standpipe Piezometer, 5' screen	20.79	NR	16.35	17.23
PZ06-BKG	1" Standpipe Piezometer, 5' screen	22.17	NR	15.41	16.08

¹Based on National Geodetic Vertical Datum of 1929

²NR = no reading

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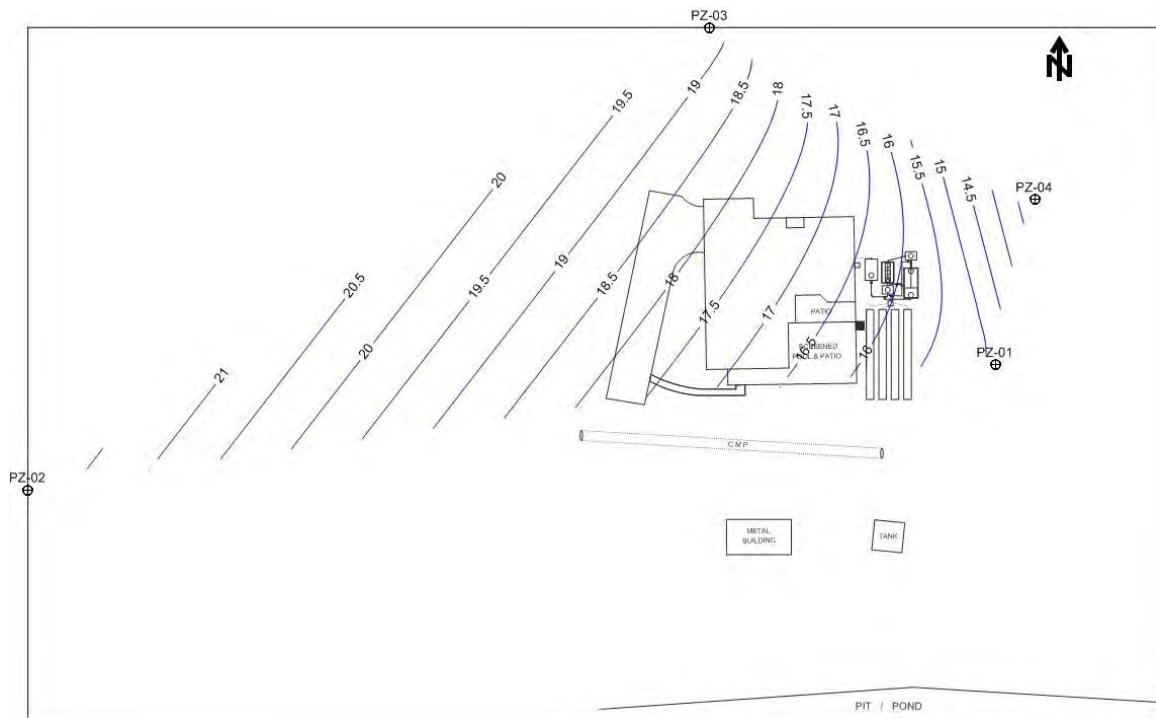


Figure 1
Surficial Groundwater Contours September 4, 2012

During the September 4, 2012 site visit, the OSTDS plume was also located using a push-pull sampler to obtain groundwater samples which were screened for conductivity at five locations downgradient of the drainfield bed as shown in Figure 2. Samples were taken from the top portion of the groundwater, approximately 5-feet below grade. Additionally, stainless steel drivepoint piezometers with a 1-foot screen were installed in the push-pull sampler locations. Appendix A summarizes the field measurements taken at the push-pull sampler locations, drivepoints and the standpipe piezometers including: temperature, pH, specific conductance, and dissolved oxygen concentrations as well as approximate nitrate and nitrite test strip measurements. The highest conductivity and nitrate test strip readings were at the PP4, PP3 and PP2 locations approximately 5-feet below grade.

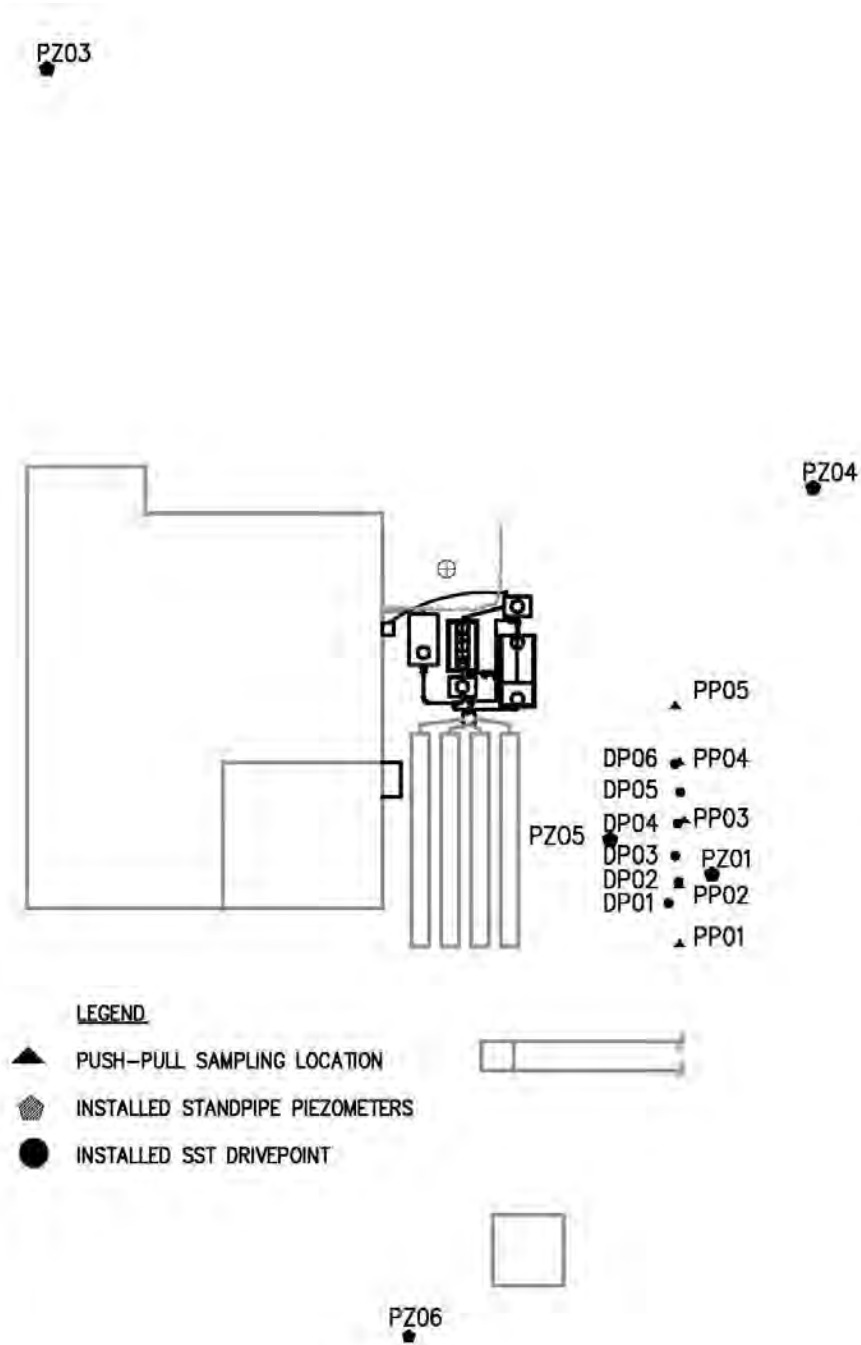


Figure 2
C-HS4 Initial Groundwater Screening

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Initial groundwater samples were collected September 6, 2012 for water quality analysis. Groundwater samples were obtained using a peristaltic pump, which was attached directly to dedicated standpipe piezometer or drivepoint tubing. Samples were collected after sufficient purging (the sample was clear and pH and conductivity readings had stabilized) had occurred. Field parameters were then recorded.

The analysis-specific containers were supplied by the analytical laboratory and contained appropriate preservatives. The analysis-specific containers were labeled, placed in coolers and transported on ice to the analytical laboratory. Each sample container was secured in packing material as appropriate to prevent damage and spills, and was recorded on chain-of-custody forms supplied by the laboratory. Chain of custody forms, provided in Appendix B, were used to document the transfer of samples from field personnel to the analytical laboratory.

Field parameters (pH, specific conductance, temperature (Temp), and dissolved oxygen (DO)) were measured using portable electronic probes with probe tips placed in an overflowing plastic beaker as groundwater was being pumped. All samples were analyzed by the laboratory for: total alkalinity, total Kjeldahl nitrogen (TKN-N), ammonia nitrogen ($\text{NH}_3\text{-N}$), nitrate/nitrite nitrogen ($\text{NO}_x\text{-N}$), and chemical oxygen demand (COD), total phosphorus (TP), and chloride (CL). All analyses were performed by an independent and fully certified analytical laboratory (Southern Analytical Laboratory). Table 2 lists the analytical parameters, analytical methods, and detection limits for these analyses. The complete water quality analytical results for preliminary Sample Event No. 1 are listed in Table B.1 of Appendix B along with the laboratory report containing the raw analytical data.

Table 2
Analytical Parameters, Method of Analysis, and Detection Limits

Analytical Parameter	Method of Analysis	Method Detection Limit (mg/L)
Total Alkalinity as CaCO ₃	SM 2320B	2 mg/L
Chemical Oxygen Demand (COD)	EPA 410.4	10 mg/L
Total Kjeldahl Nitrogen (TKN-N)	EPA 351.2	0.05 mg/L
Ammonia Nitrogen (NH ₃ -N)	EPA 350.1	0.005 mg/L
Nitrate/Nitrite Nitrogen (NO _x -N)	EPA 300.0	0.02 mg/L
Total Phosphorus	SM 4500P-E	0.01 mg/L
Chloride	EPA 300.0	0.05 mg/L

During the September 6th site visit, the groundwater levels were measured in the previously installed piezometers. Groundwater elevations were higher, but the direction of the groundwater flow was similar (Figure 3) to that on September 4, 2012.

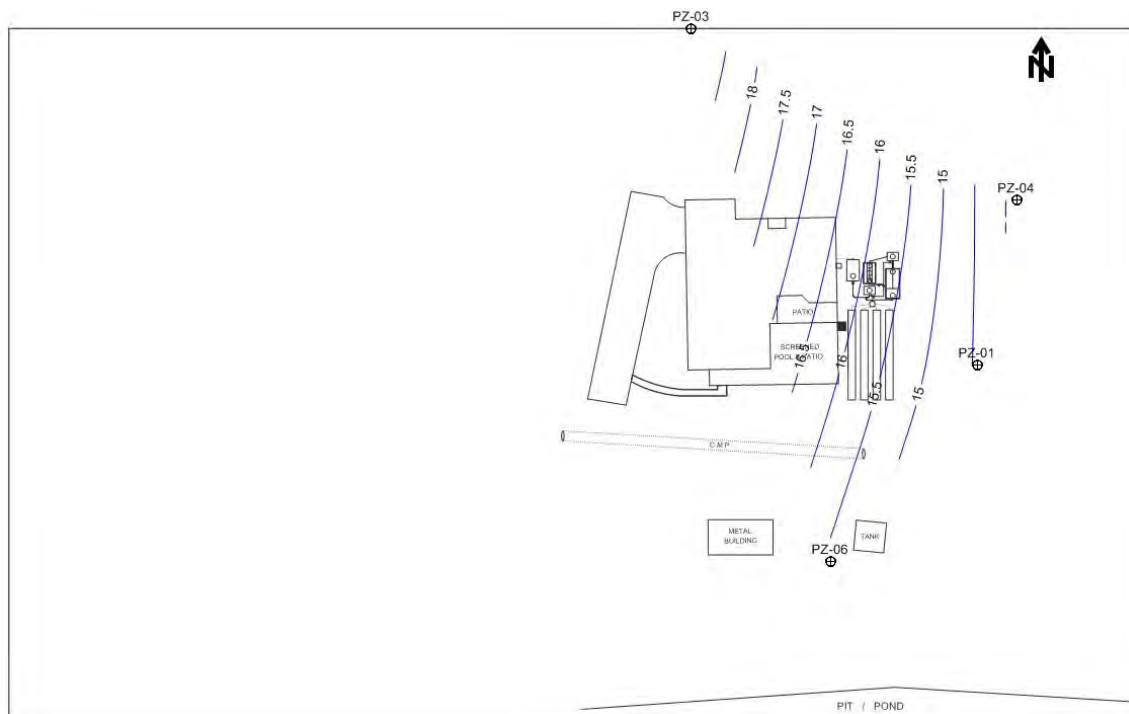


Figure 3
Surficial Groundwater Contours September 6, 2012

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As depicted in Figure 4, the general groundwater flow direction continued to be towards the southeast.

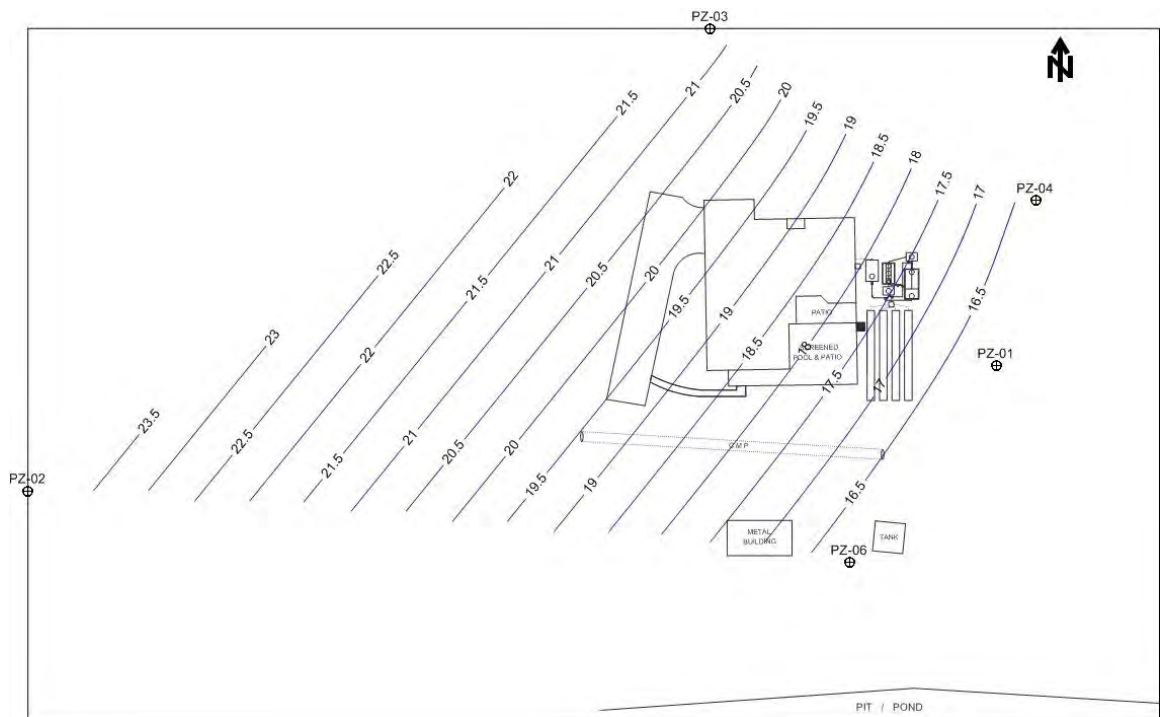


Figure 4
Surficial Groundwater Contours September 14, 2012

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Based on the groundwater flow direction and initial groundwater sampling data, a sampling grid for groundwater screening was developed downgradient of the soil treatment unit. On December 3, 2012, a 10-foot by 5-foot grid spacing was staked. Transect lines A through S run east-west, roughly parallel to the groundwater flow direction and increase (higher letter identification) moving southward from the drainfield. Transect lines 0 through 10 run north-south, roughly perpendicular to the groundwater flow direction and increase moving from the west to east. Based on initial screening data, 29 monitoring locations were chosen within the grid for standpipe piezometer installation. Each monitoring location was assigned a unique identification indicating grid location (self explanatory), and depth below ground surface (bottom of the well screen in feet). For example E03-8 is a standpipe piezometer sampler located on the grid at E03 at 8 feet below ground surface. Figure 5 shows the monitoring plan and grid.

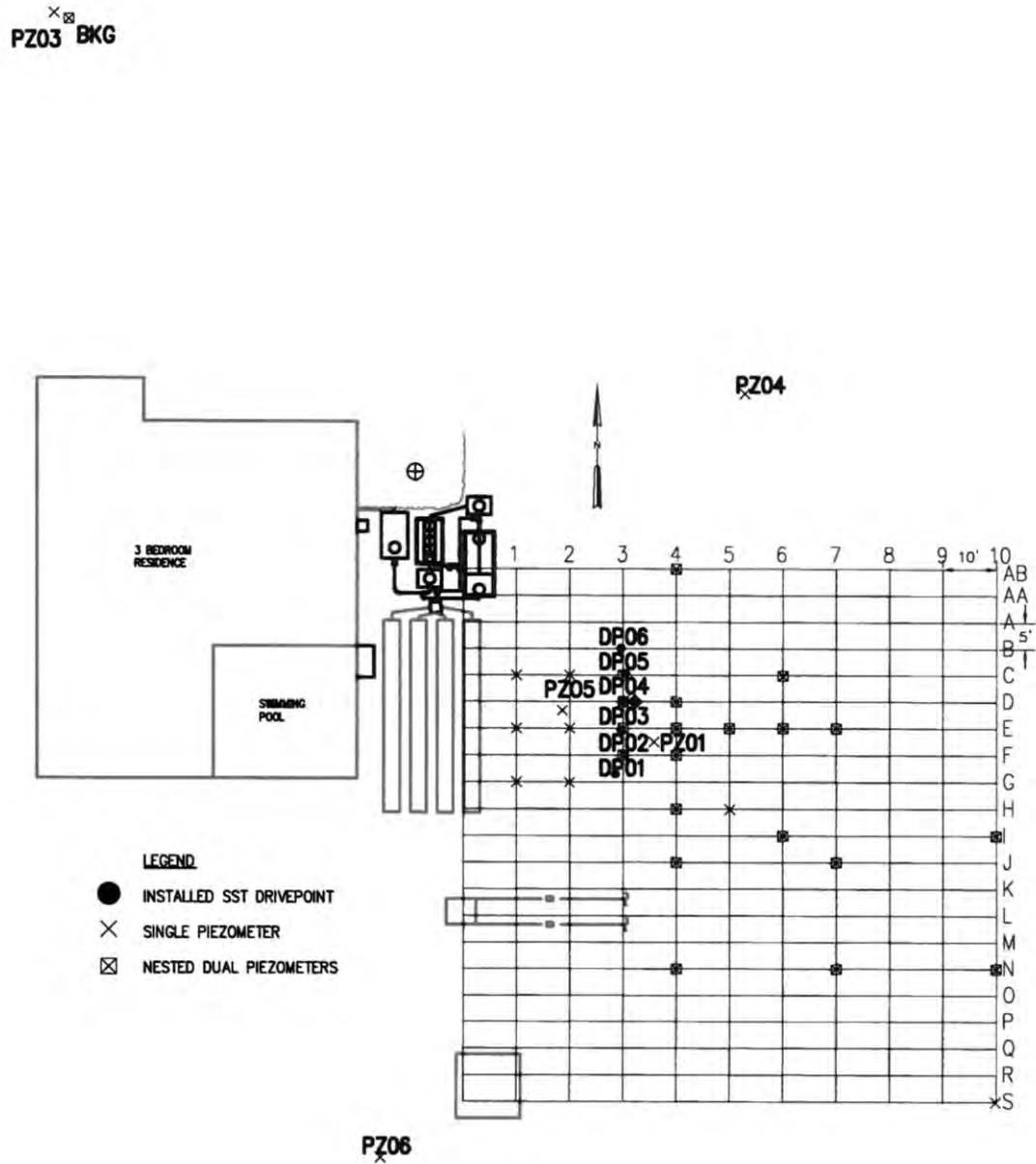


Figure 5
Monitoring Plan and Grid

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A soil and water assessment of the site was completed during the week of December 3 through 7, 2012. Drilling services were provided by Environmental Drilling Service, Inc., Orlando, FL. Groundwater screening using a direct push drilling rig was conducted at three grid locations: D03, D05, and BKG near PZ03. A ¾-inch diameter stainless steel covered by a screen sheath was placed via the direct push method at the screened intervals provided in Table 3.

Table 3
Groundwater Screening Intervals: Depth Below Land Surface (feet)

Location D03	Location D05	Location BKG
6-10	6-10	8-12
8-12	8-12	10-14
10-14	10-14	12-16
12-16	12-16	14-18
16-20	14-18	
21-25	16-20	

When the screen was located at the proper depth, the sheath was retracted to allow groundwater to flow into the screen. Groundwater samples were then collected with a peristaltic pump and dedicated polyethylene tubing as shown in Figure 6. Sample collection was performed in accordance with FDEP Standard Operating Procedures DEP-SOP-001/01 FS2200. Recorded groundwater field parameters, including pH, temperature, conductivity, dissolved oxygen, turbidity, nitrate and nitrite test strips, are provided in Appendix C, Table C.1. In addition, the groundwater sampling logs are provided in Appendix C. In addition, water samples at each depth were collected for laboratory analysis for chloride.



Figure 6
Photo of Groundwater Sample Collection

A Geoprobe™ rig was also used to install a total of 46 piezometers. Two of these piezometers (at grid locations H05 and G02) were 2-inch diameter PVC piezometers with 7.5-foot screens (0.01-inch slots) installed primarily for slug testing to determine hydraulic conductivity.

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1. Upper piezometer (1-inch diameter, 5-foot screen) – bottom of screen 1-foot below top of groundwater table.
2. Lower piezometer (3/4-inch diameter, 1-foot screen) – bottom of screen 6-feet below bottom of “upper piezometer” screen.

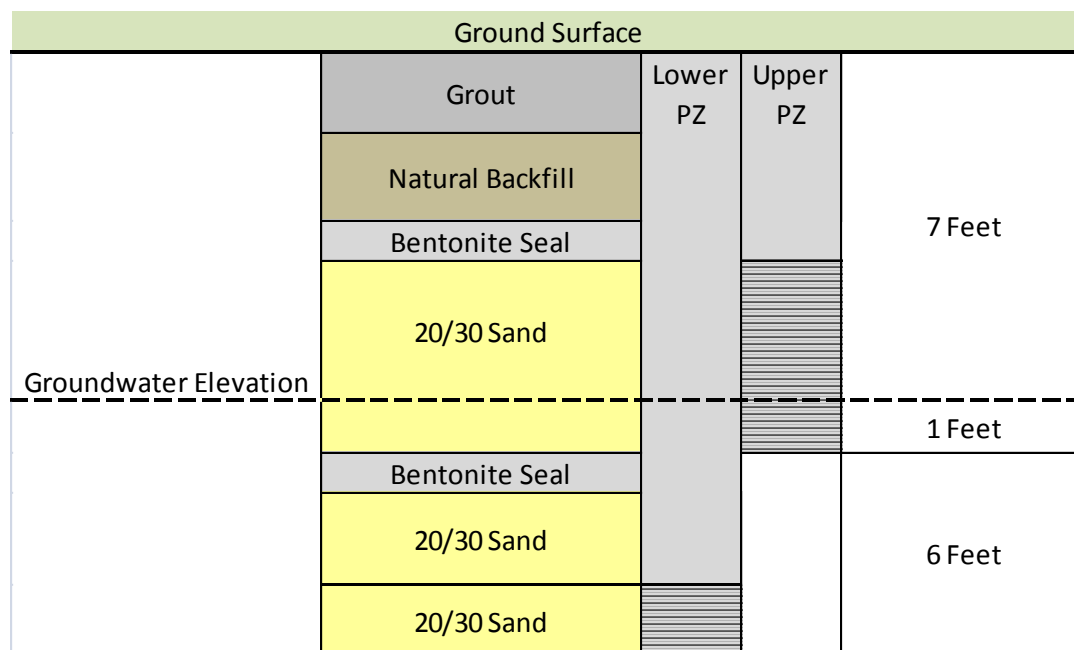


Figure 7
Nested Standpipe Piezometers Configuration
Groundwater Table Elevation 7-feet BGS

Nested piezometers were placed at grid locations AB-04; C--03, -06; D--03, -04; E--03, -04, -05, -06, -07; F-03, -04; H-04; I--06, -10; J-04, -07; N—04, -07, -10; S-10; BKG. A schematic of the C-HS4 monitoring network is shown in Figure 8. Table 4 provides a complete list of all the standpipe piezometers installed November and December, 2012.

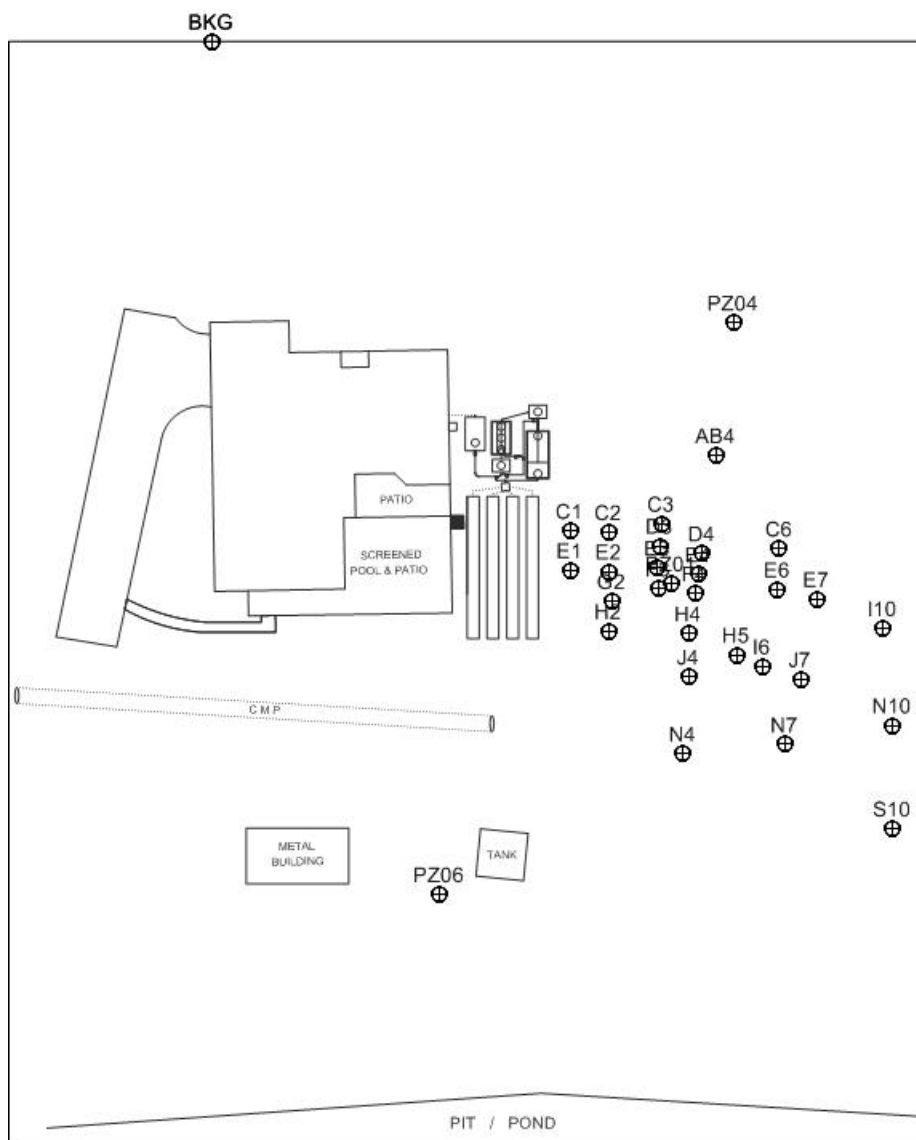


Figure 8
C-HS4 Monitoring Network

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Table 4
Site C-HS4 Installed Piezometers November through December, 2012

	Identifica- tion	Type of Monitoring Point	Latitude	Longitude	Top Elev ¹ (feet)	Bottom Elev ¹ (feet)
1	BKG-10	1" Standpipe Piezometer, 5' screen	27°49'43.0172"N	82°20'57.0468"W	24.60	15.22
2	BKG-15	3/4" Standpipe Piezometer, 1' screen	27°49'43.0164"N	82°20'57.0476"W	24.60	10.17
3	PZ-AB4-08	1" Standpipe Piezometer, 5' screen	27°49'41.9845"N	82°20'55.6230"W	18.65	10.27
4	PZ-AB4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.9862"N	82°20'55.6233"W	18.59	4.09
5	PZ-C1	1" Standpipe Piezometer, 5' screen	27°49'41.7944"N	82°20'56.0339"W	22.85	12.70
6	PZ-C2	1" Standpipe Piezometer, 5' screen	27°49'41.7918"N	82°20'55.9247"W	21.23	9.73
7	PZ-C3-08	1" Standpipe Piezometer, 5' screen	27°49'41.8127"N	82°20'55.7760"W	19.63	11.83
8	PZ-C3-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.8136"N	82°20'55.7772"W	19.64	5.09
9	PZ-C6-08	1" Standpipe Piezometer, 5' screen	27°49'41.7516"N	82°20'55.4435"W	17.53	9.03
10	PZ-C6-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.7499"N	82°20'55.4422"W	17.53	3.13
11	PZ-D3-08	1" Standpipe Piezometer, 5' screen	27°49'41.7573"N	82°20'55.7808"W	19.62	11.63
12	PZ-D3-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.7563"N	82°20'55.7811"W	19.64	5.08
13	PZ-D4-08	1" Standpipe Piezometer, 5' screen	27°49'41.7390"N	82°20'55.6608"W	18.77	10.89
14	PZ-D4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.7402"N	82°20'55.6606"W	18.76	4.21
15	PZ-E1	1" Standpipe Piezometer, 5' screen	27°49'41.6954"N	82°20'56.0331"W	22.92	11.42
16	PZ-E2	1" Standpipe Piezometer, 5' screen	27°49'41.6928"N	82°20'55.9235"W	21.03	9.33
17	PZ-E3-08	1" Standpipe Piezometer, 5' screen	27°49'41.7026"N	82°20'55.7868"W	19.66	11.41
18	PZ-E3-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.7041"N	82°20'55.7866"W	19.64	4.98
19	PZ-E4-08	1" Standpipe Piezometer, 5' screen	27°49'41.6872"N	82°20'55.6706"W	18.70	10.80
20	PZ-E4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.6864"N	82°20'55.6700"W	18.69	4.31
21	PZ-E5-08	1" Standpipe Piezometer, 5' screen	27°49'41.6680"N	82°20'55.5514"W	18.15	10.25
22	PZ-E5-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.6690"N	82°20'55.5499"W	18.13	3.56

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Table 4
Site C-HS4 Installed Piezometers November through December, 2012

	Identifica- tion	Type of Monitoring Point	Latitude	Longitude	Top Elev ¹ (feet)	Bottom Elev ¹ (feet)
23	PZ-E6-08	1" Standpipe Piezometer, 5' screen	27°49'41.6488"N	82°20'55.4485"W	17.83	9.95
24	PZ-E6-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.6496"N	82°20'55.4489"W	17.85	3.45
25	PZ-E7-08	1" Standpipe Piezometer, 5' screen	27°49'41.6257"N	82°20'55.3379"W	17.55	8.87
26	PZ-E7-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.6258"N	82°20'55.3395"W	17.55	3.05
27	PZ-F3-08	1" Standpipe Piezometer, 5' screen	27°49'41.6501"N	82°20'55.7840"W	19.54	11.59
28	PZ-F3-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.6507"N	82°20'55.7850"W	19.55	5.05
29	PZ-F4-08	1" Standpipe Piezometer, 5' screen	27°49'41.6385"N	82°20'55.6814"W	18.83	11.13
30	PZ-F4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.6389"N	82°20'55.6804"W	18.88	4.48
31	PZ-G1	1" Standpipe Piezometer, 5' screen	27°49'41.5442"N	82°20'55.9241"W	20.72	12.82
32	PZ-G2-12.5	2" Standpipe Piezometer, 7.5' screen	27°49'41.6192"N	82°20'55.9153"W	21.03	8.88
33	PZ-H4-08	1" Standpipe Piezometer, 5' screen	27°49'41.5382"N	82°20'55.6987"W	19.19	10.91
34	PZ-H4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.5393"N	82°20'55.6966"W	19.22	4.45
35	PZ-H5-11.5	2" Standpipe Piezometer, 7.5' screen	27°49'41.4854"N	82°20'55.5639"W	18.58	7.86
36	PZ-I6-08	1" Standpipe Piezometer, 5' screen	27°49'41.4568"N	82°20'55.4915"W	18.42	9.37
37	PZ-I6-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.4556"N	82°20'55.4913"W	18.42	3.87
38	PZ-I10-08	1" Standpipe Piezometer, 5' screen	27°49'41.5523"N	82°20'55.1520"W	16.87	8.95
39	PZ-I10-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.5520"N	82°20'55.1531"W	16.92	4.42
40	PZ-J4-08	1" Standpipe Piezometer, 5' screen	27°49'41.4303"N	82°20'55.6982"W	19.26	11.32
41	PZ-J4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.4310"N	82°20'55.6971"W	19.25	4.73
42	PZ-J7-08	1" Standpipe Piezometer, 5' screen	27°49'41.4247"N	82°20'55.3834"W	17.86	9.41
43	PZ-J7-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.4249"N	82°20'55.3819"W	17.87	3.45
44	PZ-N4-08	1" Standpipe Piezometer, 5' screen	27°49'41.2372"N	82°20'55.7136"W	19.28	11.00
45	PZ-N4-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.2383"N	82°20'55.7148"W	19.30	4.82

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Table 4
Site C-HS4 Installed Piezometers November through December, 2012

	Identifica- tion	Type of Monitoring Point	Latitude	Longitude	Top Elev ¹ (feet)	Bottom Elev ¹ (feet)
46	PZ-N7-08	1" Standpipe Piezometer, 5' screen	27°49'41.2616"N	82°20'55.4265"W	18.01	9.46
47	PZ-N7-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.2628"N	82°20'55.4270"W	18.03	3.23
48	PZ-N10-08	1" Standpipe Piezometer, 5' screen	27°49'41.3101"N	82°20'55.1237"W	16.92	9.17
49	PZ-N10-15	3/4" Standpipe Piezometer, 1' screen	27°49'41.3103"N	82°20'55.1250"W	16.83	2.59
50	PZ-S10-08	1" Standpipe Piezometer, 5' screen	27°49'41.0518"N	82°20'55.1229"W	17.03	8.78
51	DP-01	SST Drivepoint	27°49'41.5922"N	82°20'55.8124"W	19.25	
52	DP-02	SST Drivepoint	27°49'41.6416"N	82°20'55.8110"W	19.24	
53	DP-03	SST Drivepoint	27°49'41.6937"N	82°20'55.8136"W	19.49	
54	DP-04	SST Drivepoint	27°49'41.7401"N	82°20'55.8129"W	19.22	
55	DP-05	SST Drivepoint	27°49'41.7910"N	82°20'55.8131"W	19.25	
56	DP-06	SST Drivepoint	27°49'41.8397"N	82°20'55.8205"W	19.38	

¹Elevation above mean seal level based on NGVD 1929

4.0 Soil Assessment

Continuous soil samples were collected using the direct push method at grid locations BKG, DP-04 and E7. Soil samples were collected in direct push hollow tubes. The soil descriptions are provided in Appendix D, Table D.1. The soil samples were submitted to the University of Florida IFAS Analytical Services Laboratory and University of Florida SWS Mineralogy Core Laboratory for analysis. The soil samples were analyzed for particle size distribution (see Table D.2), pH, organic matter, cation exchange capacity (CEC), ammonia, nitrate, TKN, phosphorus, potassium, calcium, magnesium, and sodium concentrations (see Table D.3). The complete soil data set is included in Appendix D.

Additionally, soil from the auger flights during installation of standpipe piezometers was classified as the auger was retracted from the ground. Soil encountered generally included brown, tan fine sands and clay. The boring logs are included in Appendix D.

5.0 Preliminary Groundwater Sampling

Groundwater screening was conducted during installation December 3 through 7, 2012. Groundwater screening field parameters are outlined in Appendix E including tempera-

ture, pH and specific conductance measurements for some of the monitoring locations. Based on the preliminary groundwater specific conductance measurements, the general plume appears to extend to the southeast as expected. Sampling and analysis using standard analytical methods is required to confirm the plume extent and is scheduled for January 2013.

Appendix A: C-HS4 September Sampling Results

Table A.1
Site C-HS4 Initial Site Monitoring

ID	Description	Depth Below Ground Surface (ft)	Sample Date/ Time	Temp (°C)	pH	SC (µS)	DO (mg/ L)	Est. NO ₃ - N (Test Strip mg- N/L)	Est. NO ₂ - N (Test Strip mg- N/L)
PP01	PP Sampler	5	9/4/2012	29.6	3.63	1,140	5.37	0	0
PP02	PP Sampler	5	9/4/2012	30.1	4.06	571	NR	5	0
PP03	PP Sampler	5	9/4/2012	29.0	3.90	708	NR	15	0
PP04	PP Sampler	5	9/4/2012	29.3	3.74	952	NR	0	0
PP05	PP Sampler	5	9/4/2012	31.8	4.10	252	NR	0	0
DP01	DP Sampler	7	9/6/12 9:15	26.8	4.00	540	0.51	NR	NR
DP02	DP Sampler	7	9/6/12 9:45	26.7	4.50	596	0.20	NR	NR
DP03	DP Sampler	7	9/6/12 10:30	26.9	4.84	639	1.86	NR	NR
DP04	DP Sampler	7	9/6/12 13:20	26.0	5.50	747	1.36	NR	NR
DP05	DP Sampler	7	9/6/12 13:35	26.0	4.84	350	1.41	NR	NR
DP06	DP Sampler	7	9/6/12 14:05	26.1	5.05	488	0.57	NR	NR
PZ01	1"PZ, 5' screen	10	9/6/12 11:00	26.8	4.32	669	0.86	15	0
PZ03	1"PZ, 5' screen	6	9/6/12 12:00	26.6	3.53	210	1.18	NR	NR
PZ04	1"PZ, 5' screen	6	9/6/12 11:45	27.8	3.88	801	7.07	NR	NR
PZ05	1"PZ, 5' screen	6	9/6/12 14:30	26.1	4.96	687	2.38	NR	NR
PZ06	1"PZ, 5' screen	11	9/6/12 14:45	25.4	4.75	380	4.03	NR	NR

¹NR = no reading was taken

PP = push pull sampler DP = drivepoint sampler PZ = standpipe piezometer sampler

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Appendix B: Preliminary Sample Event No. 1

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Table B.1
Water Quality Data Preliminary Sample Event No. 1

Sample IDs	Sample Date/Time	Temp (°C)	pH	Total Alkalinity (mg/L)	DO (mg/L)	Specific Conductance (µS)	COD (mg/L)	TN (mg/L N) ¹	TKN (mg/L N)	Organic N (mg/L N) ²	NH ₃ -N (mg/L N)	NO _x (mg/L N)	TIN (mg/L N) ³	TP (mg/L)	Chloride (mg/L)
CHS4-STE	9/10/12 9:00	26.8	7.0	610	0.4	1463		68.0	68	13.0	55	0.03	55.0	7.1	
CHS4-DP01-7	9/6/12 9:15	26.8	4.0	2	0.51	540	47	5.0	1.8	1.8	0.021	3.2	3.2	0.05	25
CHS4-DP02-7	9/6/12 9:45	26.7	5.5	4.2	0.2	596	31	8.4	3.7	3.7	0.014	4.7	4.7	0.057	24
CHS4-DP03-7	9/6/12 10:30	26.9	4.8	12	1.86	639	67	14.4	5.4	5.4	0.009	9	9.0	0.35	31
CHS4-DP-04	9/6/12 13:20	26.0	5.5	39	1.4	747	72	19.3	4.3	4.3	0.01	15	15.0	0.075	28
CHS4-DP-05	9/6/12 13:45	26.0	4.8	8.4	1.4	350	47	1.5	1.2	1.1	0.09	0.27	0.4	0.064	12
CHS4-DP-06	9/6/12 14:05	26.1	5.1	15	0.6	488	49	2.2	1.4	1.3	0.068	0.75	0.8	0.064	16
CHS4-PZ01-10	9/6/12 11:00	26.8	4.3	2	0.86	669	40	13.4	4.3	4.3	0.018	9.1	9.1	0.044	30
CHS4-PZ01-10 Dup	9/6/12 11:05	26.8	4.3	2	0.86	669	40	12.2	4.2	4.2	0.014	8	8.0	0.044	29
CHS4-PZ03	9/6/12 12:00	26.6	3.5	2	1.2	210	56	1.2	1.2	1.2	0.046	0.02	0.1	0.13	11
CHS4-PZ04	9/6/12 11:45	27.8	3.9	2	7.07	801	44	1.0	0.95	0.9	0.009	0.05	0.1	0.069	25
CHS4-PZ05	9/6/12 14:30	26.1	5.0	9.4	2.4	687	40	11.3	3.3	3.1	0.19	8	8.2	0.062	30
CHS4-PZ06	9/6/12 15:00	26.1	4.8	8.4	4	380	67	2.1	2	1.8	0.16	0.11	0.3	3.1	14

Notes:

¹Total Nitrogen (TN) is a calculated value equal to the sum of TKN and NO_x

²Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and NH₃

³Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of NH₃ and NO_x

D.O. - Dissolved oxygen

G - Grab sample

Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.

Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical

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Tampa, FL 33619

September 28, 2012
Work Order: 1210253

Laboratory Report

Project Name		Hillsborough County C-HS4 SE#1						
Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	By

Sample Description **CHS4-DP01-7'**
 Matrix **Groundwater**
 SAL Sample Number **1210253-01**
 Date/Time Collected **09/06/12 09:15**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.0
 Temperature 26.8 °C
 Conductivity 540 umhos
 Dissolved Oxygen 0.51 mg/L

Inorganics

Ammonia as N	mg/L	0.021 I	EPA 350.1	0.040	0.009		09/11/12 14:33	MMF
Chemical Oxygen Demand	mg/L	47	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	25	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	3.2	EPA 353.2	0.20	0.05		09/12/12 11:22	MMF
Phosphorous - Total as P	mg/L	0.050	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 12:59	MMF
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		09/11/12 09:21	TJH
Total Kjeldahl Nitrogen	mg/L	1.8	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:35	MMF

Sample Description **CHS4-DP02-7'**
 Matrix **Groundwater**
 SAL Sample Number **1210253-02**
 Date/Time Collected **09/06/12 09:45**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.5
 Temperature 26.7 °C
 Conductivity 596 umhos
 Dissolved Oxygen 0.20 mg/L

Inorganics

Ammonia as N	mg/L	0.014 I	EPA 350.1	0.040	0.009		09/11/12 14:35	MMF
Chemical Oxygen Demand	mg/L	31	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	24	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	4.7	EPA 353.2	0.20	0.05		09/12/12 11:25	MMF
Phosphorous - Total as P	mg/L	0.057	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:00	MMF
Total Alkalinity	mg/L	4.2 I	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	3.7	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:37	MMF

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Laboratory Report

Project Name		Hillsborough County C-HS4 SE#1						
Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	By

Sample Description **CHS4-DP03-7'**
 Matrix **Groundwater**
 SAL Sample Number **1210253-03**
 Date/Time Collected **09/06/12 10:30**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.8
 Temperature 26.9 °C
 Conductivity 639 umhos
 Dissolved Oxygen 1.86 mg/L

Inorganics

Ammonia as N	mg/L	0.009 U	EPA 350.1	0.040	0.009		09/11/12 14:52	MMF
Chemical Oxygen Demand	mg/L	67	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	31	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	9.0	EPA 353.2	0.20	0.05		09/12/12 11:27	MMF
Phosphorous - Total as P	mg/L	0.35	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:03	MMF
Total Alkalinity	mg/L	12	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	5.4	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 12:15	MMF

Sample Description **CHS4-PZ01-10'**
 Matrix **Groundwater**
 SAL Sample Number **1210253-04**
 Date/Time Collected **09/06/12 11:00**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.3
 Temperature 26.8 °C
 Conductivity 669 umhos
 Dissolved Oxygen 0.86 mg/L

Inorganics

Ammonia as N	mg/L	0.018 I	EPA 350.1	0.040	0.009		09/11/12 14:54	MMF
Chemical Oxygen Demand	mg/L	40	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	30	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	9.1	EPA 353.2	0.20	0.05		09/12/12 11:29	MMF
Phosphorous - Total as P	mg/L	0.044	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:05	MMF
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	4.3	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:39	MMF

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Laboratory Report

Project Name		Hillsborough County C-HS4 SE#1						
Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	By

Sample Description **CHS4-PZ01-10' Dup**
 Matrix **Groundwater**
 SAL Sample Number **1210253-05**
 Date/Time Collected **09/06/12 11:05**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.3
 Temperature 26.8 °C
 Conductivity 669 umhos
 Dissolved Oxygen 0.86 mg/L

Inorganics

Ammonia as N	mg/L	0.014 I	EPA 350.1	0.040	0.009		09/11/12 14:56	MMF
Chemical Oxygen Demand	mg/L	40	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	29	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	8.0	EPA 353.2	0.20	0.05		09/12/12 11:31	MMF
Phosphorous - Total as P	mg/L	0.044	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:06	MMF
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	4.2	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:41	MMF

Sample Description **CHS4-PZ04**
 Matrix **Groundwater**
 SAL Sample Number **1210253-06**
 Date/Time Collected **09/06/12 11:45**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 3.9
 Temperature 27.8 °C
 Conductivity 801 umhos
 Dissolved Oxygen 7.07 mg/L

Inorganics

Ammonia as N	mg/L	0.009 U	EPA 350.1	0.040	0.009		09/11/12 14:58	MMF
Chemical Oxygen Demand	mg/L	44	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	25	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	0.05	EPA 353.2	0.04	0.01		09/12/12 10:53	MMF
Phosphorous - Total as P	mg/L	0.069	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:07	MMF
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	0.95	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:42	MMF

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Laboratory Report

Project Name		Hillsborough County C-HS4 SE#1						
Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	By

Sample Description **CHS4-PZ03**
 Matrix **Groundwater**
 SAL Sample Number **1210253-07**
 Date/Time Collected **09/06/12 12:00**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 3.5
 Temperature 26.6 °C
 Conductivity 210 umhos
 Dissolved Oxygen 1.2 mg/L

Inorganics

Ammonia as N	mg/L	0.046	EPA 350.1	0.040	0.009		09/11/12 15:00	MMF
Chemical Oxygen Demand	mg/L	56	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	11	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	0.02 I	EPA 353.2	0.04	0.01		09/12/12 10:56	MMF
Phosphorous - Total as P	mg/L	0.13	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:08	MMF
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	1.2	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:43	MMF

Sample Description **CHS4-DP-06**
 Matrix **Groundwater**
 SAL Sample Number **1210253-08**
 Date/Time Collected **09/06/12 14:05**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 5.1
 Temperature 26.1 °C
 Conductivity 488 umhos
 Dissolved Oxygen 0.6 mg/L

Inorganics

Ammonia as N	mg/L	0.068	EPA 350.1	0.040	0.009		09/11/12 15:02	MMF
Chemical Oxygen Demand	mg/L	49	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	16	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	0.75	EPA 353.2	0.04	0.01		09/12/12 10:58	MMF
Phosphorous - Total as P	mg/L	0.064	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:09	MMF
Total Alkalinity	mg/L	15	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	1.4	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:44	MMF

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Laboratory Report

Project Name		Hillsborough County C-HS4 SE#1						
Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	By

Sample Description **CHS4-DP-04**
 Matrix **Groundwater**
 SAL Sample Number **1210253-09**
 Date/Time Collected **09/06/12 13:20**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 5.5
 Temperature 26.0 °C
 Conductivity 747 umhos
 Dissolved Oxygen 1.4 mg/L

Inorganics

Ammonia as N	mg/L	0.010 I	EPA 350.1	0.040	0.009		09/11/12 15:04	MMF
Chemical Oxygen Demand	mg/L	72	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	28	EPA 300.0	0.20	0.050		09/20/12 16:48	JAG
Nitrate+Nitrite (N)	mg/L	15	EPA 353.2	1.0	0.25		09/12/12 11:38	MMF
Phosphorous - Total as P	mg/L	0.075	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:11	MMF
Total Alkalinity	mg/L	39	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	4.3	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:46	MMF

Sample Description **CHS4-DP-05**
 Matrix **Groundwater**
 SAL Sample Number **1210253-10**
 Date/Time Collected **09/06/12 13:45**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.8
 Temperature 26.0 °C
 Conductivity 350 umhos
 Dissolved Oxygen 1.4 mg/L

Inorganics

Ammonia as N	mg/L	0.090	EPA 350.1	0.040	0.009		09/11/12 15:06	MMF
Chemical Oxygen Demand	mg/L	47	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	12	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	0.27	EPA 353.2	0.04	0.01		09/12/12 11:02	MMF
Phosphorous - Total as P	mg/L	0.064	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:12	MMF
Total Alkalinity	mg/L	8.4	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	1.2	EPA 351.2	0.20	0.05	09/10/12 16:20	09/13/12 11:47	MMF

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Laboratory Report

Project Name		Hillsborough County C-HS4 SE#1						
Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	By

Sample Description **CHS4-PZ05**
 Matrix **Groundwater**
 SAL Sample Number **1210253-11**
 Date/Time Collected **09/06/12 14:30**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 5.0
 Temperature 26.1 °C
 Conductivity 687 umhos
 Dissolved Oxygen 2.4 mg/L

Inorganics

Ammonia as N	mg/L	0.19	EPA 350.1	0.040	0.009		09/11/12 15:08	MMF
Chemical Oxygen Demand	mg/L	40	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	30	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	8.0	EPA 353.2	0.20	0.05		09/12/12 11:33	MMF
Phosphorous - Total as P	mg/L	0.062	SM 4500P-E	0.040	0.010	09/12/12 09:55	09/14/12 13:13	MMF
Total Alkalinity	mg/L	9.4	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	3.3	EPA 351.2	0.20	0.05	09/10/12 16:23	09/14/12 12:11	MMF

Sample Description **CHS4-PZ06**
 Matrix **Groundwater**
 SAL Sample Number **1210253-12**
 Date/Time Collected **09/06/12 15:00**
 Collected by **Josephine Edeback-Hirst**
 Date/Time Received **09/06/12 17:00**

Client Provided Field Data

pH 4.8
 Temperature 26.1 °C
 Conductivity 380 umhos
 Dissolved Oxygen 4.0 mg/L

Inorganics

Ammonia as N	mg/L	0.16	EPA 350.1	0.040	0.009		09/11/12 15:14	MMF
Chemical Oxygen Demand	mg/L	67	EPA 410.4	25	10	09/11/12 09:00	09/11/12 11:10	CDB
Chloride	mg/L	14	EPA 300.0	0.20	0.050		09/18/12 16:55	JAG
Nitrate+Nitrite (N)	mg/L	0.11	EPA 353.2	0.04	0.01		09/12/12 11:07	MMF
Phosphorous - Total as P	mg/L	3.1	SM 4500P-E	0.20	0.050	09/12/12 09:55	09/14/12 13:59	MMF
Total Alkalinity	mg/L	8.4	SM 2320B	8.0	2.0		09/10/12 10:47	TJH
Total Kjeldahl Nitrogen	mg/L	2.0	EPA 351.2	0.20	0.05	09/10/12 16:23	09/14/12 12:13	MMF

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BI21012 - COD prep										
Blank (BI21012-BLK1)					Prepared & Analyzed: 09/11/12					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BI21012-BS1)					Prepared & Analyzed: 09/11/12					
Chemical Oxygen Demand	47	25	10	mg/L	50		94	90-110		
Matrix Spike (BI21012-MS1)					Source: 1210253-10 Prepared & Analyzed: 09/11/12					
Chemical Oxygen Demand	90	25	10	mg/L	50	47	86	85-115		
Matrix Spike Dup (BI21012-MSD1)					Source: 1210253-10 Prepared & Analyzed: 09/11/12					
Chemical Oxygen Demand	90	25	10	mg/L	50	47	86	85-115	0	32
Batch BI21057 - Digestion for TKN by EPA 351.2										
Blank (BI21057-BLK1)					Prepared: 09/10/12 Analyzed: 09/13/12					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BI21057-BS1)					Prepared: 09/10/12 Analyzed: 09/13/12					
Total Kjeldahl Nitrogen	2.32	0.20	0.05	mg/L	2.5		92	90-110		
Matrix Spike (BI21057-MS1)					Source: 1210131-07 Prepared: 09/10/12 Analyzed: 09/13/12					
Total Kjeldahl Nitrogen	3.05	0.20	0.05	mg/L	2.5	0.697	93	80-120		
Matrix Spike Dup (BI21057-MSD1)					Source: 1210131-07 Prepared: 09/10/12 Analyzed: 09/13/12					
Total Kjeldahl Nitrogen	3.14	0.20	0.05	mg/L	2.5	0.697	97	80-120	3	20
Batch BI21058 - Digestion for TKN by EPA 351.2										
Blank (BI21058-BLK1)					Prepared: 09/10/12 Analyzed: 09/14/12					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BI21058 - Digestion for TKN by EPA 351.2										
LCS (BI21058-BS1)					Prepared: 09/10/12 Analyzed: 09/14/12					
Total Kjeldahl Nitrogen	2.54	0.20	0.05	mg/L	2.5		100	90-110		
Matrix Spike (BI21058-MS1)					Source: 1210248-02 Prepared: 09/10/12 Analyzed: 09/14/12					
Total Kjeldahl Nitrogen	2.84	0.20	0.05	mg/L	2.5	0.781	81	80-120		
Matrix Spike Dup (BI21058-MSD1)					Source: 1210248-02 Prepared: 09/10/12 Analyzed: 09/14/12					
Total Kjeldahl Nitrogen	3.03	0.20	0.05	mg/L	2.5	0.781	89	80-120	7	20
Batch BI21111 - Ammonia by SEAL										
Blank (BI21111-BLK1)					Prepared & Analyzed: 09/11/12					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BI21111-BS1)					Prepared & Analyzed: 09/11/12					
Ammonia as N	0.47	0.040	0.009	mg/L	0.50		94	90-110		
Matrix Spike (BI21111-MS1)					Source: 1210004-07 Prepared & Analyzed: 09/11/12					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50	0.027	97	90-110		
Matrix Spike Dup (BI21111-MSD1)					Source: 1210004-07 Prepared & Analyzed: 09/11/12					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	0.027	93	90-110	4	10
Batch BI21112 - Ammonia by SEAL										
Blank (BI21112-BLK1)					Prepared & Analyzed: 09/11/12					
Ammonia as N	0.009 U	0.040	0.009	mg/L						

Hazen and Sawyer
10002 Princess Palm Ave, Suite 200
Tampa, FL 33619

September 28, 2012
Work Order: 1210253

Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BI21112 - Ammonia by SEAL										
LCS (BI21112-BS1)					Prepared & Analyzed: 09/11/12					
Ammonia as N	0.48	0.040	0.009	mg/L	0.50		96	90-110		
Matrix Spike (BI21112-MS1)					Source: 1210353-01 Prepared & Analyzed: 09/11/12					
Ammonia as N	0.47	0.040	0.009	mg/L	0.50	ND	95	90-110		
Matrix Spike Dup (BI21112-MSD1)					Source: 1210353-01 Prepared & Analyzed: 09/11/12					
Ammonia as N	0.47	0.040	0.009	mg/L	0.50	ND	93	90-110	2	10
Batch BI21121 - alkalinity										
Blank (BI21121-BLK1)					Prepared & Analyzed: 09/10/12					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						
Blank (BI21121-BLK2)					Prepared & Analyzed: 09/10/12					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						
LCS (BI21121-BS1)					Prepared & Analyzed: 09/10/12					
Total Alkalinity	120	8.0	2.0	mg/L	120		95	90-110		
LCS (BI21121-BS2)					Prepared & Analyzed: 09/10/12					
Total Alkalinity	120	8.0	2.0	mg/L	120		95	90-110		
Matrix Spike (BI21121-MS1)					Source: 1210037-01 Prepared & Analyzed: 09/10/12					
Total Alkalinity	280	8.0	2.0	mg/L	120	170	86	80-120		
Matrix Spike (BI21121-MS2)					Source: 1210338-01 Prepared & Analyzed: 09/10/12					
Total Alkalinity	280	8.0	2.0	mg/L	120	150	103	80-120		

Hazen and Sawyer
10002 Princess Palm Ave, Suite 200
Tampa, FL 33619

September 28, 2012
Work Order: 1210253

Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BI21121 - alkalinity										
Matrix Spike Dup (BI21121-MSD1)		Source: 1210037-01			Prepared & Analyzed: 09/10/12					
Total Alkalinity	290	8.0	2.0	mg/L	120	170	95	80-120	4	26
Matrix Spike Dup (BI21121-MSD2)		Source: 1210338-01			Prepared & Analyzed: 09/10/12					
Total Alkalinity	280	8.0	2.0	mg/L	120	150	103	80-120	0	26
Batch BI21201 - Nitrate 353.2 by seal										
Blank (BI21201-BLK1)					Prepared & Analyzed: 09/12/12					
Nitrate+Nitrite (N)	0.01 U	0.04	0.01	mg/L						
LCS (BI21201-BS1)					Prepared & Analyzed: 09/12/12					
Nitrate+Nitrite (N)	0.779	0.04	0.01	mg/L	0.80		97	90-110		
Matrix Spike (BI21201-MS1)		Source: 1210051-01			Prepared & Analyzed: 09/12/12					
Nitrate+Nitrite (N)	1.25	0.04	0.01	mg/L	1.0	0.315	93	77-119		
Matrix Spike Dup (BI21201-MSD1)		Source: 1210051-01			Prepared & Analyzed: 09/12/12					
Nitrate+Nitrite (N)	1.27	0.04	0.01	mg/L	1.0	0.315	96	77-119	2	20
Batch BI21223 - Digestion for TP by EPA 365.2/SM4500PE										
Blank (BI21223-BLK1)					Prepared: 09/12/12 Analyzed: 09/14/12					
Phosphorous - Total as P	0.010 U	0.040	0.010	mg/L						
LCS (BI21223-BS1)					Prepared: 09/12/12 Analyzed: 09/14/12					
Phosphorous - Total as P	0.839	0.040	0.010	mg/L	0.80		105	90-110		

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 Tampa, FL 33619

September 28, 2012
 Work Order: 1210253

Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BI21223 - Digestion for TP by EPA 365.2/SM4500PE										
Matrix Spike (BI21223-MS1)		Source: 1210183-05			Prepared: 09/12/12 Analyzed: 09/14/12					
Phosphorous - Total as P	1.03	0.040	0.010	mg/L	1.0	0.0379	99	75-125		
Matrix Spike Dup (BI21223-MSD1)		Source: 1210183-05			Prepared: 09/12/12 Analyzed: 09/14/12					
Phosphorous - Total as P	1.04	0.040	0.010	mg/L	1.0	0.0379	100	75-125	1	25
Batch BI21241 - alkalinity										
Blank (BI21241-BLK1)		Prepared & Analyzed: 09/11/12								
Total Alkalinity	2.0 U	8.0	2.0	mg/L						
LCS (BI21241-BS1)		Prepared & Analyzed: 09/11/12								
Total Alkalinity	120	8.0	2.0	mg/L	120		95	90-110		
Matrix Spike (BI21241-MS1)		Source: 1210165-01			Prepared & Analyzed: 09/11/12					
Total Alkalinity	290	8.0	2.0	mg/L	120	170	95	80-120		
Matrix Spike Dup (BI21241-MSD1)		Source: 1210165-01			Prepared & Analyzed: 09/11/12					
Total Alkalinity	290	8.0	2.0	mg/L	120	170	95	80-120	0	26
Batch BI21825 - Ion Chromatography 300.0 Prep										
Blank (BI21825-BLK1)		Prepared & Analyzed: 09/18/12								
Chloride	0.050 U	0.20	0.050	mg/L						
LCS (BI21825-BS1)		Prepared & Analyzed: 09/18/12								
Chloride	2.75	0.20	0.050	mg/L	3.0		92	85-115		

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Tampa, FL 33619

September 28, 2012
Work Order: 1210253

Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BI21825 - Ion Chromatography 300.0 Prep										
LCS Dup (BI21825-BSD1)					Prepared & Analyzed: 09/18/12					
Chloride	2.77	0.20	0.050	mg/L	3.0		92	85-115	0.7	200
Matrix Spike (BI21825-MS1)					Source: 1210253-06 Prepared & Analyzed: 09/18/12					
Chloride	29.0	0.20	0.050	mg/L	3.0	25.4	120	80-120		
Matrix Spike (BI21825-MS2)					Source: 1210337-02 Prepared & Analyzed: 09/18/12					
Chloride	432	0.20	0.050	mg/L	3.0	10100	NR	80-120		
Batch BI22019 - Ion Chromatography 300.0 Prep										
Blank (BI22019-BLK1)					Prepared & Analyzed: 09/20/12					
Chloride	0.050 U	0.20	0.050	mg/L						
LCS (BI22019-BS1)					Prepared & Analyzed: 09/20/12					
Chloride	2.82	0.20	0.050	mg/L	3.0		94	85-115		
LCS Dup (BI22019-BSD1)					Prepared & Analyzed: 09/20/12					
Chloride	2.81	0.20	0.050	mg/L	3.0		94	85-115	0.4	200
Matrix Spike (BI22019-MS1)					Source: 1211048-01 Prepared & Analyzed: 09/20/12					
Chloride	22.2	0.20	0.050	mg/L	3.0	19.0	107	80-120		
Matrix Spike (BI22019-MS2)					Source: 1210337-02 Prepared & Analyzed: 09/20/12					
Chloride	5,730 +O	0.20	0.050	mg/L	300	10100	NR	80-120		

Hazen and Sawyer
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Tampa, FL 33619

September 28, 2012
Work Order: 1210253

* Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limits and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the recommended range for the method.

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Project No. **1210253**

Client Name Hazen and Sawyer	Contact / Phone:
Project Name / Location Hillsborough County C-HS4 SE#1	

Samplers: (Signature) <i>[Signature]</i>		PARAMETER / CONTAINER DESCRIPTION																			
<p>Matrix Codes: DW-Drinking Water WW-Wastewater SW-Surface Water SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water</p>																					
Sample Description	Date	Time	Matrix	Composite	Grab	1LP, Cool CI, Total Alkalinity	250mL P, H ₂ SO ₄ TKN, NOx, NH ₃ , COD, TP							Field Temperature	Field pH	Field Conductivity	Field DO				
01 CHS4-DP01-7'	09/01/12	9:15	GW		X	1	1							26.8	4.0	540	0.51				
02 CHS4-DP02-7'	"	9:45	GW		X	1	1							26.7	4.5	596	0.20				
03 CHS4-DP03-7'	"	10:30	GW		X	1	1							26.9	4.8	639	1.86				
04 CHS4-P201-10'	"	11:00	GW		X	1	1							26.8	4.3	669	0.86				
05 CHS4-P201-10'-DUP	"	11:05	GW		X	1	1							26.8	4.3	669	0.86				
06 CHS4-P204-	"	11:45	GW		X	1	1							27.8	3.9	801	7.07				
07 CHS4-P203	"	12:00	GW		X	1	1							26.6	3.5	210	1.2				
08 CHS4-DP-06	"	12:15	GW		X	1	1							26.1	5.1	488	0.6				
09 CHS4-DP-04	"	12:20	GW		X	1	1							26.0	5.5	747	1.4				
10 CHS4-DP-05	"	13:45	GW		X	1	1							26.0	4.8	350	1.4				
11 CHS4-P205	"	14:30	GW		X	1	1							26.1	5.0	687	2.4				
12 CHS4-P206	"	14:50	GW		X	1	1							26.1	5.0	380	4.0				

Containers Prepared/Relinquished: <i>[Signature]</i>	Date/Time: 8/28/12 5:30	Received: <i>[Signature]</i>	Date/Time: 08/29/12 13:00pm	Seal intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA Samples intact upon arrival? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA Received on ice? Temp: <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA Proper preservatives indicated? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA Rec'd w/in holding time? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA Volatiles rec'd w/out headspace? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA Proper containers used? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA	Instructions / Remarks:
Relinquished: <i>[Signature]</i>	Date/Time: 9/6/12 3:15 pm	Received: <i>[Signature]</i>	Date/Time: 09-06-12 17:00		
Relinquished:	Date/Time:	Received:	Date/Time:		
Relinquished:	Date/Time:	Received:	Date/Time:		

Appendix C: Groundwater Screening

Table C.1
Site C-HS4 Groundwater Screening December 3 and 4, 2012¹

Location	Screening Interval (ft bgs)	Temp (°C)	pH	SC (µS)	DO (mg/L)	ORP (mV)	Turbidity (NTU) ²	Est. NO3-N (Test Strip mg-N/L)	Est. NO2-N (Test Strip mg-N/L)
D03	6-10'	23.8	5.19	311.0	0.77	38.8	443	0	0
	8-12'	23.8	5.25	268.0	0.94	-65.6	384	0	0
	10-14'	NR	6.35	289.0	0.53	-2.7	NR	NR	NR
	12-16'	23.1	7.08	749.0	2.78	40.3	MAX	NR	NR
	16-20'	NR	NR	NR	NR	NR	NR	NR	NR
	21-25'	NR	NR	NR	NR	NR	NR	NR	NR
D05	6-10'	23.8	5.02	466.0	1.34	-95.3	5.47	5	0
	8-12'	24.0	5.62	491.0	0.96	-135.0	761	1	0
	10-14'	24.5	5.75	452.0	2.14	-106.4	623	0	0
	12-16'	24.6	5.74	365.0	0.86	-175.4	50.1	0	0
	14-18'	24.6	5.94	404.0	3.16	-135.8	80.1	0	0
	16-20'	NR	NR	NR	NR	NR	NR	NR	NR
BKG-PZ03	8-12'	24.2	4.52	143.7	1.79	-118.7	19	0	0
	10-14'	24.3	5.67	173.7	4.02	-122.4	29.5	0	0
	12-16'	24.1	6.06	126.7	1.03	-213.5	664	0	0
	14-18'	24.2	6.23	166.5	3.53	-228.8	MAX	0	0

¹Groundwater screening samples collected using a direct push rig

PURGING DATA 10'-6'

	Nita
	9
	9
	9

SIGNATURE(S):

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2) optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:	Gnd D-3	SAMPLE ID:	DP-04 Vertical GW
		DATE:	12/3/12

PURGING DATA	12-8'
--------------	-------

WELL DIAMETER (inches): 1.5		TUBING DIAMETER (inches):		WELL SCREEN INTERVAL DEPTH: 12 feet to 8 feet		STATIC DEPTH TO WATER (feet):		PURGE PUMP TYPE OR BAILER:			
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) <div style="text-align: right;">2.4 mL</div> $= (12 \text{ feet} - 8 \text{ feet}) \times .105 \text{ gallons/foot} = 0.63 \text{ gallons}$											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) $= \quad \text{gallons} + (\quad \text{gallons/foot} \times \quad \text{feet}) + \quad \text{gallons} = \quad \text{gallons}$											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet):			FINAL PUMP OR TUBING DEPTH IN WELL (feet):			PURGING INITIATED AT:		PURGING ENDED AT:		TOTAL VOLUME PURGED (gallons):	
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) $\mu\text{mhos/cm}$ or $\mu\text{S/cm}$	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	OFF ODOR (describe)
09:10	2L	2L		7'	5.35	23.4	250	0.81	MAX	brown	31 mV
09:16	2L	4L		7'	5.29	23.8	251	0.88	906	tan	-44.5 mV
09:21	2L	6L		7'	5.51	23.8	263	1.01	432	tan	-58.9 mV
09:25	1L	7L		7'	5.25	23.8	268	0.94	384	tan	-65.6 mV
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Joseph Hart				SAMPLER(S) SIGNATURE(S): <i>[Signature]</i>			SAMPLING INITIATED AT: 09:07		SAMPLING ENDED AT: 09:26	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:			FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)							DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

PURGING DATA

SAMPLING DATA

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO: Grid D-3	SAMPLE ID: DP-04 Vertical GW	DATE: 12/3/12	

PURGING DATA 16-141

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Justin Host HAS				SAMPLER(S) SIGNATURE(S): <i>[Signature]</i>			SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:			FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: ____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)							DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE WE: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO: Grd D-3	SAMPLE ID: DP-04 Ventral Gw	DATE: 12/3/12	

PURGING DATA 20-16

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: <i>Joseph Hirst</i>				SAMPLER(S) SIGNATURE(S): <i>Joseph Hirst</i>			SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:			FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: ____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)						DUPLICATE: Y N				
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE NAME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO: Grid D-3	SAMPLE ID: DP-04 Vertical GW	DATE: 12/3/12	

PURGING DATA 25-21'

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:	SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:		FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)						DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPF = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+ 0.2$ mg/L or $+ 10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+ 5$ NTU or $+ 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE VE: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:	SAMPLE ID: GRID D-5	DATE: 12/3/12	

PURGING DATA

[illegible]

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:			FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: ____ µm	
FIELD DECONTAMINATION: PUMP Y N				TUBING Y N (replaced)			DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

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Revision Date: February 12, 2009

Form FD 9000-24

SITE VE: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:	SAMPLE ID: GRID D-5	DATE: 12/3/12	

PURGING DATA

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SAMPLING DATA

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Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:		SAMPLE ID: GHD D-5	
		DATE: 12/3/12	

PURGING DATA

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SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Joseph Hest				SAMPLER(S) SIGNATURE(S): <i>[Signature]</i>			SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:			FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: ____ μm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)							DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

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pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings < 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

TE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:	SAMPLE ID: GRVD D-5	DATE: 12/3/12	

PURGING DATA

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pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:	SAMPLE ID: GR1D D-5	DATE:	12/3/12

PURGING DATA

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SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:	SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:		FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: _____ µm		
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)						DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
REMARKS:									
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pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2); optionally, $+0.2$ mg/L or $+10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally $+5$ NTU or $+10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24

PURGING DATA

SAMPLING DATA

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Revision Date: February 12, 2009

Form FD 9000-24

ME: C-HS4

PURGING DATA

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SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:		FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: _____ µm		
FIELD DECONTAMINATION: PUMP Y N				TUBING Y N (replaced)			DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD		SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)										

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pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** $\pm 5\%$ **Dissolved Oxygen:** all readings $\leq 20\%$ saturation (see Table FS 2200-2) optionally, ± 0.2 mg/L or $\pm 10\%$ (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or $\pm 10\%$ (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO: BKG	SAMPLE ID: BKG P2003	DATE: 12/31/12	

PURGING DATA

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SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):						SAMPLING INITIATED AT:	SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:				FIELD-FILTERED: Y N Filtration Equipment Type:			FILTER SIZE: ____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)							DUPLICATE: Y N		
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									

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Revision Date: February 12, 2009

Form FD 9000-24

SITE VE: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO: BKG	SAMPLE ID: BKG-PZ-03	DATE: 12/3/12	

PURGING DATA

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SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:			FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)							DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
REMARKS:										
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Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO: BKG	SAMPLE ID: BKG-P2-03	DATE: 12/3/12	

PURGING DATA

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SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:	SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:		FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: _____ μm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)						DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
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Revision Date: February 12, 2009

Form FD 9000-24
GROUNDWATER SAMPLING LOG

SITE ME: C-HS4		SITE LOCATION: Gibsonton, Florida	
WELL NO:	BKG	SAMPLE ID:	BKG P2-03
		DATE:	12/3/02

PURGING DATA

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SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:				SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT:	SAMPLING ENDED AT:	
PUMP OR TUBING DEPTH IN WELL (feet):				TUBING MATERIAL CODE:		FIELD-FILTERED: Y N Filtration Equipment Type:		FILTER SIZE: _____ µm	
FIELD DECONTAMINATION: PUMP Y N TUBING Y N (replaced)						DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
REMARKS:									
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Revision Date: February 12, 2009

Appendix D: Soil Sample Descriptions

ID #	Location	Depth (ft bgs)	Munsell Soil Color
1	BKG	5.0-7.4	10YR 2/1
2		7.4-8.0	10YR 3/4
3		8.0-11.3	10YR 3/3
4		11.3-12.2	10YR 2/2
5		12.2-13.0	10YR 3/2
6		13.0-14.4	10YR 4/3
7		14.4-15.0	10YR 5/2
8		15.0-18.9	10YR 4/2
9	DP04	5.0-6.2	10YR 3/2
10		6.2-7.3	10YR 2/2
11		7.3-8.3	10YR 2/2
12		8.3-10.0	10YR 5/3
13		10.0-12.5	10YR 5/2
14	E7	5.0-7.1	10YR 3/2
15		7.1-7.8	10YR 2/2
16		7.8-9.8	10YR 2/1
17		9.8-12.7	10YR 3/2
18		12.7-13.8	10YR 4/2
19		13.8-14.1	10YR 3/2
20		14.1-15.0	10YR 2/2
21		15.0-20.0	10YR 6/2
22		20.0-21.0	10YR 8/1
23		21.0-22.0	10YR 8/1
24		22.0-25.0	10YR 8/1

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Table D.2
Site C-HS4 Soil Particle Size Distribution

ID #	Location	Depth (ft)	Particle Size Dtribution (% <2mm)								Texture Class
			Sand Fractions (%)					Total (%)			
			Very Coarse	Coarse	Medium	Fine	Very Fine	Sand	Silt	Clay	
			2.0-1.0 mm	1.0-0.5 mm	0.5-0.25 mm	0.25-0.10 mm	0.10-0.05 mm	2.0-0.05	0.05-0.002	<0.002	
1	BKG	5.0-7.4	0.1	5.8	47.4	37.3	6.3	94.4	3.3	2.3	sand
2		7.4-8.0	0.0	0.6	4.3	50.6	27.7	87.5	4.6	7.8	fine sand
3		8.0-11.3	0.0	0.3	2.5	55.6	29.2	86.8	4.9	8.3	loamy sand
4		11.3-12.2	0.1	0.6	2.8	51.2	17.2	69.2	15.7	15.1	sandy loam
5		12.2-13.0	0.0	0.1	2.8	76.4	15.9	94.3	3.5	2.2	fine sand
6		13.0-14.4	0.0	0.7	6.0	77.4	13.8	97.8	BDL	4.9	fine sand
7		14.4-15.0	0.1	0.6	3.9	70.0	21.2	95.5	1.1	3.4	fine sand
8		15.0-18.9	0.3	0.6	4.2	66.1	20.0	91.0	5.3	3.7	fine sand
9	DP04	5.0-6.2	0.2	3.3	25.7	48.9	12.7	90.5	6.7	2.7	sand
10		6.2-7.3	0.1	3.7	32.2	50.5	11.1	97.5	BDL	2.6	fine sand
11		7.3-8.3	0.2	3.7	34.6	40.9	5.7	85.0	10.8	4.2	loamy sand
12		8.3-10.0	0.2	4.4	30.2	59.9	2.7	96.9	BDL	4.1	fine sand
13		10.0-12.5	0.1	1.1	8.6	65.8	15.3	91.3	4.1	4.6	fine sand
14	E7	5.0-7.1	0.0	1.3	40.1	52.5	4.8	98.8	BDL	2.6	fine sand
15		7.1-7.8	0.0	1.0	17.4	61.6	16.7	96.0	0.1	4.0	fine sand
16		7.8-9.8	0.0	2.1	17.9	51.7	15.4	84.0	12.3	3.7	loamy sand
17		9.8-12.7	0.0	0.7	20.8	64.2	11.0	95.8	1.1	3.2	fine sand
18		12.7-13.8	0.4	8.3	53.4	29.9	2.7	94.9	3.9	1.3	sand
19		13.8-14.1	3.4	30.7	33.4	22.4	2.9	92.2	3.4	4.4	Coarse sand
21		15.0-20.0	14.3	13.6	16.6	20.6	2.7	68.5	16.6	15.0	sandy loam
Duplicate 14		5.0-7.1	0.0	1.2	38.1	53.9	4.8	98.3	BDL	2.0	fine sand
Duplicate 18		12.7-13.8	0.4	10.6	59.0	26.4	2.1	98.6	BDL	1.8	sand
STD			1.3	8.6	15.4	13.1	4.0	58.7	23.2	18.2	sandy loam
STD			3.6	14.5	22.8	14.9	4.0	60.2	17.6	22.2	sandy clay loam

Table D.3
Site C-HS4 Soil Sample Parameters

ID#	Location	Depth	TN	TKN	Org N	NH ₃ -N	NO _x -N	TIN	P	K	Ca	Mg	Na	Ec	Cl	pH	BufpH	OrgMt	CEC	%C
		ft	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ds/m	mg/kg			%	calc	calc - %
1	BKG	5.0-7.4	398.6	398.0	396.6	1.41	0.60	2.0	173.2	22.24	180.7	4.43	18.09	0.04	17.31	4.70	7.26	3.58	8.22	2.40
2		7.4-8.0	264.7	264.7	263.2	1.46	0.05	1.5	154.6	16.80	73.70	4.72	14.99	0.02	5.28	4.49	7.10	2.84	8.69	1.90
3		8.0-11.3	165.8	165.8	164.5	1.23	0.06	1.3	122.5	15.63	105.0	12.95	25.20	0.04	3.16	4.55	7.35	1.62	7.33	1.09
4		11.3-12.2	746.2	746.2	744.2	2.00	0.02	2.0	142.7	18.76	109.3	14.72	20.74	0.06	6.20	4.56	6.84	4.18	11.33	2.80
5		12.2-13.0	190.1	190.1	188.5	1.65	-0.02	1.6	35.87	9.50	81.29	4.83	15.30	0.04	3.94	4.94	7.63	1.30	4.32	0.87
6		13.0-14.4	21.9	22.0	21.1	0.88	-0.10	0.8	1.11	6.68	61.20	0.50	9.84	0.02	4.42	5.55	7.95	0.52	1.31	0.35
7		14.4-15.0	47.1	47.1	45.2	1.89	-0.06	1.8	0.75	8.33	141.1	19.30	11.69	0.04	5.96	5.69	7.95	0.28	1.99	0.19
8		15.0-18.9	77.4	77.5	75.1	2.37	-0.00	2.4	6.74	12.44	191.1	83.89	20.53	0.26	7.33	4.66	7.90	0.50	3.67	0.34
9	DP04	5.0-6.2	100.8	99.7	98.0	1.74	1.08	2.8	11.52	5.34	95.33	23.29	10.83	0.10	13.69	5.10	7.82	0.62	2.72	0.42
10		6.2-7.3	91.4	90.3	88.7	1.59	1.13	2.7	27.18	7.13	117.7	24.28	10.86	0.08	9.93	5.54	7.82	0.70	2.89	0.47
11		7.3-8.3	176.7	176.4	175.1	1.25	0.32	1.6	60.44	9.63	211.0	49.17	11.71	0.06	10.54	5.66	7.70	1.23	4.62	0.82
12		8.3-10.0	50.9	50.4	49.3	1.10	0.53	1.6	25.13	6.63	135.2	32.22	10.00	0.06	5.76	5.51	7.85	0.43	2.75	0.29
13		10.0-12.5	62.5	62.1	60.5	1.60	0.36	2.0	8.72	10.72	174.3	77.32	14.44	0.28	5.46	4.59	7.89	0.60	3.30	0.40
14	E7	5.0-7.1	27.2	26.8	26.0	0.76	0.44	1.2	10.39	4.44	51.02	9.43	8.78	0.06	5.06	5.75	7.95	0.21	1.23	0.14
15		7.1-7.8	194.2	193.9	192.5	1.49	0.29	1.8	142.3	4.54	63.63	11.79	15.33	0.18	10.82	4.33	7.63	1.71	4.16	1.15
16		7.8-9.8	897.8	897.8	896.3	1.46	0.02	1.5	221.1	6.79	110.1	38.65	28.15	0.12	18.93	4.25	6.91	6.48	10.99	4.34
17		9.8-12.7	201.8	201.6	200.3	1.24	0.25	1.5	36.85	5.46	64.93	8.72	13.59	0.06	6.34	4.93	7.79	1.06	2.81	0.71
18		12.7-13.8	50.2	50.1	49.2	0.93	0.06	1.0	14.92	4.48	40.46	3.03	10.92	0.06	4.59	5.05	7.94	0.21	1.30	0.14
19		13.8-14.1	132.1	131.9	130.5	1.36	0.18	1.5	103.8	4.87	79.67	10.73	10.25	0.14	6.29	4.78	7.83	0.91	2.42	0.61
20		14.1-15.0	202.4	201.8	198.8	3.05	0.61	3.7	254.6	10.50	562.0	102.7	16.55	0.68	18.20	3.99	7.74	3.96	6.73	2.65
21		15.0-20.0	452.0	451.1	442.5	8.58	0.85	9.4	521.0	57.50	1880	368.4	69.78	1.00	48.19	6.23	7.55	4.57	20.58	3.06
22		20.0-21.0	607.0	605.9	598.9	6.94	1.15	8.1	653.9	59.73	2479	678.6	73.98	1.62	452.9	7.63	7.74	5.82	24.88	3.90
23		21.0-22.0	286.5	285.6	281.2	4.39	0.88	5.3	315.9	29.38	2546	1171	32.72	1.56	329.2	7.71	7.86	1.83	25.79	1.23
24		22.0-25.0	354.1	353.3	348.1	5.20	0.84	6.0	295.5	34.94	3221	1552	34.16	2.70	594.2	7.16	7.81	2.82	32.94	1.89

Notes:

¹Total Nitrogen (TN) is a calculated value equal to the sum of TKN and NO_x.²Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and NH₃.³Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of NH₃ and NO_x.

D.O. - Dissolved oxygen

Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.

Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analysis.



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest☐ Northwest☐ St. Johns River☐ South Florida☐ Suwannee River☐ DEP☐ Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS

(*Denotes Required Fields Where Applicable)

Date Stamp

Received:

Dec 11, 2012 2:30 pm

Official Use Only

1. *Permit Number 825412		*CUP/WUP Number _____		*DID Number _____		62-524 Delineation No. _____	
2. *Number of permitted wells constructed, repaired, or abandoned 8		*Number of permitted wells not constructed, repaired, or abandoned 0					
3. *Owner's Name _____		4. *Completion Date 12/07/2012		5. Florida Unique ID _____			
6. _____		N/A					
*Well Location - Address, Road Name or Number, City, ZIP _____							
7. *County HILLSBOROUGH		*Section 31		Land Grant _____		*Township 30 *Range 20	
8. Latitude 28.12		Longitude 82.12					
9. Data Obtained From: <input type="checkbox"/> GPS <input checked="" type="checkbox"/> Map <input type="checkbox"/> Survey		Datum: <input type="checkbox"/> NAD 27 <input checked="" type="checkbox"/> NAD 83 <input type="checkbox"/> WGS 84					
10. *Type of Work: <input checked="" type="checkbox"/> Construction <input type="checkbox"/> Repair <input type="checkbox"/> Modification <input type="checkbox"/> Abandonment							
11. *Specify Intended Use(s) of Well(s):							
<input type="checkbox"/> Domestic		<input type="checkbox"/> Landscape Irrigation		<input type="checkbox"/> Agricultural Irrigation		<input type="checkbox"/> Site Investigation	
<input type="checkbox"/> Bottled Water Supply		<input type="checkbox"/> Recreation Area Irrigation		<input type="checkbox"/> Livestock		<input checked="" type="checkbox"/> Monitoring	
<input type="checkbox"/> Public Water Supply (Limited Use/DOH)		<input type="checkbox"/> Nursery Irrigation		<input type="checkbox"/> Test		<input type="checkbox"/> Earth-Coupled Geothermal	
<input type="checkbox"/> Public Water Supply (Community or Non-Community/DEP)		<input type="checkbox"/> Commercial/Industrial		<input type="checkbox"/> Golf Course Irrigation		<input type="checkbox"/> HVAC Supply	
<input type="checkbox"/> Class I Injection		<input type="checkbox"/> Class V Injection: <input type="checkbox"/> Recharge <input type="checkbox"/> Commercial/Industrial Disposal <input type="checkbox"/> Aquifer Storage and Recovery <input type="checkbox"/> Drainage		<input type="checkbox"/> Remediation: <input type="checkbox"/> Recovery <input type="checkbox"/> Air Sparge <input type="checkbox"/> Other (Describe) _____		<input type="checkbox"/> Other (Describe) _____	
12. *Drill Method: <input checked="" type="checkbox"/> Auger <input type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary <input type="checkbox"/> Combination (Two or More Methods) <input type="checkbox"/> Jetted <input type="checkbox"/> Sonic							
<input type="checkbox"/> Horizontal Drilling <input type="checkbox"/> Hydraulic Point (Direct Push) <input type="checkbox"/> Other _____							
13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM							
14. *Measuring Point (Describe) _____ Which is _____ ft. Above _____ Below Land Surface *Flowing: <input type="checkbox"/> Yes <input type="checkbox"/> No							
15. *Casing Material: <input type="checkbox"/> Black Steel <input type="checkbox"/> Galvanized <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless Steel <input type="checkbox"/> Not Cased <input type="checkbox"/> Other _____							
16. *Total Well Depth 15.0 ft. Cased Depth 14.0 ft. *Open Hole: From _____ To _____ ft. *Screen: From _____ To _____ ft. Slot Size _____							
17. *Abandonment: <input type="checkbox"/> Other (Explain) _____							
From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
18. *Surface Casing Diameter and Depth:							
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
19. *Primary Casing Diameter and Depth:							
Dia 1.00 in. From 0.00 ft. To 14.00 ft. No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
20. *Liner Casing Diameter and Depth:							
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
21. *Telescope Casing Diameter and Depth:							
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____		Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____					
22. Pump Type (If Known):							
<input type="checkbox"/> Centrifugal <input type="checkbox"/> Jet <input type="checkbox"/> Submersible <input type="checkbox"/> Turbine		23. Chemical Analysis (When Required):					
Horsepower _____ Pump Capacity (GPM) _____		Iron _____ ppm		Sulfate _____ ppm		Chloride _____ ppm	
Pump Depth _____ ft. Intake Depth _____ ft.		<input type="checkbox"/> Laboratory Test		<input type="checkbox"/> Field Test Kit			
24. Water Well Contractor:							
*Contractor Name Douglas A Leonhardt		*License Number 2406		E-mail Address lisa@edsenvironmental.com			
*Contractor's Signature Digitally Signed							
*Driller's Name (Print or Type) GLEN PENNINGTON							

2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMDC.STATE.FL.US

4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

[illegible]

Comments:

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest☐ Northwest☐ St. Johns River☐ South Florida☐ Suwannee River☐ DEP☐ Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS

(*Denotes Required Fields Where Applicable)

Date Stamp

Received:

Dec 11, 2012 2:30 pm

Official Use Only

1. *Permit Number 825412 *CUP/WUP Number _____ *DID Number _____ 62-524 Delineation No. _____2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 03. *Owner's _____ 4. *Completion Date 12/07/2012 5. Florida Unique ID _____6. _____
Name or Number, City, ZIP7. *County HILLSBOROUGH *Section 31 Land Grant _____ *Township 30 *Range 208. _____
Datum: _____ NAD 27 ☒ NAD 83 _____ WGS 8410. *Type of Work: ☒ Construction _____ Repair _____ Modification _____ Abandonment

11. *Specify Intended Use(s) of Well(s):

<input type="checkbox"/> Domestic	<input type="checkbox"/> Landscape Irrigation	<input type="checkbox"/> Agricultural Irrigation	<input type="checkbox"/> Site Investigation
<input type="checkbox"/> Bottled Water Supply	<input type="checkbox"/> Recreation Area Irrigation	<input type="checkbox"/> Livestock	<input checked="" type="checkbox"/> Monitoring
<input type="checkbox"/> Public Water Supply (Limited Use/DOH)	<input type="checkbox"/> Commercial/Industrial	<input type="checkbox"/> Nursery Irrigation	<input type="checkbox"/> Test
<input type="checkbox"/> Public Water Supply (Community or Non-Community/DEP)	<input type="checkbox"/> Golf Course Irrigation	<input type="checkbox"/> Earth-Coupled Geothermal	<input type="checkbox"/> HVAC Supply
<input type="checkbox"/> Class I Injection		<input type="checkbox"/> HVAC Return	

Class V Injection: _____ Recharge _____ Commercial/Industrial Disposal _____ Aquifer Storage and Recovery _____ Drainage

Remediation: _____ Recovery _____ Air Sparge _____ Other (Describe) _____

Other (Describe) _____

12. *Drill Method: ☒ Auger _____ Cable Tool _____ Rotary _____ Combination (Two or More Methods) _____ Jetted _____ Sonic _____
_____ Horizontal Drilling _____ Hydraulic Point (Direct Push) _____ Other _____13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. *Measuring Point (Describe) _____ Which is _____ ft. Above _____ Below Land Surface *Flowing: _____ Yes _____ No

15. *Casing Material: _____ Black Steel _____ Galvanized ☒ PVC _____ Stainless Steel _____ Not Cased _____ Other _____16. *Total Well Depth 15.0 ft. Cased Depth 14.0 ft. *Open Hole: From _____ To _____ ft. *Screen: From _____ To _____ ft. Slot Size _____

17. *Abandonment: _____ Other (Explain) _____			
From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

18. *Surface Casing Diameter and Depth:			
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

19. *Primary Casing Diameter and Depth:			
Dia <u>1.00</u> in. From <u>0.00</u> ft. To <u>14.00</u> ft.	No. of Bags <u>1.00</u>	Seal Material (Check One):	<input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

20. *Liner Casing Diameter and Depth:			
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

21. *Telescope Casing Diameter and Depth:			
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft.	No. of Bags _____	Seal Material (Check One):	<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

22. Pump Type (If Known):		23. Chemical Analysis (When Required):	
<input type="checkbox"/> Centrifugal <input type="checkbox"/> Jet <input type="checkbox"/> Submersible <input type="checkbox"/> Turbine		Iron _____ ppm	Sulfate _____ ppm Chloride _____ ppm
Horsepower _____ Pump Capacity (GPM) _____		_____ Laboratory Test _____ Field Test Kit	
Pump Depth _____ ft. Intake Depth _____ ft.			

24. Water Well Contractor: _____

*Contractor Name Douglas A Leonhardt *License Number 2406 E-mail Address lisa@edsenvironmental.com*Contractor's Signature Digitally Signed *Driller's Name (Print or Type) GLEN PENNINGTON
(I certify that the information provided in this report is accurate and true.)

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

*DRILL CUTTINGS LOG (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

[illegible]

Comments

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest

☐ Northwest

☐ St. Johns River

☐ South Florida

☐ Suwannee River

☐ DEP

☐ Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS

(*Denotes Required Fields Where Applicable)

Date Stamp

Received:

Dec 11, 2012 2:30 pm

Official Use Only

1. *Permit Number 825412 *CUP/WUP Number _____ *DID Number _____ 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name ██████████ 4. *Completion Date 12/07/2012 5. Florida Unique ID _____

6. ██████████ CREEK RD N/A

*Well Location - Address, Road Name or Number, City, ZIP

7. *County HILLSBOROUGH *Section 31 Land Grant _____ *Township 30 *Range 20

8. ██████████

9. Data Obtained From: GPS ☒ Map ☐ Survey _____ Datum: NAD 27 ☒ NAD 83 ☐ WGS 84

10. *Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment

11. *Specify Intended Use(s) of Well(s):

☐ Domestic ☐ Landscape Irrigation ☐ Agricultural Irrigation ☐ Site Investigation
☐ Bottled Water Supply ☐ Recreation Area Irrigation ☐ Livestock ☒ Monitoring
☐ Public Water Supply (Limited Use/DOH) ☐ Nursery Irrigation ☐ Test
☐ Public Water Supply (Community or Non-Community/DEP) ☐ Commercial/Industrial ☐ Earth-Coupled Geothermal
☐ Class I Injection ☐ Golf Course Irrigation ☐ HVAC Supply
☐ HVAC Return

Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage

Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe) _____

Other (Describe) _____

12. *Drill Method: ☒ Auger ☐ Cable Tool ☐ Rotary ☐ Combination (Two or More Methods) ☐ Jetted ☐ Sonic

☐ Horizontal Drilling ☐ Hydraulic Point (Direct Push) ☐ Other _____

13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. *Measuring Point (Describe) _____ Which is _____ ft. Above Below Land Surface *Flowing: ☐ Yes ☐ No

15. *Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel ☐ Not Cased ☐ Other _____

16. *Total Well Depth 15.0 ft. Cased Depth 14.0 ft. *Open Hole: From _____ To _____ ft. *Screen: From _____ To _____ ft. Slot Size _____

17. *Abandonment: ☐ Other (Explain) _____

From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

18. *Surface Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

19. *Primary Casing Diameter and Depth:

Dia <u>1.00</u> in. From <u>0.00</u> ft. To <u>14.00</u> ft. No. of Bags <u>1.00</u>	Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

20. *Liner Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

21. *Telescope Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

22. Pump Type (If Known): ☐ Centrifugal ☐ Jet ☐ Submersible ☐ Turbine

Horsepower _____ Pump Capacity (GPM) _____

Pump Depth _____ ft. Intake Depth _____ ft.

24. Water Well Contractor: _____

23. Chemical Analysis (When Required):

Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm

Laboratory Test _____ Field Test Kit

*Contractor Name Douglas A Leonhardt *License Number 2406 E-mail Address lisa@edsenvironmental.com

*Contractor's Signature Digitally Signed *Driller's Name (Print or Type) GLEN PENNINGTON

(I certify that the information provided in this report is accurate and true.)



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest

☐ Northwest

☐ St. Johns River

☐ South Florida

☐ Suwannee River

☐ DEP

☐ Delegated Authority (If Applicable)

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Received:

Dec 11, 2012 2:30 pm

Official Use Only

1. *Permit Number 825412		*CUP/WUP Number		*DID Number		62-524 Delineation No.	
2. *Number of permitted wells constructed, repaired, or abandoned 8		*Number of permitted wells not constructed, repaired, or abandoned 0					
3. *Owner's Name		4. *Completion Date 12/07/2012		5. Florida Unique ID			
6. N/A							
*Well Location - Address, Road Name or Number, City, ZIP							
7. *County HILLSBOROUGH		*Section 31		Land Grant		*Township 30 *Range 20	
8. Latitude							
9. Data Obtained		GPS <input checked="" type="checkbox"/> Map		Survey		Datum: NAD 27 <input checked="" type="checkbox"/> NAD 83 WGS 84	
10. *Type of Work: <input checked="" type="checkbox"/> Construction <input type="checkbox"/> Repair <input type="checkbox"/> Modification <input type="checkbox"/> Abandonment							
11. *Specify Intended Use(s) of Well(s):							
<input type="checkbox"/> Domestic		<input type="checkbox"/> Landscape Irrigation		<input type="checkbox"/> Agricultural Irrigation		<input type="checkbox"/> Site Investigation	
<input type="checkbox"/> Bottled Water Supply		<input type="checkbox"/> Recreation Area Irrigation		<input type="checkbox"/> Livestock		<input checked="" type="checkbox"/> Monitoring	
<input type="checkbox"/> Public Water Supply (Limited Use/DOH)		<input type="checkbox"/> Nursery Irrigation		<input type="checkbox"/> Commercial/Industrial		<input type="checkbox"/> Test	
<input type="checkbox"/> Public Water Supply (Community or Non-Community/DEP)		<input type="checkbox"/> Golf Course Irrigation		<input type="checkbox"/> Earth-Coupled Geothermal		<input type="checkbox"/> HVAC Supply	
<input type="checkbox"/> Class I Injection				<input type="checkbox"/> HVAC Return			
Class V Injection: <input type="checkbox"/> Recharge <input type="checkbox"/> Commercial/Industrial Disposal <input type="checkbox"/> Aquifer Storage and Recovery <input type="checkbox"/> Drainage							
Remediation: <input type="checkbox"/> Recovery <input type="checkbox"/> Air Sparge <input type="checkbox"/> Other (Describe)							
Other (Describe)							
12. *Drill Method: <input checked="" type="checkbox"/> Auger <input type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary <input type="checkbox"/> Combination (Two or More Methods) <input type="checkbox"/> Jetted <input type="checkbox"/> Sonic							
<input type="checkbox"/> Horizontal Drilling <input type="checkbox"/> Hydraulic Point (Direct Push) <input type="checkbox"/> Other							
13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level ft. After Hours at GPM							
14. *Measuring Point (Describe) Which is ft. Above Below Land Surface *Flowing: Yes No							
15. *Casing Material: <input type="checkbox"/> Black Steel <input type="checkbox"/> Galvanized <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless Steel <input type="checkbox"/> Not Cased <input type="checkbox"/> Other							
16. *Total Well Depth 15.0 ft. Cased Depth 14.0 ft. *Open Hole: From To ft. *Screen: From To ft. Slot Size							
17. *Abandonment: Other (Explain)							
From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
18. *Surface Casing Diameter and Depth:							
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
19. *Primary Casing Diameter and Depth:							
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One):		<input checked="" type="checkbox"/> Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
20. *Liner Casing Diameter and Depth:							
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
21. *Telescope Casing Diameter and Depth:							
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
Dia in. From ft. To ft.		No. of Bags		Seal Material (Check One):		Neat Cement Bentonite Other	
22. Pump Type (If Known):							
<input type="checkbox"/> Centrifugal <input type="checkbox"/> Jet <input type="checkbox"/> Submersible <input type="checkbox"/> Turbine		23. Chemical Analysis (When Required):					
Horsepower Pump Capacity (GPM)		Iron ppm		Sulfate ppm		Chloride ppm	
Pump Depth ft. Intake Depth ft.		<input type="checkbox"/> Laboratory Test <input type="checkbox"/> Field Test Kit					
24. Water Well Contractor:							

*Contractor Name **Douglas A Leonhardt** *License Number **2406** E-mail Address **lisa@edsenvironmental.com**

*Contractor's Signature **Digitally Signed** *Driller's Name (Print or Type) **GLEN PENNINGTON**

(I certify that the information provided in this report is accurate and true.)

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

[illegible]

Comments:

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well.



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest

☐ Northwest

☐ St. Johns River

☐ South Florida

☐ Suwannee River

☐ DEP

☐ Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS

(*Denotes Required Fields Where Applicable)

Date Stamp

Received:

Dec 11, 2012 2:30 pm

Official Use Only

1. *Permit Number 825412 *CUP/WUP Number _____ *DID Number _____ 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name _____ 4. *Completion Date 12/07/2012 5. Florida Unique ID _____

6. _____
Name or Number, City, ZIP

7. *County HILLSBOROUGH *Section 31 Land Grant _____ *Township 30 *Range 20

8. _____

9. Data Obtained From: GPS ☒ Map ☐ Survey _____ Datum: NAD 27 ☒ NAD 83 ☐ WGS 84

10. *Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment

11. *Specify Intended Use(s) of Well(s):
☐ Domestic ☐ Landscape Irrigation ☐ Agricultural Irrigation ☐ Site Investigation
☐ Bottled Water Supply ☐ Recreation Area Irrigation ☐ Livestock ☒ Monitoring
☐ Public Water Supply (Limited Use/DOH) ☐ Nursery Irrigation ☐ Test
☐ Public Water Supply (Community or Non-Community/DEP) ☐ Commercial/Industrial ☐ Earth-Coupled Geothermal
☐ Class I Injection ☐ Golf Course Irrigation ☐ HVAC Supply
☐ HVAC Return

Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage

Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe) _____

Other (Describe) _____

12. *Drill Method: ☒ Auger ☐ Cable Tool ☐ Rotary ☐ Combination (Two or More Methods) ☐ Jetted ☐ Sonic

☐ Horizontal Drilling ☐ Hydraulic Point (Direct Push) ☐ Other _____

13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. *Measuring Point (Describe) _____ Which is _____ ft. Above _____ Below Land Surface *Flowing: ☐ Yes ☐ No

15. *Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel ☐ Not Cased ☐ Other _____

16. *Total Well Depth 15.0 ft. Cased Depth 14.0 ft. *Open Hole: From _____ To _____ ft. *Screen: From _____ To _____ ft. Slot Size _____

17. *Abandonment: ☐ Other (Explain) _____

From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

18. *Surface Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

19. *Primary Casing Diameter and Depth:

Dia <u>1.00</u> in. From <u>0.00</u> ft. To <u>14.00</u> ft. No. of Bags <u>1.00</u>	Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

20. *Liner Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

21. *Telescope Casing Diameter and Depth:

Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____	Seal Material (Check One): <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____

22. Pump Type (If Known): ☐ Centrifugal ☐ Jet ☐ Submersible ☐ Turbine

Horsepower _____ Pump Capacity (GPM) _____

Pump Depth _____ ft. Intake Depth _____ ft. _____ Laboratory Test _____ Field Test Kit

24. Water Well Contractor: _____

*Contractor Name Douglas A Leonhardt *License Number 2406 E-mail Address lisa@edsenvironmental.com

*Contractor's Signature Digitally Signed *Driller's Name (Print or Type) GLEN PENNINGTON

(I certify that the information provided in this report is accurate and true.)

2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SFWMD.STATE.FL.US

4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

[illegible]

Comments

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well.



STATE OF FLORIDA WELL COMPLETION REPORT

- ☒ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable)

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Received:

Dec 11, 2012 2:30 pm

Official Use Only

1. *Permit Number 825412		*CUP/WUP Number		*DID Number		62-524 Delineation No.	
2. *Number of permitted wells constructed, repaired, or abandoned 8		*Number of permitted wells not constructed, repaired, or abandoned 0					
3. *Owner's Name ██████████		4. *Completion Date 12/07/2012		5. Florida Unique ID			
6. ██████████ CREEK RD		N/A					
*Well Location - Address, Road Name or Number, City, ZIP							
7. *County HILLSBOROUGH		*Section 31		Land Grant		*Township 30 *Range 20	
8. ██████████							
GPS <input checked="" type="checkbox"/> Map		Survey		Datum: NAD 27		<input checked="" type="checkbox"/> NAD 83 WGS 84	
10. *Type of Work: <input checked="" type="checkbox"/> Construction <input type="checkbox"/> Repair <input type="checkbox"/> Modification <input type="checkbox"/> Abandonment							
11. *Specify Intended Use(s) of Well(s):							
<input type="checkbox"/> Domestic		<input type="checkbox"/> Landscape Irrigation		<input type="checkbox"/> Agricultural Irrigation		<input type="checkbox"/> Site Investigation	
<input type="checkbox"/> Bottled Water Supply		<input type="checkbox"/> Recreation Area Irrigation		<input type="checkbox"/> Livestock		<input checked="" type="checkbox"/> Monitoring	
<input type="checkbox"/> Public Water Supply (Limited Use/DOH)		<input type="checkbox"/> Commercial/Industrial		<input type="checkbox"/> Nursery Irrigation		<input type="checkbox"/> Test	
<input type="checkbox"/> Public Water Supply (Community or Non-Community/DEP)		<input type="checkbox"/> Golf Course Irrigation		<input type="checkbox"/> Earth-Coupled Geothermal		<input type="checkbox"/> HVAC Supply	
<input type="checkbox"/> Class I Injection				<input type="checkbox"/> HVAC Return			
Class V Injection: <input type="checkbox"/> Recharge <input type="checkbox"/> Commercial/Industrial Disposal <input type="checkbox"/> Aquifer Storage and Recovery <input type="checkbox"/> Drainage							
Remediation: <input type="checkbox"/> Recovery <input type="checkbox"/> Air Sparge <input type="checkbox"/> Other (Describe)							
<input type="checkbox"/> Other (Describe)							
12. *Drill Method: <input checked="" type="checkbox"/> Auger <input type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary <input type="checkbox"/> Combination (Two or More Methods) <input type="checkbox"/> Jetted <input type="checkbox"/> Sonic							
<input type="checkbox"/> Horizontal Drilling <input type="checkbox"/> Hydraulic Point (Direct Push) <input type="checkbox"/> Other							
13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level 7.0 ft. After 7.0 Hours at 7.0 GPM							
14. *Measuring Point (Describe) 7.0 ft. Which is 7.0 ft. Above 7.0 ft. Below Land Surface *Flowing: <input type="checkbox"/> Yes <input type="checkbox"/> No							
15. *Casing Material: <input type="checkbox"/> Black Steel <input type="checkbox"/> Galvanized <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Stainless Steel <input type="checkbox"/> Not Cased <input type="checkbox"/> Other							
16. *Total Well Depth 15.0 ft. Cased Depth 14.0 ft. *Open Hole: From 14.0 To 15.0 ft. *Screen: From 14.0 To 15.0 ft. Slot Size							
17. *Abandonment: <input type="checkbox"/> Other (Explain)							
From 14.0 ft. To 15.0 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
From 14.0 ft. To 15.0 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
From 14.0 ft. To 15.0 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
From 14.0 ft. To 15.0 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
18. *Surface Casing Diameter and Depth:							
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
19. *Primary Casing Diameter and Depth:							
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
20. *Liner Casing Diameter and Depth:							
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
21. *Telescope Casing Diameter and Depth:							
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
Dia 1.00 in. From 0.00 ft. To 14.00 ft.		No. of Bags 1.00		Seal Material (Check One): <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other			
22. Pump Type (If Known):							
<input type="checkbox"/> Centrifugal <input type="checkbox"/> Jet <input type="checkbox"/> Submersible <input type="checkbox"/> Turbine							
Horsepower 1.00		Pump Capacity (GPM) 1.00					
Pump Depth 14.0 ft.		Intake Depth 14.0 ft.					
23. Chemical Analysis (When Required):							
Iron 1.00 ppm		Sulfate 1.00 ppm		Chloride 1.00 ppm			
<input type="checkbox"/> Laboratory Test		<input type="checkbox"/> Field Test Kit					
24. Water Well Contractor:							
*Contractor Name Douglas A Leonhardt		*License Number 2406		E-mail Address lisa@edsenvironmental.com			
*Contractor's Signature Digitally Signed		*Driller's Name (Print or Type) GLEN PENNINGTON					
(I certify that the information provided in this report is accurate and true.)							

WWW.SWFWMD.STATE.FL.US

WWW.SJRWMD.COM

WWW.NWFWMD.STATE.FL.US

WWW.SFWMD.GOV

WWW.MYSUWANNEERIVER.COM

[illegible]

Comments:

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well.



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp
Received:
Dec 11, 2012 2:30 pm

Official Use Only

1. Permit Number 825412 *CUP/WUP Number _____ *DID Number _____ 62-524 Delineation No. _____

2. Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. Owner's Name _____ 4. Completion Date 12/07/2012 5. Florida Unique ID _____

6. _____ Name or Number, City, ZIP _____

7. *County HILLSBOROUGH _____

8. Latitude _____ Datum: _____ NAD 27 ☒ NAD 83 _____ WGS 84 _____

10. *Type of Work: ☒ Construction _____ Repair _____ Modification _____ Abandonment _____

11. *Specify Intended Use(s) of Well(s):
____ Domestic _____ Landscape Irrigation _____ Agricultural Irrigation _____ Site Investigation
____ Bottled Water Supply _____ Recreation Area Irrigation _____ Livestock _____ ☒ Monitoring
____ Public Water Supply (Limited Use/DOH) _____ Nursery Irrigation _____ Test
____ Public Water Supply (Community or Non-Community/DEP) _____ Commercial/Industrial _____ Earth-Coupled Geothermal
____ Class I Injection _____ Golf Course Irrigation _____ HVAC Supply
____ Class V Injection: _____ Recharge _____ Commercial/Industrial Disposal _____ Aquifer Storage and Recovery _____ Drainage
____ Remediation: _____ Recovery _____ Air Sparge _____ Other (Describe) _____
____ Other (Describe) _____

12. *Drill Method: ☒ Auger _____ Cable Tool _____ Rotary _____ Combination (Two or More Methods) _____ Jetted _____ Sonic
____ Horizontal Drilling _____ Hydraulic Point (Direct Push) _____ Other _____

13. *Measured Static Water Level 7.0 ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. *Measuring Point (Describe) _____ Which is _____ ft. Above _____ Below Land Surface *Flowing: _____ Yes _____ No

15. *Casing Material: _____ Black Steel _____ Galvanized ☒ PVC _____ Stainless Steel _____ Not Cased _____ Other _____

16. *Total Well Depth 11.0 ft. Cased Depth 7.0 ft. *Open Hole: From _____ To _____ ft. *Screen: From _____ To _____ ft. Slot Size _____

17. *Abandonment: _____ Other (Explain) _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

18. *Surface Casing Diameter and Depth:
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

19. *Primary Casing Diameter and Depth:
Dia 2.00 in. From 0.00 ft. To 7.00 ft. No. of Bags 1.00 Seal Material (Check One): ☒ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

20. *Liner Casing Diameter and Depth:
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

21. *Telescope Casing Diameter and Depth:
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): _____ Neat Cement _____ Bentonite _____ Other _____

22. Pump Type (If Known):
____ Centrifugal _____ Jet _____ Submersible _____ Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth _____ ft. Intake Depth _____ ft.

23. Chemical Analysis (When Required):
Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
____ Laboratory Test _____ Field Test Kit

24. Water Well Contractor:

*Contractor Name Douglas A Leonhardt *License Number 2406 E-mail Address lisa@edsenvironmental.com

*Contractor's Signature Digitally Signed *Driller's Name (Print or Type) GLEN PENNINGTON

(I certify that the information provided in this report is accurate and true.)

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

[illegible]

Comments

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well.



STATE OF FLORIDA WELL COMPLETION REPORT

☒ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable) _____

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp
Received:
Dec 11, 2012 2:30 pm

Official Use Only

1. Permit Number 825412 *CUP/WUP Number _____ *DID Number _____ 62-524 Delineation No. _____

2. Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. Owner's Name _____ 4. Completion Date 12/07/2012 5. Florida Unique ID _____

6. _____ Name or Number, City, ZIP _____

7. County HILLSBOROUGH _____

8. _____

9. Data Obtained From: GPS ☒ Map ☐ Survey ☐ Datum: NAD 27 ☒ NAD 83 ☐ WGS 84

10. Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment

11. Specify Intended Use(s) of Well(s):
Domestic _____ Landscape Irrigation _____ Agricultural Irrigation _____ Site Investigation _____
Bottled Water Supply _____ Recreation Area Irrigation _____ Livestock _____ ☒ Monitoring _____
Public Water Supply (Limited Use/DOH) _____ Nursery Irrigation _____ Test _____
Public Water Supply (Community or Non-Community/DEP) _____ Commercial/Industrial _____ Earth-Coupled Geothermal _____
Class I Injection _____ Golf Course Irrigation _____ HVAC Supply _____
Class V Injection: _____ Recharge _____ Commercial/Industrial Disposal _____ Aquifer Storage and Recovery _____ Drainage _____
Remediation: _____ Recovery _____ Air Sparge _____ Other (Describe) _____
Other (Describe) _____

12. Drill Method: ☒ Auger ☐ Cable Tool ☐ Rotary ☐ Combination (Two or More Methods) ☐ Jetted ☐ Sonic
☐ Horizontal Drilling ☐ Hydraulic Point (Direct Push) ☐ Other _____

13. Measured Static Water Level 7.0 ft. Measured Pumping Water Level _____ ft. After _____ Hours at _____ GPM

14. Measuring Point (Describe) _____ Which is _____ ft. Above _____ Below Land Surface *Flowing: ☐ Yes ☐ No

15. Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel ☐ Not Cased ☐ Other _____

16. Total Well Depth 12.0 ft. Cased Depth 7.0 ft. *Open Hole: From _____ To _____ ft. *Screen: From _____ To _____ ft. Slot Size _____

17. Abandonment: _____ Other (Explain) _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

18. Surface Casing Diameter and Depth:
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

19. Primary Casing Diameter and Depth:
Dia 2.00 in. From 0.00 ft. To 7.00 ft. No. of Bags 1.00 Seal Material (Check One): ☒ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

20. Liner Casing Diameter and Depth:
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

21. Telescope Casing Diameter and Depth:
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____
Dia _____ in. From _____ ft. To _____ ft. No. of Bags _____ Seal Material (Check One): ☐ Neat Cement ☐ Bentonite ☐ Other _____

22. Pump Type (If Known):
☐ Centrifugal ☐ Jet ☐ Submersible ☐ Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth _____ ft. Intake Depth _____ ft.

23. Chemical Analysis (When Required):
Iron _____ ppm Sulfate _____ ppm Chloride _____ ppm
Laboratory Test _____ Field Test Kit _____

24. Water Well Contractor:

*Contractor Name Douglas A Leonhardt *License Number 2406 E-mail Address lisa@edsenvironmental.com

*Contractor's Signature Digitally Signed *Driller's Name (Print or Type) GLEN PENNINGTON

(I certify that the information provided in this report is accurate and true.)

WWW.SWFWMD.STATE.FL.US

WWW.SJRWMD.COM

WWW.NWFWMD.STATE.FL.US

WWW.SFWMD.GOV

WWW.MYSUWANNEERIVER.COM

M=Medium, and C=Coarse)

[illegible]

Comments:

*Detailed Site Map of Well Location



Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources within 500 ft. of well.



STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT,
REPAIR, MODIFY, OR ABANDON A WELL

- ☒ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable)

PLEASE FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

The water well contractor is responsible for completing
this form and forwarding the permit application to the
appropriate delegated authority where applicable.

Permit No. **825412**
Florida Unique ID _____
Permit Stipulations Required (See Attached)
23.39
62-524 Quad No. **Q3119** Delineation No. _____
CUP/WUP Application No. _____
ABOVE THIS LINE FOR OFFICIAL USE ONLY

1. Owner, Legal Name if _____ FL **33534-0899**
N/A
2. Well Location - Address, Road Name or Number, City _____
3. Parcel ID No. (PIN) or Alternate Key (Circle One) _____ Lot _____ Block _____ Unit _____
4. Section or Land Grant **31** Township **30** Range **20** County **HILLSBOROUGH** Subdivision _____ Check if 62-524: Yes ☒ No
5. **Douglas A Leonhardt** **2406** **(407) 295-3532** **lisa@edsenvironmental.com**
Water Well Contractor License Number Telephone Number E-mail Address
6. **4712 OLD WINTER GARDEN ROAD** **ORLANDO** **FL** **38211**
Water Well Contractor's Address City State ZIP
7. Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment
8. Number of Proposed Wells **8** Reason for Repair, Modification, or Abandonment _____
9. Specify Intended Use(s) of Well(s):
Domestic ☐ Landscape Irrigation ☐ Agricultural Irrigation ☐ Site Investigation ☐
Bottled Water Supply ☐ Recreation Area Irrigation ☐ Livestock ☒ Monitoring ☐
Public Water Supply (Limited Use/DOH) ☐ Nursery Irrigation ☐ Test ☐
Public Water Supply (Community or Non-Community/DEP) ☐ Commercial/Industrial ☐ Earth-Coupled Geothermal ☐
Class I Injection ☐ Golf Course Irrigation ☐ HVAC Supply ☐
Class V Injection: Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage ☐
Remediation: Recovery ☐ Air Sparge ☐ Other (Describe) _____
Other (Describe) _____ (Note: Not all types of wells are permitted by a given permitting authority)
10. Distance from Septic System if ≤ 200 ft. _____ 11. Facility Description _____ 12. Estimated Start Date **11/27/2012**
13. Estimated Well Depth **28** ft. Estimated Casing Depth _____ ft. Primary Casing Diameter **1** in. Open Hole: From _____ To _____ ft.
14. Estimated Screen Interval: From _____ To _____ ft.
15. Primary Casing Material: Black Steel ☐ Galvanized ☐ PVC ☒ Stainless Steel ☐
Not Cased ☐ Other: _____
16. Secondary Casing: Telescope Casing ☐ Liner ☐ Surface Casing ☐ Diameter _____ in.
17. Secondary Casing Material: Black Steel ☐ Galvanized ☐ PVC ☐ Stainless Steel ☐ Other ☐
18. Method of Construction, Repair, or Abandonment: Auger ☐ Cable Tool ☐ Jetted ☐ Rotary ☐ Sonic ☐
Combination (Two or More Methods) ☐ Hand Driven (Well Point, Sand Point) ☒ Hydraulic Point (Direct Push) ☐
Horizontal Drilling ☐ Plugged by Approved Method ☐ Other (Describe) _____
19. Proposed Grouting Interval for the Primary, Secondary, and Additional Casing:
From _____ To _____ Seal Material (Bentonite Neat Cement Other) _____
From _____ To _____ Seal Material (Bentonite Neat Cement Other) _____
From _____ To _____ Seal Material (Bentonite Neat Cement Other) _____
From _____ To _____ Seal Material (Bentonite Neat Cement Other) _____
20. Indicate total number of existing wells on site **8** List number of existing unused wells on site **0**
21. Is this well or any existing well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP)
or CUP/WUP Application? Yes ☒ No ☐ If yes, complete the following: CUP/WUP No. _____ District Well ID No. _____
22. _____
23. Data Obtained From: GPS ☒ Map ☐ Survey ☐ Datum: NAD 27 ☒ NAD 83 ☐ WGS 84 ☐
I hereby certify that I will comply with the applicable rules of Title 10, Florida Administrative Code, and that a water
use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well
construction. I further certify that all information provided in this application is accurate and that I will obtain
necessary approval from other federal, state, or local governments, if applicable, I agree to provide a well
completion report to the District within 30 days after completion of the construction, repair, modification, or
abandonment authorized by this permit, or the permit expiration, whichever occurs first.
I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my
responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well, or I certify that I am
the agent for the owner, that the information provided is accurate, and that I have informed the owner of his
responsibilities as stated above. Owner consents to allowing personnel of the WMD or Delegated Authority access to
the well site during the construction, repair, modification, or abandonment authorized by this permit.

Date Stamp
Received:
Nov 27, 2012 12:09 pm
Official Use Only

Digitally Signed _____ 2406 Digitally Signed _____ 11/27/2012
Signature of Contractor License No. Signature of Owner or Agent Date

DO NOT WRITE BELOW THIS LINE - FOR OFFICIAL USE ONLY

Approval Granted By **Automatically Issued** Issue Date **11/27/2012** Expiration Date **02/25/2013** Hydrologist Approval _____

Fee Received **\$50.00** Receipt No. **9239917** Check No. _____

THIS PERMIT IS NOT VALID UNTIL PROPERLY SIGNED BY AN AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD OR DELEGATED AUTHORITY. THE
PERMIT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL CONSTRUCTION, REPAIR, MODIFICATION, OR ABANDONMENT ACTIVITIES.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

Comments:

General Site Map of Proposed Well Location



Identify known roads and landmarks. Give distances from all reference points or structures, septic systems, sanitary hazards, and contamination sources, if applicable.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

STIPULATION # 23 - TEST/MONITOR WELL

- A. This well is to be used as a test/monitor well. If it is to be converted into a production well, an additional permit shall be obtained.
- B. There shall be no injection of fluids into the monitor well without prior written approval from the Florida Department of Environmental Protection (DEP) or the District. This includes, but is not limited to treated ground water, or the introduction of microbes for in-situ aquifer restoration.
- C. The well shall be constructed in such a manner to prevent the unauthorized interchange of water between different water bearing zones (i.e., breaching of confining beds, clays or hardpan intervals) as per Chapter 62-532.500 (3)(e), Florida Administrative Code (F.A.C.).
- D. Prior written approval from the District shall be required if the monitor well will be pumped for use in hydrodynamic control and/or contaminant plume management, if quantities reach or exceed requirement of a Water Use Permit.
- E. All monitor wells constructed at any facility which has been designated as a ground water contamination site, or a possible ground water contamination site, shall adhere to the construction standards set forth by the DEP and other applicable rules.
- F. In the event the well needs to be abandoned, an abandonment permit shall be obtained prior to commencing with abandonment operations.
- G. An observer from our Regulation Department is required on all abandonments to ensure compliance with applicable 40D-3 regulations. Please contact the Field Service Supervisor in the Tampa Office at (813) 985-7481 for additional information.

Permit No. 825412

COPY TO OWNER TO BE PROVIDED BY CONTRACTOR

(11/03)

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

STIPULATION NUMBER 39 - WELL AND DRILLHOLE ABANDONMENT

It will be the **water well contractor's** responsibility to have any incomplete well or drillhole attempted under this permit properly abandoned.

Any incomplete or abandoned well or drillhole as described in 40D-3, Florida Administrative Code (F.A.C.), shall be abandoned as follows:

A. The well shall be examined from land surface to the original depth of construction for debris or obstructions (any debris or obstruction shall be removed prior to abandonment).

B. The well shall be plugged from bottom to top by an approved method of grouting with either Portland neat cement grout or an approved Bentonite product as specified in 40D-3.517 2. (b), F.A.C.

It will be the **owner's** responsibility to have any well completed under this permit, or any existing well on this property, which meets the definition of an abandoned well as defined in Chapter 40D-3.021(1), F.A.C., properly abandoned in accordance with Chapter 40D-3.531, F.A.C.

If any well constructed under this permit will replace any existing well deemed abandoned or triggers an unauthorized Water Use situation, then the existing well must be plugged within 30 days of new well completion. A plugging permit will be required.

It will be the **owner's** responsibility to have any inactive well, which does not meet the above criteria and is no threat to the water resource properly capped in an air and watertight manner with a threaded, welded or bolted cover or valve. If the pump and well seal are water tight, the pump may be left in place. If practical, a protective cover two (2) feet in height shall be placed around the well casing.

A. Wells with a diameter of six (6) inches or more without pumping equipment shall have the well casing extended a minimum of two (2) feet above land surface.

B. Wells with a diameter of less than six (6) inches without pumping equipment shall be securely set in a concrete slab and have either the well casing extended a minimum height of two (2) feet above land surface or a protective cover centered over the well casing. The concrete slab shall be a minimum of four (4) inches in thickness by two (2) feet by two (2) feet square. The protective cover shall be set in the concrete slab and extend a minimum of two (2) feet above land surface.

In flood prone areas all wells shall extend a minimum of one (1) foot above the 100 year flood elevation, if practical, in accordance with Chapter 40D-3.521(4), F.A.C.

Any plugging operations shall be permitted separately from this permit by the Southwest Florida Water Management District and be witnessed by a designated District representative. Arrangement for a District representative shall be made with the local District Field Services office a minimum of 24 hours in advance of these operations. A District representative will be available for assignment during normal working hours (8:00 AM - 4:30 PM), Monday through Friday. Travel time must be taken into consideration. Exemptions may be made for extenuating circumstances. For scheduling, please contact the Field Service Supervisor in the Tampa office at (813) 985-7481.

Permit Number: 825412

(Updated 07/11)

Appendix E: December Groundwater Sampling

Table E.1
Field Parameter Results
(December 3 through 7, 2012)

Sample ID	Temp (°C)	pH	Specific Conductance (µS/cm)	Est. NO ₃ -N (Test Strip mg-N/L)	Est. NO ₂ -N (Test Strip mg-N/L)
PZ01	23.4	5.61	472	2	0
PZ-AB4-08	NR	5.97	407	0	0
PZ-AB4-15	NR	7.57	597	0	0
PZ-C2	25.0	5.92	160	NR	NR
PZ-C3-08	23.9	5.83	344	NR	NR
PZ-C3-15	NR	6.23	534	NR	NR
PZ-C6-08	NR	4.26	537	0	0
PZ-C6-15	NR	5.26	414	0	0
PZ-D3-08	24.8	6.01	462	NR	NR
PZ-D3-15	NR	6.58	491	0	0
PZ-D4-08	23.4	5.47	302	NR	NR
PZ-D4-15	NR	5.98	429	0	0
PZ-E2	23.9	6.15	273	NR	NR
PZ-E3-08	21.7	5.93	594	NR	NR
PZ-E3-15	NR	6.31	345	0	0
PZ-E4-08	23.4	5.57	328	0	0
PZ-E4-15	24.3	6.31	634	0	0
PZ-E5-08	23.7	5.48	472	1	0
PZ-E5-15	24.3	5.84	502	0	0
PZ-E6-08	23.7	5.43	531	0	0
PZ-E6-15	24.2	5.36	522	0	0
PZ-E7-08	23.9	5.02	550	6	0
PZ-E7-15	NR	6.08	834	0	0
PZ-F3-08	23.1	5.48	329	0	0
PZ-F3-15	NR	6.22	447	0	0
PZ-F4-08	23.5	4.87	396	1	0

o:\44237-001\Wpdocs\Report\Draft

THIS SPECIFIC PURPOSE SURVEY WAS PREPARED TO SHOW THE HORIZONTAL AND VERTICAL DATUM OF MONITORING WELLS AS CONSTRUCTED.



WILLIAMSBURG COUNTY RANCH, NUMBER U-31-50-20 27U-60000-00010 (1940)
IN U.S. GOVERNMENT LOT 5, SECTION 31, TOWNSHIP 50 SOUTH, RANGE 20 EAST
COUNTY OF ARTS AND CRAFTS, WILLIAMSBURG, VA. 22186

1997 / 1998

[illegible][illegible]

THIS SPECIFIC PURPOSE SURVEY WAS PREPARED FOR
HAZEN AND SAWYER, P.C. ON LEROY BULLTROG CREEK,
ROAD, GIBSONVILLE, WELLSBOROUGH COUNTY, FLORIDA
IN SECTION 26, TOWNSHIP 31 SOUTH, RANGE 21 EAST

management involvement

1. the individual Public Health Service and Marine, in which only the 14th command the survey is completed with 100%.

M. B.

Abstract

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Project Number: PLS-205-13-SubProj
Last Field Work Date: February 26, 2013
Hard Book: 1 Pages: 33 & 32

**Table E.1
Field Parameter Results
(December 3 through 7, 2012)**

Sample ID	Temp (°C)	pH	Specific Conductance (μS/cm)	Est. NO3-N (Test Strip mg-N/L)	Est. NO2-N (Test Strip mg-N/L)
PZ-F4-15	NR	6.07	613	0	0
PZ-H4-08	NR	4.71	337	1	0
PZ-H4-15	NR	6.46	535	0	0
PZ-I6-08	NR	4.48	3.84	1	0
PZ-I6-15	NR	5.55	501	0	0
PZ-I10-08	NR	6.19	671	6	0
PZ-I10-15	NR	6.89	815	0	0
PZ-J4-08	NR	5.37	374	5	0
PZ-J4-15	NR	6.22	530	0	0
PZ-J7-08	24.0	5.54	488	5	0
PZ-J7-15	NR	5.32	271	0	0
PZ-N4-08	NR	6.17	401	0	0
PZ-N4-15	NR	6.47	578	0	0
PZ-N7-08	NR	6.09	588	NR	NR
PZ-N7-15	NR	5.23	344	NR	NR
PZ-N10-08	NR	6.36	512	0	0
PZ-N10-15	NR	6.78	937	0	0
PZ-S10-08	NR	6.29	351	0	0

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