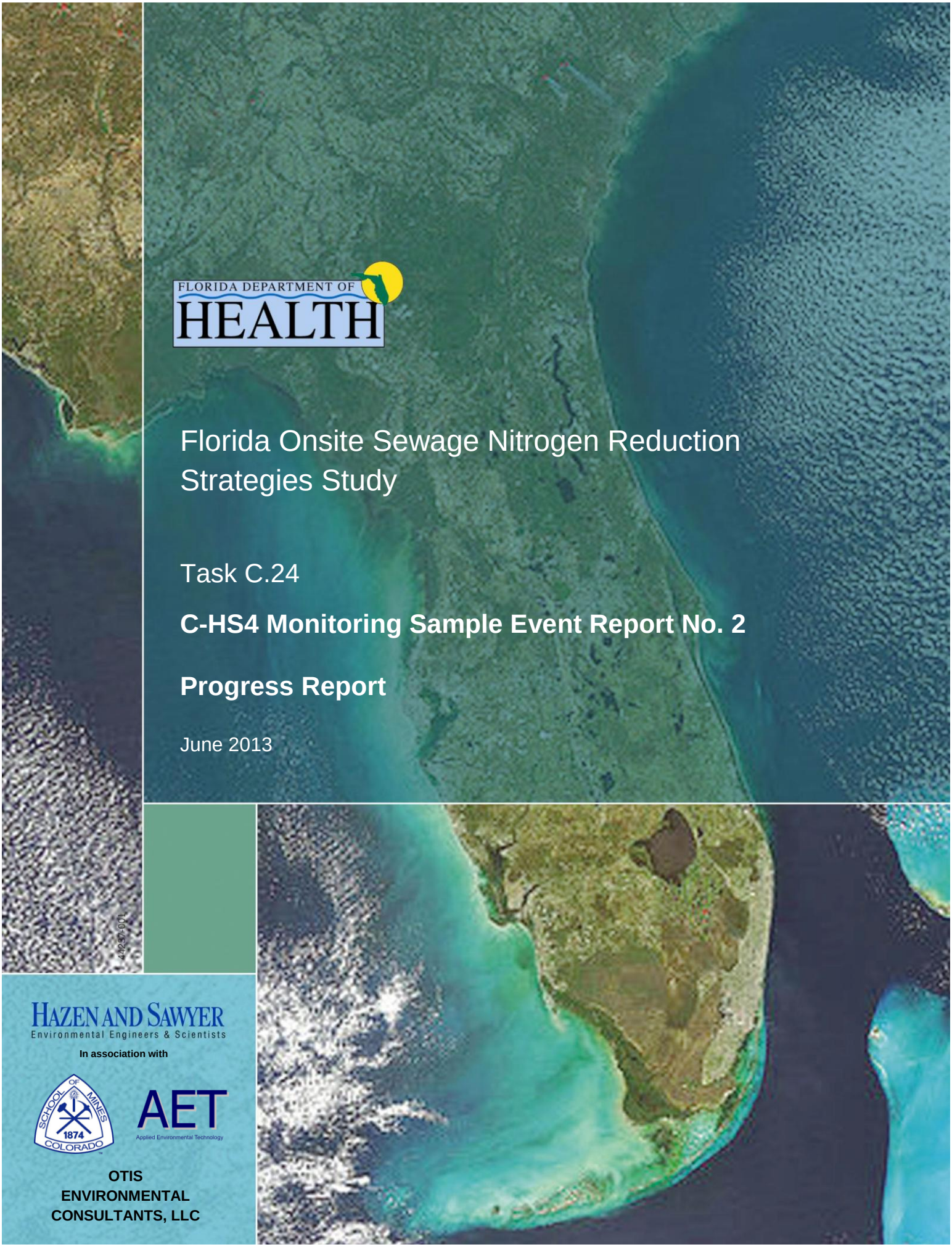

FLORIDA DEPARTMENT OF HEALTH

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.24

C-HS4 Monitoring Sample Event Report No. 2

Progress Report

June 2013

4423-001

HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

OTIS ENVIRONMENTAL CONSULTANTS, LLC

Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK C.24
PROGRESS REPORT

C-HS4 Monitoring
Sample Event Report No. 2

Prepared for:

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Environmental Health
Onsite Sewage Programs
4042 Bald Cypress Way Bin #A-08
Tallahassee, FL 32399-1713

FDOH Contract CORCL

June 2013

Prepared by:

HAZEN AND SAWYER
Environmental Engineers & Scientists

In Association With:

SCHOOL OF MINES 1874 COLORADO

C-HS4 Monitoring
Sample Event Report No. 2

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. The Task C.23 instrumentation report for the C-HS4 OSTDS system and plume monitoring documents the test area design, number and location of monitoring points, and preliminary field parameters from monitoring points for this Hillsborough County, Florida field site, and also includes preliminary sample collection and analyses.

2.0 Purpose

This sample event report documents data collected from the second C-HS4 monitoring and sampling event which was conducted April 22 through April 24, 2013. This monitoring event consisted of water use measurement from the household water meter, groundwater elevation measured within the standpipe piezometers, measurement of field parameters, and collection of groundwater samples and their analyses by a NELAC certified laboratory.

3.0 Materials and Methods

3.1 Project Site

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.™ 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

o:\44237-001R004\Wpdocs\Report\Final

1 unsaturated media filter; 300 gallon concrete pump tank; and 1,500 gallon two chamber concrete Stage 2 saturated media biofilter.

3.2 Monitoring and Sample Locations and Identification

A sampling grid for groundwater screening was developed downgradient of the soil treatment unit as depicted in Figure 1. 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. Groundwater monitoring points were installed in September and December 2012. Two types of monitoring points were installed using either hand or drilling methods: stainless steel drivepoints and standpipe piezometers. Stainless steel drivepoints consist of 1-foot screens with polypropylene tubing extending to the ground surface. Standpipe piezometers consist of either ¾-inch or 1-inch diameter PVC with a 1-foot or 5-foot screen (0.010-inch slots) and riser extending to the ground surface (refer to the Task C QAPP and Task C.23 C-HS3 Instrumentation Report for additional detail).

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. A schematic of the C-HS4 monitoring network is shown in Figure 1. A complete list of all installed standpipe piezometers and sample identification is included in Appendix A. A total of 35 specific monitoring locations were sampled during this second C-HS4 sampling event.

o:\44237-001R004\Wpdocs\Report\Final

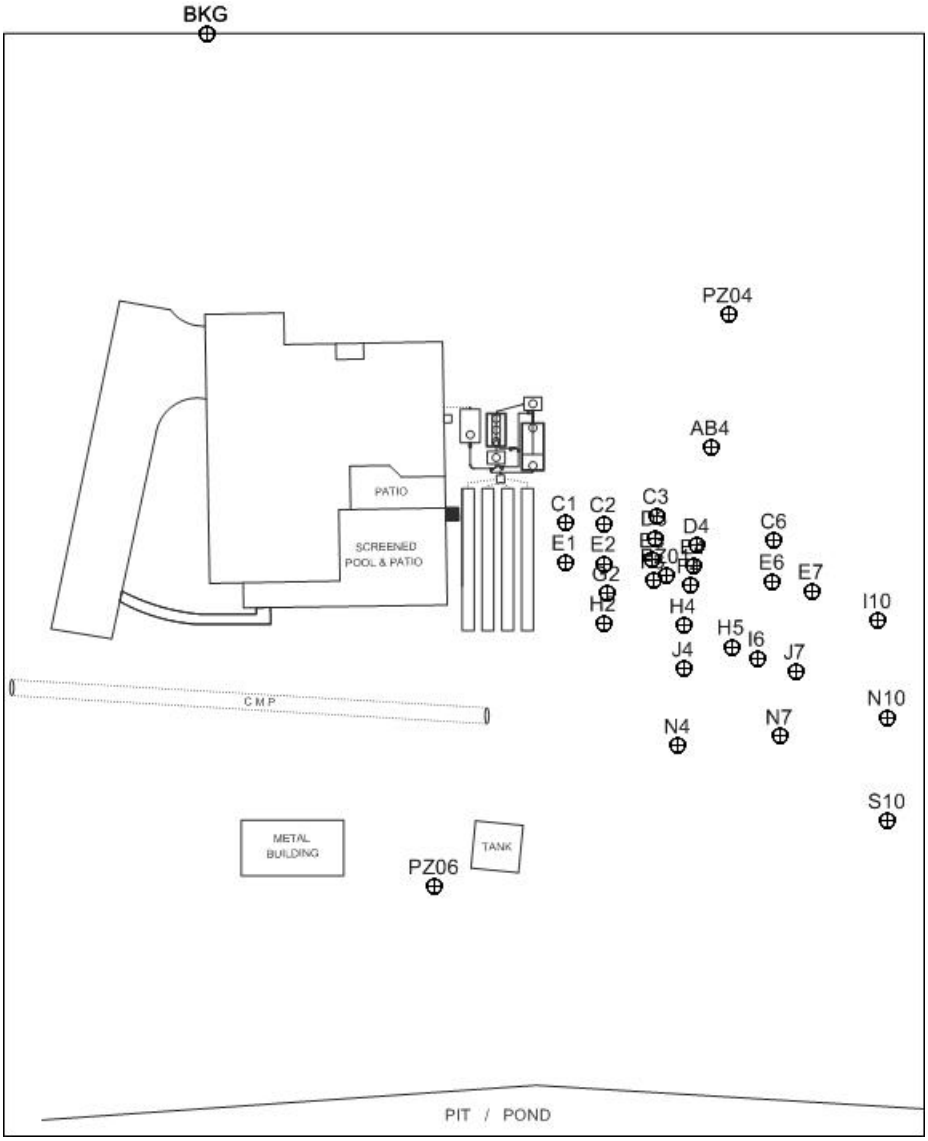

Figure 1
C-HS4 Monitoring Network

3.3 Operational Monitoring

A water meter for the home site was installed March 6, 2012. The water meter for the house site was read and recorded. A weather station (Balm in Wimauma, FL) is located approximately 10 miles from the site. Data from this weather station is available at the following website: http://fawn.ifas.ufl.edu/.

o:\44237-001R004\Wpdocs\Report\Final

3.4 Groundwater Elevation Measurements

Groundwater level measurements are used to determine hydraulic gradients and directions of flow. Groundwater levels were measured using a flat tape water level meter graduated in feet (measurement accuracy is 0.01 feet). The groundwater level within all the sampled standpipe piezometers was measured for this sampling event.

3.5 Water Quality Sample Collection and Analyses

Groundwater and septic tank effluent (STE) were collected April 22 through April 24, 2013 for water quality analysis. A sample was collected from the septic tank to represent the effluent delivered to the drainfield. A peristaltic pump was used to collect STE directly into the analysis-specific containers. 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.

In addition, field sample duplicates were collected immediately subsequent to the regular samples. The field duplicate samples taken include:

- BKG-15
- PZ-I6-15
- PZ-N7-15
- PZ-N10-08

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 Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH_3-N), and nitrate/nitrite nitrogen (NO_X-N). At some of the locations, total alkalinity, chemical oxygen demand (COD), chloride (CL), total phosphorus (TP), anions, and cations were included. All analyses were performed by an independent and fully certified analytical laboratory (Southern Analytical Laboratory). Table 1 lists the analytical parameters, analytical methods, and detection limits for these analyses.

o:\44237-001R004\Wpdocs\Report\Final

Table 1
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
Anions		
Fluoride	EPA 300.0	0.01 mg/L
Chloride	EPA 300.0	0.05 mg/L
Nitrate-N	EPA 300.0	0.01 mg/L
Nitrite-N	EPA 300.0	0.01 mg/L
Orthophosphate-P	EPA 300.0	0.01 mg/L
Sulfate	EPA 300.0	0.20 mg/L
Cations		
Boron	EPA 200.7	0.05 mg/L
Calcium	EPA 200.7	0.01 mg/L
Iron	EPA 200.7	0.02 mg/L
Magnesium	EPA 200.7	0.01 mg/L
Manganese	EPA 200.7	0.001 mg/L
Potassium	EPA 200.7	0.01 mg/L
Sodium	EPA 200.7	0.01 mg/L

4.0 Results

Once analytical results are obtained from the laboratory, the C-HS4 Data Summary Report No. 2 (Task C.25) will be prepared describing the results from this sampling event.

4.1 Operational Monitoring and Site Conditions

Table 2 summarizes the water meter readings and average daily water use for the residence at site C-HS4.

o:\44237-001R004\Wpdocs\Report\Final

Table 2
Water Meter Readings and Water Usage for C-HS4

Residence	Date Read	Meter Reading	Gallons/day since last reading	Gallons/day since installed
C-HS4 Residence	3/6/2012	7,790	Installed	
	1/1/2013	43,240	117.8	117.8
	2/5/2013	47,741	128.6	118.9
	4/23/2013	54,680	90.1	113.5

Daily recorded meteorological data is provided in Appendix C. Table 3 provides the daily averages leading up to and during the sample event.

Table 3
Meteorological Data Daily Averages Measured April 16 through April 24, 2013

Date	Temp Avg 60 cm (°F)	Temp Avg 2m (°F)	Temp Avg 10 m (°F)	Temp Soil Avg -10 cm (°F)	Dewpoint Avg 2m (°F)	Relative Humidity Avg 2m (%)	Rain Total 2m (in)	2m Rain max over 15min (in)	10m Wind avg (mph)	ET (in/d)
16-Apr-13	77.16	77.38	77.03	77.48	68.68	77	0	0	8.44	0.17
17-Apr-13	74.27	74.58	74.23	77.53	64.40	73	0	0	8.23	0.15
18-Apr-13	75.19	75.40	75.19	77.55	67.33	79	0.69	0.26	5.77	0.15
19-Apr-13	77.11	77.40	77.08	77.32	70.37	81	0.02	0.01	8.89	0.10
20-Apr-13	68.70	68.68	68.32	76.19	64.24	86	0	0	7.55	0.12
21-Apr-13	69.98	69.88	69.39	75.44	64.78	85	0.04	0.02	7.23	0.11
22-Apr-13	70.63	70.67	70.28	75.49	66.78	88	0.16	0.05	7.57	0.16
23-Apr-13	72.15	72.26	71.64	75.59	62.98	75	0	0	9.33	0.16
24-Apr-13	71.37	71.57	71.57	76.16	60.42	71	0	0	5.39	0.17

4.2 Groundwater Levels

Water levels were measured at all standpipe piezometers sampled April 22 through April 24, 2013 for this sampling event as summarized in Table 4. Figure 2 illustrates the surficial groundwater contours as measured within the standpipe piezometers.

o:\44237-001R004\Wpdocs\Report\Final

Table 4
Standpipe Piezometer Groundwater Levels April 22, 2013

Identification	Water Table El[1] (ft)	Identification	Water Table El[1] (ft)
PZ-01	DRY	PZ-E7-15	10.45
PZ-02	DRY	PZ-F3-08	DRY
PZ-03	DRY	PZ-F3-15	10.90
BKG-10	15.95	PZ-F4-08	DRY
BKG-15	15.45	PZ-F4-15	10.63
PZ-04	DRY	PZ-G1	DRY
PZ-05	DRY	PZ-G2-12.5	11.53
PZ-06	DRY	PZ-H4-08	DRY
PZ-AB4-08	DRY	PZ-H4-15	10.82
PZ-AB4-15	10.96	PZ-H5-11.5	10.43
PZ-C1	DRY	PZ-I6-08	10.42
PZ-C2	12.78	PZ-I6-15	10.52
PZ-C3-08	DRY	PZ-I10-08	10.42
PZ-C3-15	11.42	PZ-I10-15	10.40
PZ-C6-08	10.43	PZ-J4-08	DRY
PZ-C6-15	10.43	PZ-J4-15	10.55
PZ-D3-08	DRY	PZ-J7-08	10.46
PZ-D3-15	11.36	PZ-J7-15	10.42
PZ-D4-08	DRY	PZ-N4-08	DRY
PZ-D4-15	10.58	PZ-N4-15	10.65
PZ-E1	13.02	PZ-N7-08	10.54
PZ-E2	12.08	PZ-N7-15	10.48
PZ-E3-08	DRY	PZ-N10-08	10.52
PZ-E3-15	11.31	PZ-N10-15	10.43
PZ-E4-08	DRY	PZ-S10-08	10.58
PZ-E4-15	10.61	DP-01	DRY
PZ-E5-08	DRY	DP-02	DRY
PZ-E5-15	10.48	DP-03	DRY
PZ-E6-08	10.45	DP-04	DRY
PZ-E6-15	10.50	DP-05	DRY
PZ-E7-08	10.40	DP-06	DRY

[1]Elevation above mean sea level based on NGVD 1910.9029
[2]Most likely erroneous instrument reading10.63

o:\44237-001R004\Wpdocs\Report\Final

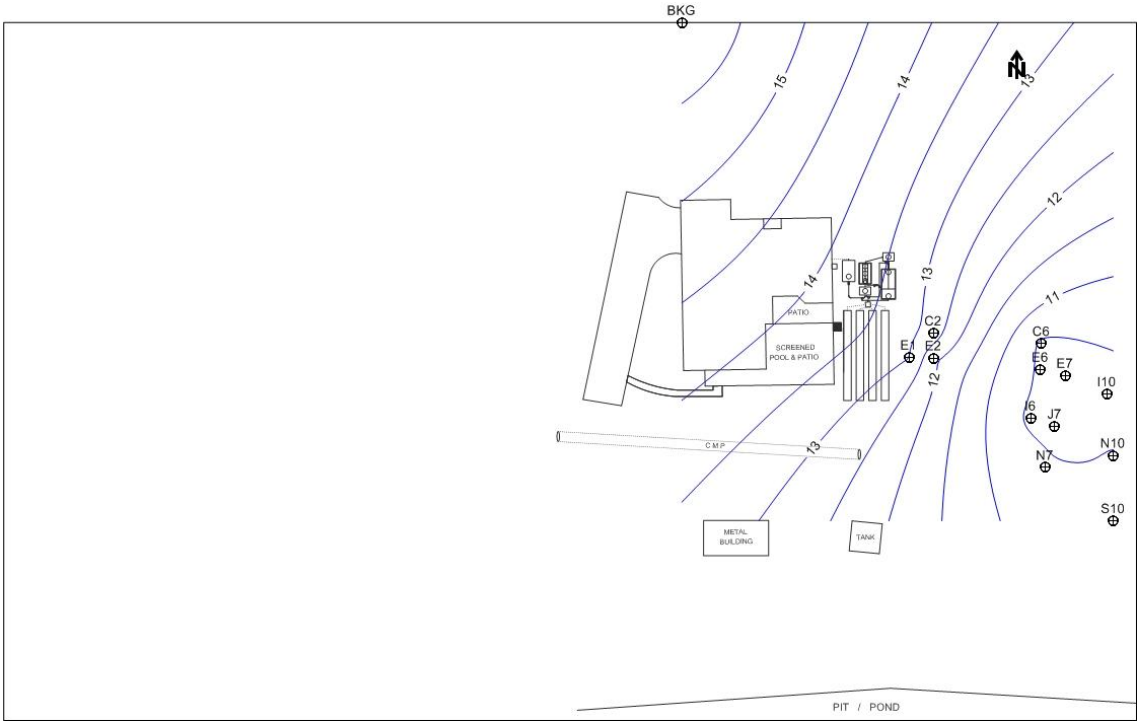

Figure 2
Surficial Groundwater Contours April 22, 2013

4.3 Water Quality

Field parameters were measured prior to sample collection and are listed in Appendix D. Once analytical results are obtained from the laboratory, C-HS4 Data Summary Report No. 2 (Task C.25) will be prepared describing the results from this sampling event.

o:\44237-001R004\Wpdocs\Report\Final

Appendix A: C-HS4 Sample Identification

Table A.1
Site C-HS4 Sample Identification

	Identification	Type of Monitoring Point	Top Elev[1] (feet)	Bottom Elev[1] (feet)
1	C-HS4-STE	Wastewater	N/A	N/A
2	PZ01	1" Standpipe Piezometer, 5' screen	19.08	9.48
3	PZ02	1" Standpipe Piezometer, 5' screen	28.72	16.54
4	PZ03	1" Standpipe Piezometer, 5' screen	24.85	19.00
5	PZ04	1" Standpipe Piezometer, 5' screen	18.82	13.02
6	PZ05	1" Standpipe Piezometer, 5' screen	20.79	NR
7	PZ06	1" Standpipe Piezometer, 5' screen	22.17	11.02
8	BKG-10	1" Standpipe Piezometer, 5' screen	24.60	15.22
9	BKG-15	3/4" Standpipe Piezometer, 1' screen	24.60	10.17
10	PZ-AB4-08	1" Standpipe Piezometer, 5' screen	18.65	10.27
11	PZ-AB4-15	3/4" Standpipe Piezometer, 1' screen	18.59	4.09
12	PZ-C1	1" Standpipe Piezometer, 5' screen	22.85	12.70
13	PZ-C2	1" Standpipe Piezometer, 5' screen	21.23	9.73
14	PZ-C3-08	1" Standpipe Piezometer, 5' screen	19.63	11.83
15	PZ-C3-15	3/4" Standpipe Piezometer, 1' screen	19.64	5.09
16	PZ-C6-08	1" Standpipe Piezometer, 5' screen	17.53	9.03
17	PZ-C6-15	3/4" Standpipe Piezometer, 1' screen	17.53	3.13
18	PZ-D3-08	1" Standpipe Piezometer, 5' screen	19.62	11.63
19	PZ-D3-15	3/4" Standpipe Piezometer, 1' screen	19.64	5.08
20	PZ-D4-08	1" Standpipe Piezometer, 5' screen	18.77	10.89
21	PZ-D4-15	3/4" Standpipe Piezometer, 1' screen	18.76	4.21
22	PZ-E1	1" Standpipe Piezometer, 5' screen	22.92	11.42
23	PZ-E2	1" Standpipe Piezometer, 5' screen	21.03	9.33
24	PZ-E3-08	1" Standpipe Piezometer, 5' screen	19.66	11.41
25	PZ-E3-15	3/4" Standpipe Piezometer, 1' screen	19.64	4.98
26	PZ-E4-08	1" Standpipe Piezometer, 5' screen	18.70	10.80
27	PZ-E4-15	3/4" Standpipe Piezometer, 1' screen	18.69	4.31
28	PZ-E5-08	1" Standpipe Piezometer, 5' screen	18.15	10.25
29	PZ-E5-15	3/4" Standpipe Piezometer, 1' screen	18.13	3.56
30	PZ-E6-08	1" Standpipe Piezometer, 5' screen	17.83	9.95

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

Table A.1 (continued)
Site C-HS4 Sample Identification

	Identification	Type of Monitoring Point	Top Elev[1] (feet)	Bottom Elev[1] (feet)
31	PZ-E6-15	3/4" Standpipe Piezometer, 1' screen	17.85	3.45
32	PZ-E7-08	1" Standpipe Piezometer, 5' screen	17.55	8.87
33	PZ-E7-15	3/4" Standpipe Piezometer, 1' screen	17.55	3.05
34	PZ-F3-08	1" Standpipe Piezometer, 5' screen	19.54	11.59
35	PZ-F3-15	3/4" Standpipe Piezometer, 1' screen	19.55	5.05
36	PZ-F4-08	1" Standpipe Piezometer, 5' screen	18.83	11.13
37	PZ-F4-15	3/4" Standpipe Piezometer, 1' screen	18.88	4.48
38	PZ-G1	1" Standpipe Piezometer, 5' screen	20.72	12.82
39	PZ-G2-12.5	2" Standpipe Piezometer, 7.5' screen	21.03	8.88
40	PZ-H4-08	1" Standpipe Piezometer, 5' screen	19.19	10.91
41	PZ-H4-15	3/4" Standpipe Piezometer, 1' screen	19.22	4.45
42	PZ-H5-11.5	2" Standpipe Piezometer, 7.5' screen	18.58	7.86
43	PZ-I6-08	1" Standpipe Piezometer,5' screen	18.42	9.37
44	PZ-I6-15	3/4" Standpipe Piezometer, 1' screen	18.42	3.87
45	PZ-I10-08	1" Standpipe Piezometer, 5' screen	16.87	8.95
46	PZ-I10-15	3/4" Standpipe Piezometer, 1' screen	16.92	4.42
47	PZ-J4-08	1" Standpipe Piezometer, 5' screen	19.26	11.32
48	PZ-J4-15	3/4" Standpipe Piezometer, 1' screen	19.25	4.73
49	PZ-J7-08	1" Standpipe Piezometer, 5' screen	17.86	9.41
50	PZ-J7-15	3/4" Standpipe Piezometer, 1' screen	17.87	3.45
51	PZ-N4-08	1" Standpipe Piezometer, 5' screen	19.28	11.00
52	PZ-N4-15	3/4" Standpipe Piezometer, 1' screen	19.30	4.82
53	PZ-N7-08	1" Standpipe Piezometer, 5' screen	18.01	9.46
54	PZ-N7-15	3/4" Standpipe Piezometer, 1' screen	18.03	3.23
55	PZ-N10-08	1" Standpipe Piezometer, 5' screen	16.92	9.17
56	PZ-N10-15	3/4" Standpipe Piezometer, 1' screen	16.83	2.59
57	PZ-S10-08	1" Standpipe Piezometer, 5' screen	17.03	8.78
58	DP01	SST Drivepoint	19.25	
59	DP02	SST Drivepoint	19.24	
60	DP03	SST Drivepoint	19.49	
61	DP04	SST Drivepoint	19.22	
62	DP05	SST Drivepoint	19.25	
63	DP06	SST Drivepoint	19.38	

[1]Elevation above mean sea level based on NGVD 1929

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

Appendix B: Chain of Custody Forms

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

SOUTHERN ANALYTICAL LABORATORIES, INC.

11D BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na				Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
13	PZ-AB4-15			GW		X	1	1												
14	PZ-C1			GW		X	1	1												
15	PZ-C2			GW		X	1	1												
16	PZ-C3-08			GW		X	1	1												
17	PZ-C3-15	4/22/13	0955	GW		X	1	1								6.70	22.0	516	0.94	
18	PZ-C6-08	4/22/13	1151	GW		X	1	1								4.40	21.8	401	2.30	
19	PZ-C6-15		1205	GW		X	1	1								5.58	22.0	351	4.45	
20	PZ-D3-08			GW		X			1	1										
21	PZ-D3-15	4/22/13	1012	GW		X			1	1						6.74	22.0	427	3.97	
22	PZ-D4-08			GW		X	1	1												
23	PZ-D4-15	4/22/13	No sample	GW		X	1	1								7.14	22.1	670	7.08	
24	PZ-E1			GW		X			1	1										

Containers Prepared/ Relinquished: S Hartley	Date/Time: 4/4/13 1500	Received:	Date/Time:
Relinquished:	Date/Time: 4/22/13 1600	Received:	Date/Time: 4/22/13 1600
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w/out headspace?	Y N N/A
Proper containers used?	Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only: Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO3 B, Ca, Fe, Mg, Mn, K, Na	500mLP, Cool NOx, F, Cl, OP, SO_4			Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
25	PZ-E2			GW		X	1	1												
26	PZ-E3-08			GW		X				1	1	1								
27	PZ-E3-15	4/22/13	No Sample	GW		X			1	1										
28	PZ-E4-08			GW		X			1	1										
29	PZ-E4-15	4/22/13	1105	GW		X	1	1								6.57	21.9	505	1.29	
30	PZ-E5-08			GW		X	1	1												
31	PZ-E5-15	4/22/13	1134	GW		X	1	1								6.63	21.9	625	4.60	
32	PZ-E6-08	4/22/13	1218	GW		X	1	1								4.87	21.9	704	1.67	
33	PZ-E6-15	4/22/13	1238	GW		X				1		1	1			5.34	22.6	330	6.65	
34	PZ-E7-08	4/22/13	1320	GW		X				1	1	1				4.64	22.1	333	2.83	
35	PZ-E7-15	4/22/13	1337	GW		X			1	1						6.81	22.3	1385	5.62	
36	PZ-F3-08			GW		X			1	1										

Relinquished:	Date/Time:	Received:	Date/Time:
Containers Prepared/ Relinquished:	0900 4/5/13		
	1600 4/22/13		1600 4/22/13

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na	500mLP, Cool NOx, F, Cl, OP, SO_4			Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
37	PZ-F3-15	4/22/13	1046	GW		X			1	1						6.60	22.1	294	2.16	
38	PZ-F4-08			GW		X				1	1	1								
39	PZ-F4-08-DUP			GW		X				1	1	1								
40	PZ-F4-15			GW		X			1	1										
41	PZ-G1			GW		X	1	1												
42	PZ-G2-12.5			GW		X	1	1												
43	PZ-H4-08			GW		X				1	1	1								
44	PZ-H4-15			GW		X			1	1										
45	PZ-H5-11.5			GW		X	1					1	1							
46	PZ-I6-08	4/22/13	1355	GW		X	1	1								4.59	22.1	329	2.54	
47	PZ-I6-15		1410	GW		X	1	1								6.71	21.9	1174	0.90	
48	PZ-I6-15-DUP		1415	GW		X	1	1								6.71	21.9	1174	0.90	

Relinquished	Date/Time	Received	Date/Time
Containers Prepared/ Relinquished:	Date/Time: 0820 4/15/13	Received:	Date/Time:
Relinquished:	Date/Time: 1600 4/22/13	Received:	Date/Time: 4/22/13 1600
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

11D BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na				Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
01	STE			WW		X	1	1												
02	PZ-01			GW		X			1	1										
03	PZ-01-DUP			GW		X			1	1										
04	PZ-02			GW		X	1	1												
05	PZ-03			GW		X	1	1												
06	BKG-10	4/23/13	No sample	GW		X				1	1	1								
07	BKG-15		0851	GW		X			1	1						5.82	21.9	131.4	0.23	
08	BKG-15-DUP		0856	GW		X			1	1						5.82	21.9	131.4	0.23	
09	PZ-04			GW		X	1	1												
10	PZ-05			GW		X	1	1												
11	PZ-06			GW		X	1	1												
12	PZ-AB4-08			GW		X			1	1										

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time: 1355 4/23/13	Received: K Mudmack	Date/Time: 1355 4/23/13
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w /out headspace?	Y N N/A
Proper containers used?	Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

11D BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na				Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
13	PZ-AB4-15	4/23/13	09H	GW		X	1	1								6.55	21.5	2.58	0.19	
14	PZ-C1			GW		X	1	1												
15	PZ-C2			GW		X	1	1												
16	PZ-C3-08			GW		X	1	1												
17	PZ-C3-15			GW		X	1	1												
18	PZ-C6-08			GW		X	1	1												
19	PZ-C6-15			GW		X	1	1												
20	PZ-D3-08			GW		X			1	1										
21	PZ-D3-15			GW		X			1	1										
22	PZ-D4-08			GW		X	1	1												
23	PZ-D4-15			GW		X	1	1												
24	PZ-E1			GW		X			1	1										

Containers Prepared/ Relinquished:	Date/Time: 4/4/13 1500	Received:	Date/Time:
Relinquished:	Date/Time: 4/23/13 1355	Received: K Mudmant	Date/Time: 4/23/13 1355
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w /out headspace?	Y N N/A
Proper containers used?	Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na	500mLP, Cool NOx, F, Cl, OP, SO_4			Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
37	PZ-F3-15			GW		X			1	1										
38	PZ-F4-08			GW		X				1	1	1								
39	PZ-F4-08-DUP			GW		X				1	1	1								
40	PZ-F4-15			GW		X			1	1										
41	PZ-G1			GW		X	1	1												
42	PZ-G2-12.5	4/23/13	0928	GW		X	1	1								4.40	21.8	706	2.57	
43	PZ-H4-08			GW		X				1	1	1								
44	PZ-H4-15	4/23/13	0942	GW		X			1	1						6.61	21.6	638	0.30	
45	PZ-H5-11.5		0956	GW		X	1					1	1			4.57	21.1	402	3.09	
46	PZ-I6-08			GW		X	1	1												
47	PZ-I6-15			GW		X	1	1												
48	PZ-I6-15-DUP			GW		X	1	1												

Containers Prepared/ Relinquished:	Date/Time: 0930 4/5/13	Received:	Date/Time:
Relinquished:	Date/Time: 1355 4/23/13	Received: K Mudmach	Date/Time: 1355 4/23/13
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w/out headspace?	Y N N/A
Proper containers used?	Y N N/A

Chain of Custody.xls
Rev.Date 11/18/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na	500mLP, Cool NOx, F, Cl, OP, SO_4	125mLP, H_2SO_4 TKN, NH_3, TP		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
49	PZ-I10-08	4/23/13	1034	GW		X			1	1						4.81	21.5	391	0.37	
50	PZ-I10-15		1045	GW		X	1	1								6.12	21.7	491	0.15	
51	PZ-J4-08			GW		X				1	1	1								
52	PZ-J4-15	4/23/13	1239	GW		X			1	1						6.19	22.0	402	0.24	
53	PZ-J7-08		1005	GW		X				1	1	1				4.46	21.2	369	0.17	
54	PZ-J7-15		1021	GW		X						1	1	1		5.03	21.4	430	0.41	
55	PZ-N4-08			GW		X			1	1										
56	PZ-N4-15	4/23/13	1223	GW		X	1	1								6.21	21.8	390	0.19	
57	PZ-N7-08		1142	GW		X	1					1	1			6.23	22.2	497	5.41	
58	PZ-N7-15		1204	GW		X	1	1								5.57	22.1	309	0.36	
59	PZ-N7-15-DUP		1209	GW		X	1	1								5.57	22.1	309	0.36	
60	PZ-N10-08		1056	GW		X			1	1						5.70	21.7	298	0.34	

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
J. Hartley	0930 4/23/13		
Relinquished:	Date/Time: 1355 4/23/13	Received: K. Mudmeck	Date/Time: 1355 4/23/13
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w/out headspace?	Y N N/A
Proper containers used?	Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

11D BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na	500mLP, Cool NOx, F, Cl, OP, SO_4	125mLP, H_2SO_4 TKN, NH_3, TP		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
61	PZ-N10-08-DUP	4/23/13	1101	GW		X			1	1						7.70	21.7	298	0.34	
62	PZ-N10-15		1115	GW		X	1	1								6.78	22.2	798	0.12	
63	PZ-S10-08		1130	GW		X			1	1						4.75	22.2	375	0.17	
64	DP-01			GW		X			1	1										
65	DP-02			GW		X			1	1										
66	DP-03			GW		X			1	1										
67	DP-04-Shallow			GW		X			1	1										
68	DP-04-Deep			GW		X			1	1										
69	DP-05			GW		X			1	1										
70	DP-06			GW		X			1	1										
71	FB-DI	4/22/13	1425	R		X				1	1	1				7.32	23.8	3.26	7.92	
72	EB		1423	R		X				1	1	1				7.32	23.8	3.26	7.92	

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time: 1355 4/23/13	Received: K Mudmand	Date/Time: 1355 4/23/13
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y	N	N/A
Samples intact upon arrival?	Y	N	N/A
Received on ice? Temp_____	Y	N	N/A
Proper preservatives indicated?	Y	N	N/A
Rec'd within holding time?	Y	N	N/A
Volatiles rec'd w/out headspace?	Y	N	N/A
Proper containers used?	Y	N	N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na				Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
01	STE	4/24/13	0945	WW		X	1	1								7.21	22.4	1344	0.08	
02	PZ-01			GW		X			1	1										
03	PZ-01-DUP			GW		X			1	1										
04	PZ-02			GW		X	1	1												
05	PZ-03			GW		X	1	1												
06	BKG-10			GW		X				1	1	1								
07	BKG-15			GW		X			1	1										
08	BKG-15-DUP			GW		X			1	1										
09	PZ-04			GW		X	1	1												
10	PZ-05			GW		X	1	1												
11	PZ-06			GW		X	1	1												
12	PZ-AB4-08			GW		X			1	1										

Relinquished:	Date/Time:	Received:	Date/Time:
Containers Prepared/ Relinquished:			
	1130 4/24/13	K Mudmark	4/24/13 1130

Seal intact?	Y N N/A
Samples intact upon arrival?	Y N N/A
Received on ice? Temp_____	Y N N/A
Proper preservatives indicated?	Y N N/A
Rec'd within holding time?	Y N N/A
Volatiles rec'd w /out headspace?	Y N N/A
Proper containers used?	Y N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO_3 B, Ca, Fe, Mg, Mn, K, Na				Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
13	PZ-AB4-15			GW		X	1	1												
14	PZ-C1			GW		X	1	1												
15	PZ-C2	4/24/13	0853	GW		X	1	1								5.52	21.7	225	0.71	
16	PZ-C3-08			GW		X	1	1												
17	PZ-C3-15			GW		X	1	1												
18	PZ-C6-08			GW		X	1	1												
19	PZ-C6-15			GW		X	1	1												
20	PZ-D3-08			GW		X			1	1										
21	PZ-D3-15			GW		X			1	1										
22	PZ-D4-08			GW		X	1	1												
23	PZ-D4-15			GW		X	1	1												
24	PZ-E1	4/24/13	0907	GW		X			1	1						5.35	21.1	361	4.33	

Containers Prepared/ Relinquished: S Hartley	Date/Time: 4/4/13 1500	Received:	Date/Time:
Relinquished:	Date/Time: 4/24/13 1130	Received: K Mudmond	Date/Time: 4/24/13 1130
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N (N/A)
Samples intact upon arrival?	(Y) N N/A
Received on ice? Temp_____	(Y) N N/A
Proper preservatives indicated?	(Y) N N/A
Rec'd within holding time?	(Y) N N/A
Volatiles rec'd w/out headspace?	Y N (N/A)
Proper containers used?	(Y) N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1303532

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: Hillsborough County C-HS4 SE#3

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	500mLP, Cool Total Alkalinity, NOx	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, Cool Total Alkalinity, NOx, F, Cl, OP, SO_4	250mLP, HNO3 B, Ca, Fe, Mg, Mn, K, Na	500mLP, Cool NOx, F, Cl, OP, SO_4			Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
25	PZ-E2	4/24/13	0930	GW		X	1	1								5.86	21.1	192.1	4.82	
26	PZ-E3-08			GW		X				1	1	1								
27	PZ-E3-15			GW		X			1	1										
28	PZ-E4-08			GW		X			1	1										
29	PZ-E4-15			GW		X	1	1												
30	PZ-E5-08			GW		X	1	1												
31	PZ-E5-15			GW		X	1	1												
32	PZ-E6-08			GW		X	1	1												
33	PZ-E6-15			GW		X				1		1	1							
34	PZ-E7-08			GW		X				1	1	1								
35	PZ-E7-15			GW		X			1	1										
36	PZ-F3-08			GW		X			1	1										

Containers Prepared/ Relinquished	Date/Time: 0900 4/23/13	Received:	Date/Time:
Relinquished:	Date/Time: 1130 4/24/13	Received: K Mudmerch	Date/Time: 1130 4/24/13
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N (N/A)
Samples intact upon arrival?	(Y) N N/A
Received on ice? Temp_____	(Y) N N/A
Proper preservatives indicated?	(Y) N N/A
Rec'd within holding time?	(Y) N N/A
Volatiles rec'd w/out headspace?	Y N (N/A)
Proper containers used?	(Y) N N/A

Chain of Custody.xls
Rev.Date 11/19/01

Chain of Custody

Appendix C: Weather Station Data

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

Table C.1
Daily Recorded Meteorological Data
Wimauma, FL

Period	60cm T avg (F)	60cm T min (F)	60cm T max (F)	2m T avg (F)	2m T min (F)	2m T max (F)	10m T avg (F)	10m T min (F)	10m T max (F)	Tsoil avg - 10cm (F)	Tsoil min(avg) - 10cm (F)	Tsoil max(avg) - 10cm (F)	2m DewPt avg (F)	RelHum avg 2m (%)	2m Rain tot (in)	2m Rain max over 15min (in)	10m Wind avg (mph)	10m Wind min (mph)	10m Wind max (mph)	WDir avg 10m (deg)	ET (in)
1-Feb-13	51.91	39.09	68.90	52.67	40.25	67.75	52.81	40.61	66.99	64.28	62.53	65.84	32.47	52	0	0	6.68	0.30	22.13	11	0.07
2-Feb-13	55.20	38.47	73.18	55.78	40.61	72.00	55.65	41.47	71.11	63.57	61.43	65.82	41.55	63	0	0	5.09	0.17	14.43	15	0.08
3-Feb-13	54.40	39.80	71.74	55.31	43.51	70.92	55.62	44.27	68.95	63.56	61.45	65.57	46.44	74	0	0	5.46	0.20	19.70	339	0.08
4-Feb-13	52.61	34.71	72.27	53.80	38.22	71.01	55.19	42.53	70.07	63.14	60.94	65.37	41.56	70	0	0	3.71	0.03	15.23	350	0.07
5-Feb-13	58.14	38.62	77.86	59.15	41.03	76.60	60.32	43.31	75.29	63.45	61.00	66.11	46.64	66	0	0	3.97	0.17	47.13	65	0.08
6-Feb-13	65.27	50.86	79.11	65.89	52.29	78.21	66.60	56.26	76.98	65.11	63.34	67.14	56.69	74	0	0	4.00	0.30	14.13	100	0.08
7-Feb-13	69.20	59.04	82.54	69.63	59.92	81.93	69.29	60.75	79.95	66.76	65.23	68.43	62.17	79	0.04	0.02	10.32	1.53	39.17	168	0.10
8-Feb-13	67.66	53.98	78.26	67.89	55.62	77.67	67.26	56.08	76.05	67.96	66.63	69.58	61.33	81	0	0	7.04	1.33	21.57	303	0.10
9-Feb-13	61.80	47.34	77.00	62.20	49.50	76.73	62.19	52.07	74.95	66.97	65.26	68.67	53.45	77	0	0	6.96	0.67	17.00	50	0.09
10-Feb-13	66.90	55.24	80.15	67.29	56.25	79.83	67.11	58.37	78.17	67.25	65.75	68.95	58.38	75	0	0	9.41	3.33	24.23	113	0.10
11-Feb-13	68.35	55.47	82.98	68.94	57.13	82.36	69.00	59.83	80.98	68.13	66.31	70.18	61.49	79	0	0	6.60	0.13	20.20	177	0.10
12-Feb-13	69.78	57.83	84.25	70.38	59.11	83.48	70.45	61.74	81.43	68.79	66.72	70.90	64.75	84	0	0	7.26	1.60	21.00	189	0.11
13-Feb-13	71.90	61.18	82.96	72.22	61.63	82.53	71.63	61.27	80.98	70.51	69.30	72.10	67.62	86	0.06	0.05	11.13	0.07	38.60	222	0.10
14-Feb-13	60.76	58.50	64.29	61.00	59.00	64.17	60.83	58.57	63.72	68.90	67.60	70.90	58.69	92	0.35	0.08	4.78	0.00	22.83	25	0.05
15-Feb-13	59.49	54.90	69.26	59.41	55.44	68.36	59.19	55.44	67.50	67.41	66.52	68.83	56.29	90	0.11	0.02	4.41	0.20	11.37	357	0.07
16-Feb-13	56.03	45.81	66.94	56.11	47.52	66.13	55.80	48.11	64.72	65.98	64.78	67.08	46.92	73	0.01	0.01	9.44	0.17	28.70	329	0.08
17-Feb-13	45.66	35.02	56.80	45.69	35.87	55.09	45.34	36.08	54.34	63.58	61.83	65.07	23.36	43	0	0	7.82	0.53	23.50	0	0.07
18-Feb-13	50.70	32.18	69.98	51.23	33.29	69.24	51.30	34.44	67.44	62.33	59.92	64.76	37.50	62	0	0	7.94	2.63	22.87	88	0.09
19-Feb-13	61.20	45.63	76.93	62.06	47.07	76.42	62.97	50.72	75.25	63.98	61.61	66.61	52.72	74	0	0	6.14	0.67	21.37	186	0.10
20-Feb-13	64.72	52.97	80.60	65.11	54.32	78.89	65.39	57.83	77.38	65.81	63.75	68.47	59.96	85	0	0	4.38	0.17	16.97	345	0.10
21-Feb-13	66.90	54.46	83.82	67.25	55.08	82.69	67.43	55.92	81.01	67.34	65.23	69.66	60.53	81	0	0	5.28	0.13	15.47	101	0.10
22-Feb-13	70.54	59.04	86.83	71.07	60.69	85.78	71.29	62.40	84.06	68.41	66.36	70.68	64.55	82	0	0	6.47	0.40	22.37	160	0.11
23-Feb-13	73.54	64.98	85.15	73.72	65.79	84.09	73.25	66.60	82.06	70.14	68.50	72.37	68.19	84	0	0	9.11	1.10	25.07	200	0.12
24-Feb-13	72.31	62.91	83.62	72.59	64.49	82.71	72.33	66.94	81.36	71.51	70.18	73.11	67.87	86	0	0	6.39	0.80	43.20	246	0.10
25-Feb-13	72.95	65.57	85.21	73.26	65.80	84.67	73.10	65.88	83.48	71.63	70.32	73.22	66.69	82	0	0	7.56	0.43	24.33	158	0.10
26-Feb-13	70.02	61.45	77.27	70.51	62.38	77.36	70.33	63.05	76.77	71.41	70.47	72.07	67.48	90	0.45	0.21	9.21	1.37	28.67	213	0.07
27-Feb-13	63.14	54.00	73.40	63.39	56.23	72.01	63.50	56.46	70.68	69.67	67.82	71.47	57.15	81	0	0	4.90	0.07	15.27	298	0.10
28-Feb-13	60.31	47.57	72.50	60.61	49.82	71.58	60.74	50.92	70.05	68.77	66.79	70.75	51.68	75	0	0	5.83	0.00	23.67	309	0.10

Table C.1 (continued)
Monthly Recorded Meteorological Data
Wimauma, FL

Period	60cm T avg (F)	60cm T min (F)	60cm T max (F)	2m T avg (F)	2m T min (F)	2m T max (F)	10m T avg (F)	10m T min (F)	10m T max (F)	Tsoil avg - 10cm (F)	Tsoil min(avg) - 10cm (F)	Tsoil max(avg) - 10cm (F)	2m DewPt avg (F)	RelHum avg 2m (%)	2m Rain tot (in)	2m Rain max over 15min (in)	10m Wind avg (mph)	10m Wind min (mph)	10m Wind max (mph)	WDir avg 10m (deg)	ET (in)
1-Mar-13	54.63	47.12	61.18	54.77	47.73	60.58	54.73	48.13	59.67	67.06	66.06	68.85	43.07	66	0	0	6.68	0.63	19.83	329	0.07
2-Mar-13	51.05	39.82	59.47	51.15	42.32	58.08	51.17	44.65	56.43	65.58	64.44	66.52	38.59	63	0	0	7.72	0.00	31.87	343	0.07
3-Mar-13	45.31	36.94	54.75	45.35	37.64	53.85	45.12	38.09	52.34	63.71	62.53	64.81	34.48	66	0	0	7.87	0.17	30.37	348	0.07
4-Mar-13	49.01	31.65	69.31	49.37	34.09	67.87	49.67	36.51	67.06	63.31	60.66	66.36	34.60	62	0	0	4.07	0.10	16.33	23	0.09
5-Mar-13	57.22	36.04	75.20	57.63	38.64	74.35	58.03	43.24	72.73	64.32	61.38	67.46	48.05	73	0	0	6.34	0.10	22.00	207	0.10
6-Mar-13	57.74	44.09	64.08	57.76	47.03	64.33	57.37	48.09	64.35	65.84	64.94	67.17	46.64	69	0.04	0.03	10.27	0.87	25.33	299	0.10
7-Mar-13	50.58	36.52	68.07	50.77	38.31	66.31	50.52	39.28	65.05	64.16	61.66	66.81	36.70	61	0	0	6.07	0.37	22.07	346	0.09
8-Mar-13	56.50	39.27	77.34	56.73	41.36	75.90	56.80	41.77	75.09	64.61	61.79	67.71	40.67	62	0	0	5.20	0.20	15.57	5	0.11
9-Mar-13	60.38	45.03	75.38	60.85	46.45	74.73	61.15	47.97	73.29	65.39	62.94	67.75	46.50	63	0	0	6.37	0.47	17.07	76	0.10
10-Mar-13	65.37	50.13	79.32	65.54	52.27	78.62	65.31	54.72	77.23	66.78	64.65	69.28	54.00	69	0	0	8.78	1.43	26.57	105	0.12
11-Mar-13	66.47	53.96	79.34	66.82	55.08	78.49	66.70	56.32	76.89	67.51	65.80	69.22	57.35	74	0	0	8.98	2.17	24.80	156	0.10
12-Mar-13	62.57	53.51	68.13	62.86	54.14	68.54	62.73	54.28	68.14	67.58	66.40	68.23	59.57	89	0.36	0.05	8.67	1.17	24.10	245	0.07
13-Mar-13	59.92	48.20	75.40	59.99	48.97	74.32	59.54	49.30	72.84	65.82	63.72	68.05	43.07	60	0	0	8.02	0.97	23.97	339	0.12
14-Mar-13	56.08	43.08	69.82	56.15	45.99	68.77	55.78	47.80	67.96	65.47	63.19	67.82	35.26	51	0	0	8.01	1.00	20.03	355	0.11
15-Mar-13	53.73	34.64	73.08	54.68	37.44	72.23	55.50	40.47	71.78	65.06	62.15	68.04	38.74	62	0	0	4.59	0.00	38.67	18	0.10
16-Mar-13	57.32	37.05	77.86	58.23	40.09	76.59	59.23	43.58	74.84	65.62	62.51	68.85	45.32	68	0	0	4.22	0.00	16.90	208	0.11
17-Mar-13	61.32	42.74	77.47	62.08	44.73	76.91	62.85	49.46	74.95	66.02	63.73	68.14	53.54	76	0	0	4.88	0.07	17.57	153	0.10
18-Mar-13	66.87	56.62	76.93	67.39	58.51	76.98	67.41	60.17	75.90	66.93	65.66	67.91	62.62	85	0	0	7.59	0.27	27.37	170	0.08
19-Mar-13	69.99	58.98	85.66	70.13	60.62	84.25	69.80	61.63	82.89	68.72	66.29	71.94	62.85	80	0	0	4.67	0.10	16.53	342	0.13
20-Mar-13	65.29	58.46	73.06	65.58	58.64	72.95	65.38	58.60	71.96	69.06	68.31	70.14	61.32	87	0.06	0.02	5.48	0.07	21.10	316	0.07
21-Mar-13	58.55	42.56	71.11	58.62	46.94	69.66	58.37	48.40	68.11	67.82	65.80	70.03	40.96	59	0	0	6.05	0.27	16.93	336	0.11
22-Mar-13	60.01	38.47	78.24	60.40	40.02	76.69	60.49	43.60	74.71	66.51	63.86	68.95	52.63	78	0.56	0.14	6.85	0.13	21.77	82	0.11
23-Mar-13	72.27	63.18	83.71	72.46	63.39	83.28	71.96	63.41	81.77	69.23	67.21	71.65	68.05	87	0	0	8.87	1.87	28.13	181	0.13
24-Mar-13	73.63	67.44	81.16	74.03	68.23	81.09	73.66	68.23	79.86	70.64	69.64	71.60	70.70	90	0	0	12.32	1.07	35.30	225	0.09
25-Mar-13	62.73	50.94	70.34	62.62	52.18	68.94	61.99	52.38	68.00	70.21	68.68	71.83	46.53	60	0	0	9.57	0.60	24.57	318	0.12
26-Mar-13	51.70	41.82	58.80	51.52	43.20	57.16	50.88	43.53	55.67	67.91	66.18	69.49	35.09	54	0	0	10.86	1.87	29.13	335	0.10
27-Mar-13	47.87	33.21	62.53	48.00	36.25	60.87	47.62	36.44	58.91	66.24	63.57	68.94	33.39	61	0	0	6.24	0.67	23.03	348	0.10
28-Mar-13	53.47	34.13	72.52	53.86	36.67	71.47	53.88	38.61	70.03	66.03	63.03	69.33	34.58	56	0	0	5.65	0.37	16.77	18	0.11
29-Mar-13	58.88	40.81	75.49	59.68	43.16	74.55	60.32	45.30	73.29	66.78	63.86	69.96	39.75	54	0	0	5.81	0.00	19.83	55	0.12
30-Mar-13	61.26	43.31	79.02	61.93	45.91	77.47	62.69	50.68	75.54	67.85	64.90	71.08	48.28	65	0	0	5.34	0.00	20.07	114	0.13
31-Mar-13	66.16	49.48	81.54	66.41	51.01	80.28	66.62	54.19	78.87	68.90	66.34	71.58	54.71	70	0	0	6.29	0.30	22.60	187	0.13

Table C.1 (continued)
Monthly Recorded Meteorological Data
Wimauma, FL

Period	60cm T avg (F)	60cm T min (F)	60cm T max (F)	2m T avg (F)	2m T min (F)	2m T max (F)	10m T avg (F)	10m T min (F)	10m T max (F)	Tsoil avg - 10cm (F)	Tsoil min(avg) - 10cm (F)	Tsoil max(avg) - 10cm (F)	2m DewPt avg (F)	RelHum avg 2m (%)	2m Rain tot (in)	2m Rain max over 15min (in)	10m Wind avg (mph)	10m Wind min (mph)	10m Wind max (mph)	WDir avg 10m (deg)	ET (in)
1-Apr-13	70.01	60.57	81.05	70.14	61.12	80.26	69.78	61.79	78.82	70.54	68.47	72.93	63.64	82	0	0	6.99	0.80	21.20	239	0.15
2-Apr-13	70.02	57.85	85.66	69.92	58.37	84.52	70.00	59.11	83.32	72.12	69.44	75.31	60.81	77	0	0	3.87	0.00	14.03	275	0.12
3-Apr-13	72.12	59.02	86.04	72.34	60.57	85.26	72.06	63.03	84.02	72.46	70.74	74.08	64.46	78	0.02	0.01	7.87	0.20	24.13	108	0.06
4-Apr-13	67.17	63.46	71.15	67.54	64.04	70.93	67.42	63.73	70.05	70.52	68.77	72.99	65.60	94	2.37	0.54	8.66	0.43	31.93	180	0.11
5-Apr-13	66.51	59.85	73.18	66.64	59.95	72.81	66.29	60.08	71.46	69.48	68.38	71.02	61.33	84	0.02	0.01	8.32	0.67	29.13	285	0.14
6-Apr-13	65.75	56.59	78.04	65.52	56.53	77.40	65.16	56.59	76.21	70.07	67.75	72.79	55.43	72	0	0	7.80	0.73	19.00	49	0.15
7-Apr-13	69.75	55.20	83.07	69.68	56.01	82.11	69.47	58.28	80.40	71.32	68.65	74.39	58.45	71	0	0	6.87	0.40	18.70	91	0.16
8-Apr-13	71.95	58.37	85.19	72.10	59.32	84.31	72.11	61.38	83.08	72.87	70.29	75.67	58.79	67	0	0	6.73	0.67	16.60	105	0.15
9-Apr-13	71.49	57.70	84.54	71.63	58.60	83.66	71.70	61.79	81.86	73.43	71.11	75.65	62.71	76	0	0	8.12	1.40	21.80	110	0.15
10-Apr-13	72.60	58.08	87.57	72.78	59.04	86.99	72.78	60.75	86.20	73.89	71.29	76.48	63.75	76	0.15	0.09	6.43	0.00	27.73	114	0.15
11-Apr-13	75.91	68.02	89.06	76.01	68.47	88.11	75.60	69.03	86.25	74.86	73.22	76.89	70.45	85	0.38	0.2	9.94	0.83	28.63	159	0.09
12-Apr-13	75.57	71.40	80.96	75.93	71.98	81.16	75.75	72.19	80.37	74.64	73.83	75.49	72.03	88	0	0	9.62	0.07	26.13	198	0.15
13-Apr-13	75.25	65.70	89.02	75.26	66.51	87.51	75.09	67.59	86.45	75.17	72.95	77.76	67.09	78	0	0	4.22	0.17	25.70	324	0.14
14-Apr-13	75.42	65.82	88.99	75.46	66.45	88.16	75.05	66.49	86.94	75.63	73.89	77.63	68.43	80	0.01	0.01	8.45	0.17	40.80	131	0.17
15-Apr-13	76.24	63.70	90.90	76.23	64.18	89.76	75.97	65.08	88.77	76.52	73.98	79.47	66.15	73	0	0	4.53	0.03	16.57	198	0.17
16-Apr-13	77.16	66.40	89.96	77.38	67.26	89.42	77.03	68.13	87.96	77.48	75.24	79.84	68.68	77	0	0	8.44	0.00	21.37	80	0.17
17-Apr-13	74.27	62.74	86.34	74.58	63.79	85.68	74.23	64.45	84.04	77.53	75.36	79.61	64.40	73	0	0	8.23	1.90	22.43	79	0.15
18-Apr-13	75.19	61.84	87.73	75.40	62.94	87.01	75.19	64.96	86.43	77.55	75.29	79.57	67.33	79	0.69	0.26	5.77	0.07	19.17	108	0.15
19-Apr-13	77.11	68.43	87.30	77.40	69.19	87.08	77.08	70.00	86.22	77.32	75.78	78.69	70.37	81	0.02	0.01	8.89	1.00	24.07	177	0.10
20-Apr-13	68.70	60.15	75.49	68.68	60.19	74.70	68.32	60.31	73.54	76.19	75.29	77.13	64.24	86	0	0	7.55	0.63	19.33	29	0.12
21-Apr-13	69.98	59.79	83.23	69.88	59.74	82.33	69.39	59.85	81.66	75.44	73.69	77.34	64.78	85	0.04	0.02	7.23	0.27	17.23	56	0.11
22-Apr-13	70.63	64.94	80.91	70.67	65.37	79.99	70.28	65.59	78.69	75.49	74.43	76.78	66.78	88	0.16	0.05	7.57	0.33	21.23	45	0.16
23-Apr-13	72.15	64.00	83.80	72.26	64.42	83.19	71.64	64.44	81.52	75.59	73.65	77.86	62.98	75	0	0	9.33	1.10	21.73	66	0.16
24-Apr-13	71.37	55.63	86.83	71.57	56.68	85.64	71.57	58.71	85.24	76.16	73.31	79.21	60.42	71	0	0	5.39	0.20	18.43	84	0.17
25-Apr-13	73.48	59.99	88.43	73.73	61.45	86.76	73.77	62.35	85.51	77.07	74.46	79.68	63.29	73	0	0	4.94	0.17	16.80	28	0.16
26-Apr-13	74.15	57.79	87.42	74.65	59.85	86.86	74.92	63.12	85.69	77.53	75.00	79.93	62.81	69	0	0	4.93	0.10	17.30	80	0.16
27-Apr-13	73.97	62.91	85.98	74.24	63.88	85.28	73.97	65.14	83.46	77.89	75.99	79.75	65.02	75	0	0	7.91	1.97	22.73	85	0.17
28-Apr-13	74.37	59.77	86.74	74.53	61.14	85.82	74.35	63.88	84.06	78.08	75.79	80.40	62.21	68	0	0	7.94	0.07	21.03	121	0.15
29-Apr-13	74.05	62.31	86.85	74.33	63.23	85.84	74.21	65.03	84.34	78.39	76.53	80.15	65.31	75	0	0	5.84	0.00	19.50	162	0.16

Appendix D: Field Parameter Analyses

Table D.1
Field Parameter Results
(April 22 through April 24, 2013)

Sample Identification	Temperature (˚C)	pH	Specific Conductance (µS)	Dissolved Oxygen (mg/L)
STE	22.4	7.21	1,341	0.08
Groundwater Samples				
BKG-15	21.9	5.82	131	0.23
BKG-15-DUP	21.9	5.82	131	0.23
PZ-AB4-15	21.5	6.55	286	0.19
PZ-C2	21.7	5.52	225	0.71
PZ-C3-15	22.0	6.70	516	0.94
PZ-C6-08	21.8	4.40	401	2.36
PZ-C6-15	22.0	5.58	351	4.45
PZ-D3-15	22.0	6.74	427	3.97
PZ-E1	21.1	5.35	361	4.33
PZ-E2	21.1	5.86	192	4.82
PZ-E4-15	21.9	6.57	505	1.29
PZ-E5-15	21.9	6.63	625	4.60
PZ-E6-08	21.9	4.87	704	1.67
PZ-E6-15	22.6	5.34	330	6.65
PZ-E7-08	22.1	4.64	333	2.83
PZ-E7-15	22.3	6.81	1,385	5.62
PZ-F3-15	22.1	6.60	294	2.16
PZ-G2-12.5	21.8	4.40	706	2.57
PZ-H4-15	21.6	6.61	638	0.30
PZ-H5-11.5	21.1	4.57	402	3.09
PZ-I6-08	22.1	4.59	329	2.54
PZ-I6-15	22.9	6.71	1,174	0.90

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

Sample Identification	Temperature (˚C)	pH	Specific Conductance (µS)	Dissolved Oxygen (mg/L)
PZ-I6-15-DUP	22.9	6.71	1,174	0.90
PZ-I10-08	21.5	4.81	391	0.37
PZ-I10-15	21.7	6.12	491	0.15
PZ-J4-15	22.0	6.19	462	0.24
PZ-J7-08	21.2	4.46	369	0.17
PZ-J7-15	21.4	5.03	430	0.41
PZ-N4-15	21.8	6.21	390	0.19
PZ-N7-08	22.2	6.23	497	5.41
PZ-N7-15	22.1	5.57	309	0.36
PZ-N7-15-DUP	22.1	5.57	309	0.36
PZ-N10-08	21.7	5.70	298	0.34
PZ-N10-08-DUP	21.7	5.70	298	0.34
PZ-N10-15	22.2	6.78	798	0.12
PZ-S10-08	22.2	4.75	375	0.17
Blanks				
FB-DI	23.8	7.32	3	7.92
EB	23.8	7.32	3	7.92

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