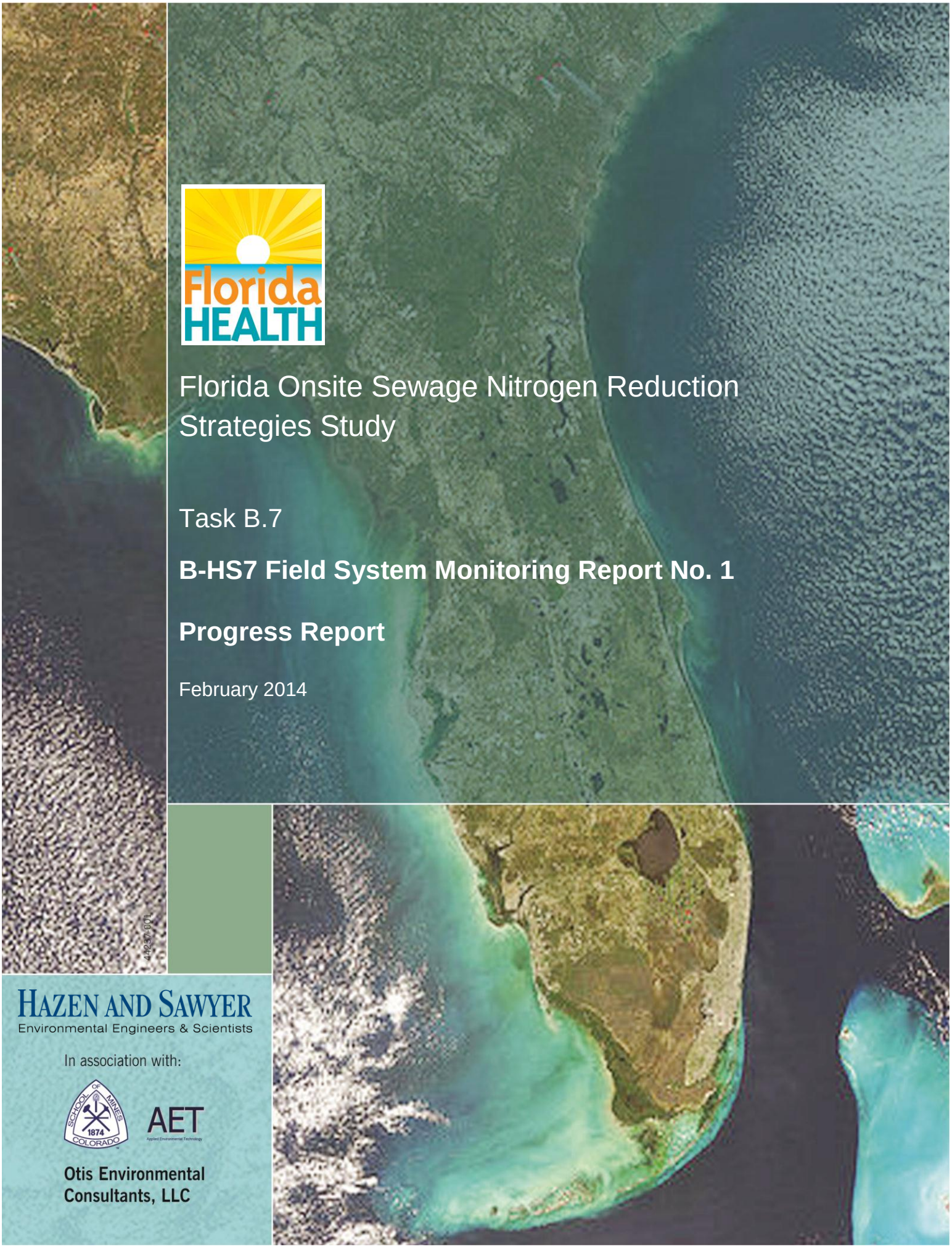

Florida HEALTH

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B.7

B-HS7 Field System Monitoring Report No. 1

Progress Report

February 2014

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In association with:

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

Otis Environmental Consultants, LLC

Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK B.7
PROGRESS REPORT

B-HS7 Field System
Monitoring Report No. 1

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
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February 2014

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B-HS7 Field System Monitoring Report No. 1

1.0 Background

Task B of the Florida Onsite Sewage Nitrogen Reduction Strategies Study (FOSNRS) includes performing field experiments to critically evaluate the performance of nitrogen removal technologies that were identified in FOSNRS Task A.9 and pilot tested in Task A.26. To meet this objective, full scale treatment systems are being installed at various residential sites in Florida and monitored over an extended timeframe under actual onsite conditions. The Task B Quality Assurance Project Plan (Task B.5) documents the objectives, monitoring framework, sample frequency and duration, and analytical methods to be used at the home sites. This report documents the first sample event of the passive nitrogen reduction system at a home site B-HS7 in Marion County, Florida.

2.0 Purpose

This monitoring report documents data collected from the first B-HS7 monitoring and sampling event conducted on January 20, 2014. This monitoring event consisted of conducting flow measurements from the household water use meter and the treatment system internal water meters, recording electricity use, monitoring of field parameters, collection of water samples from twenty-one points in the treatment system, and chemical analyses of water samples by a NELAC certified laboratory.

3.0 Materials and Methods

3.1 Project Site

The B-HS7 field site is located in Marion County, FL. The nitrogen reducing onsite treatment system for the single family residence was installed in November 2013. Design and construction details were presented previously in the Task B.6 document. Figure 1 is a system schematic showing the system components and layout of the installation. A flow schematic of the system is shown in Figure 2. The B-HS7 system consists of a 300 gallon concrete pump tank, low-pressure distribution network, and an in-ground Stage 1 nitrification biofilter directly over a lined Stage 2 denitrification biofilter. The existing 900 gallon dual chamber septic tank will continue to provide primary

treatment for the new PNRS. The treated effluent is discharged into the soil around the perimeter of the liner.

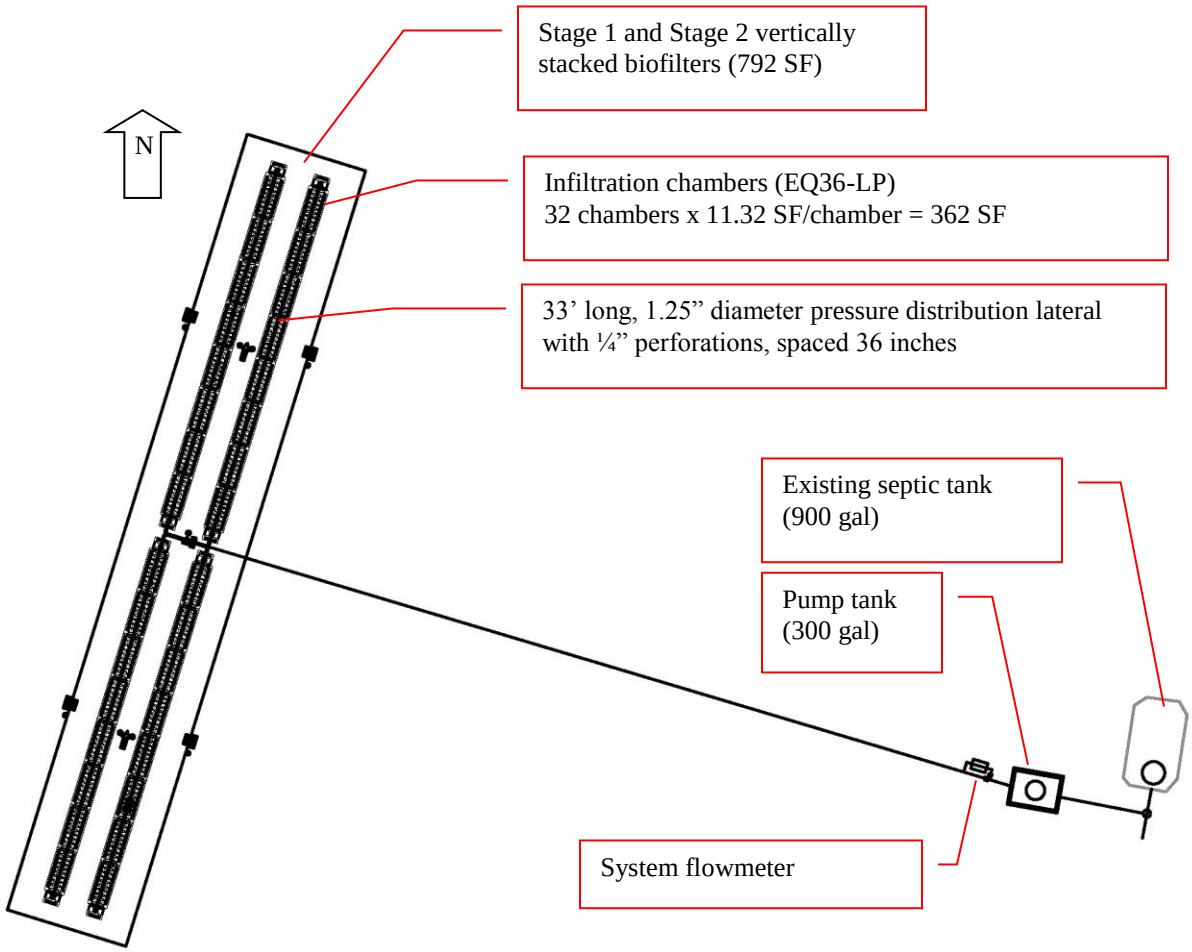


Figure 1
Plan view of B-HS7 System Layout

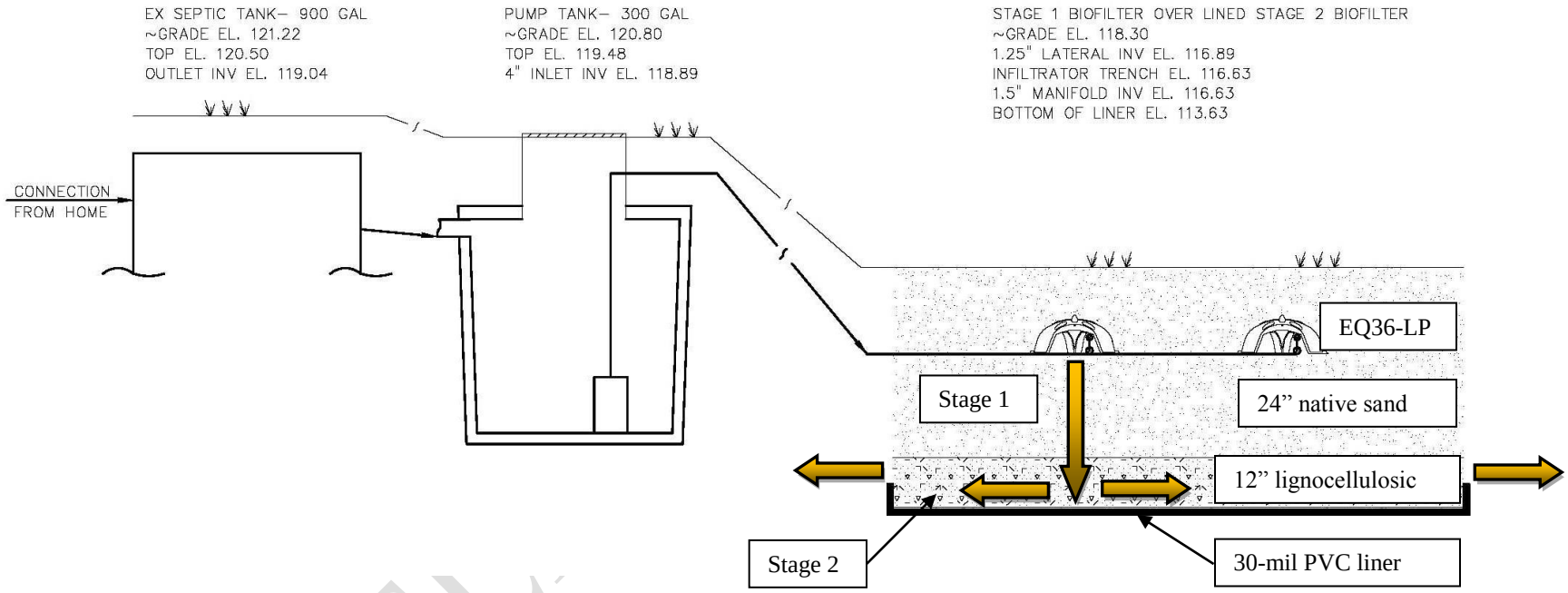


Figure 2
Flow Schematic of B-HS7 PNRS Installed in Marion County

3.3 Monitoring and Sample Locations and Identification

The monitoring points for this sample event are shown in Figure 3. The monitoring points used for treatment evaluation across a cross section in the southwest side of treatment area are shown in Figure 4.

Primary Effluent: Household wastewater enters the 1st chamber of the primary tank and exits the second chamber as septic tank effluent through an effluent screen. Screened effluent is directed to the pump tank which contains the pump and float switches. The first monitoring point, B-HS7-STE, is the effluent sampled approximately 1.5 feet below the surface of the pump tank (Figure 5), which is referred to as primary effluent or septic tank effluent (STE). Samples from monitoring point B-HS7-STE are the whole household wastewater after it has had some residence time in the primary tank.

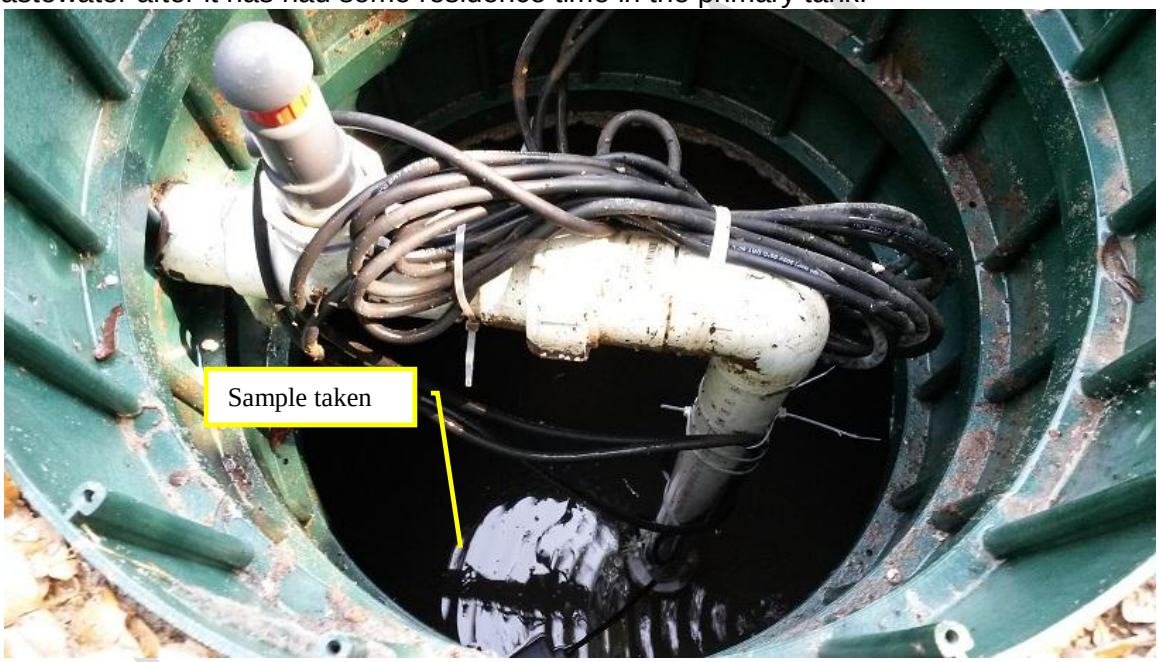
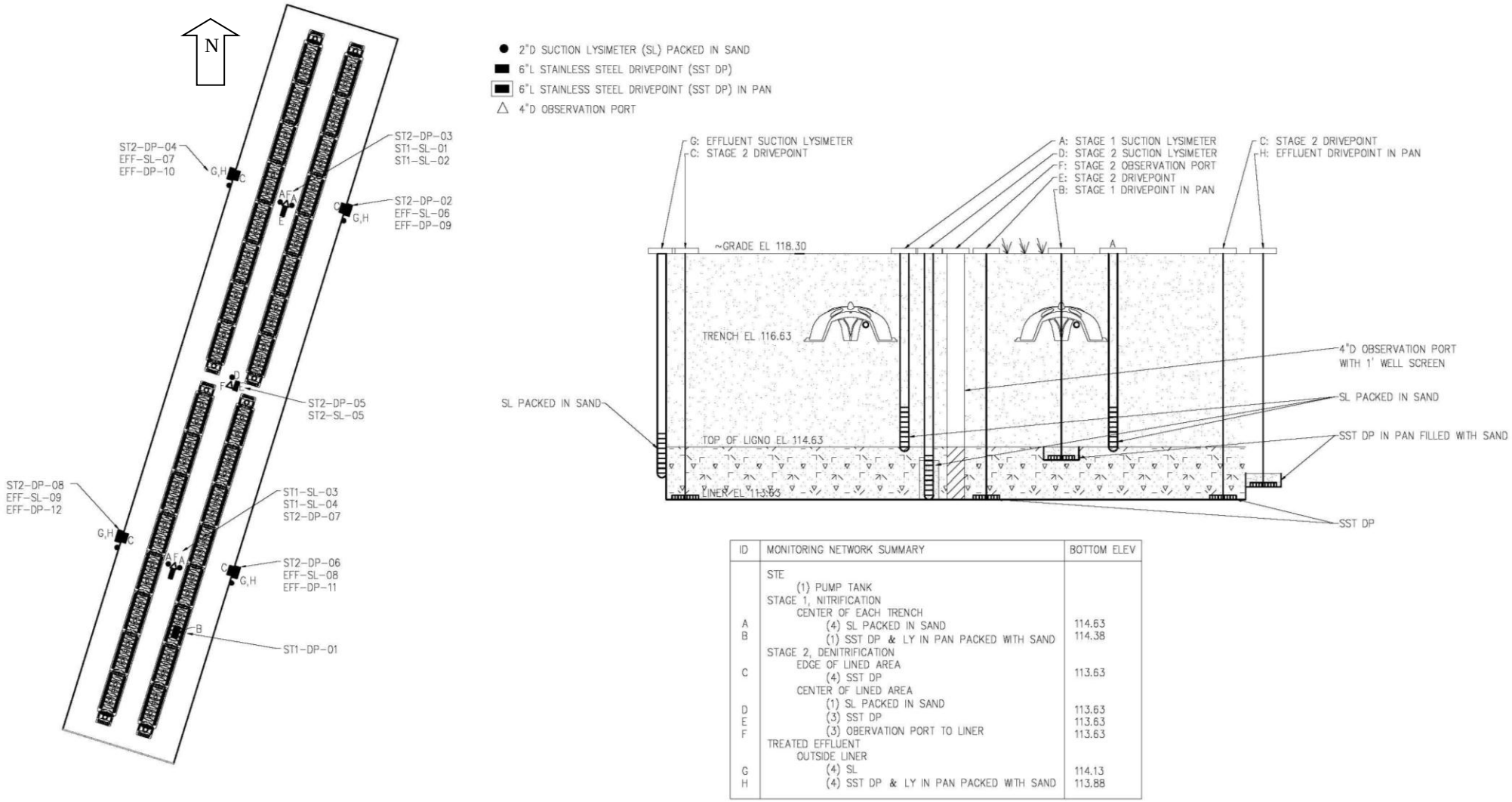


Figure 5
Pump Tank (B-HS7-STE sample)

Stage 1 Effluent: Pump tank contents are discharged through a low-pressure distribution network installed inside Infiltrator EQ36-LP™ chambers. The low-pressure distribution network consists of a central manifold design with (4) 33-foot long, 1.25-inch diameter perforated laterals installed along the top of the 24-inch native sand media (unsaturated Stage 1 biofilter). In the Stage 1 biofilter, wastewater percolates downward through the unsaturated native sand media where nitrification occurs. Ceramic cup

suction lysimeters (BHS7-ST1-SL-01, BHS7-ST1-SL-02, BHS7-ST1-SL-03, and BHS7-ST1-SL-04) were installed with the cup at the bottom of the native sand layer to represent water quality after downward passage through the sand layer (see Figure 6). In addition, one stainless steel drivepoint (BHS7-ST1-DP-01) was installed in a shallow pan at the bottom of the native sand layer (see Figure 7). The Stage 1 monitoring point in the treatment evaluation cross section is BHS7-ST1-SL-04, which is located in the center of the south end of the lined area.



ID	MONITORING NETWORK SUMMARY	BOTTOM ELEV
	STE	
	(1) PUMP TANK	
	STAGE 1, NITRIFICATION	
	CENTER OF EACH TRENCH	
A	(4) SL PACKED IN SAND	114.63
B	(1) SST DP & LY IN PAN PACKED WITH SAND	114.38
	STAGE 2, DENITRIFICATION	
	EDGE OF LINED AREA	
C	(4) SST DP	113.63
	CENTER OF LINED AREA	
D	(1) SL PACKED IN SAND	113.63
E	(3) SST DP	113.63
F	(3) OBERVATION PORT TO LINER	113.63
	TREATED EFFLUENT	
	OUTSIDE LINER	
G	(4) SL	114.13
H	(4) SST DP & LY IN PAN PACKED WITH SAND	113.88

Figure 3
B-HS7 Sample and Monitoring Locations

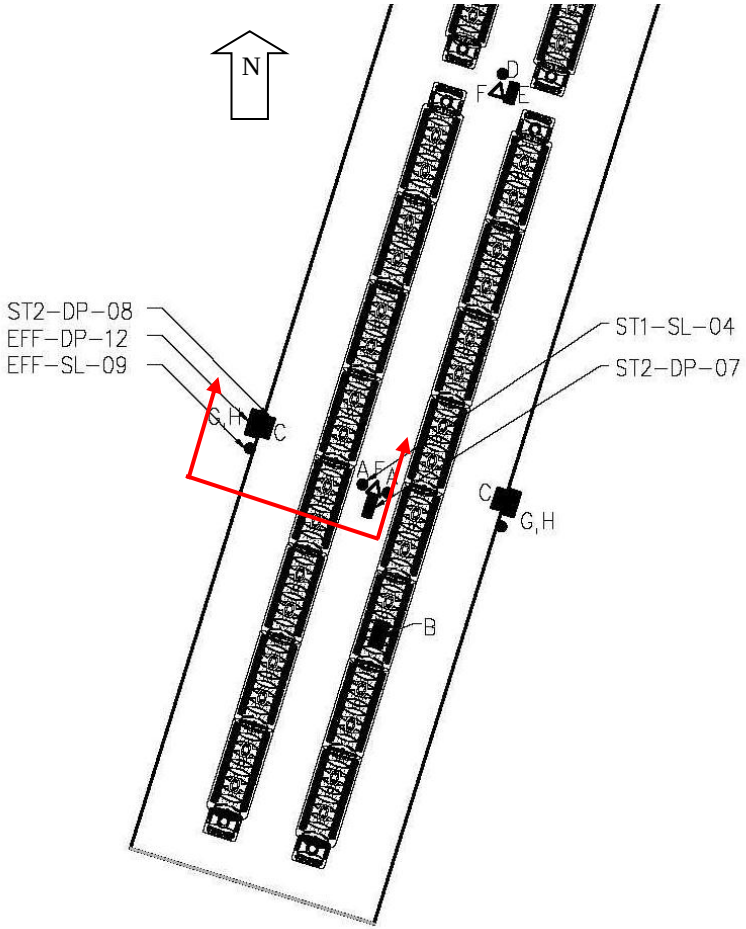


Figure 4
B-HS7 Treatment Evaluation Cross Section

Figure 6
Stage 1 biofilter effluent sample taken from suction lysimeter (BHS7-ST1-SL samples)

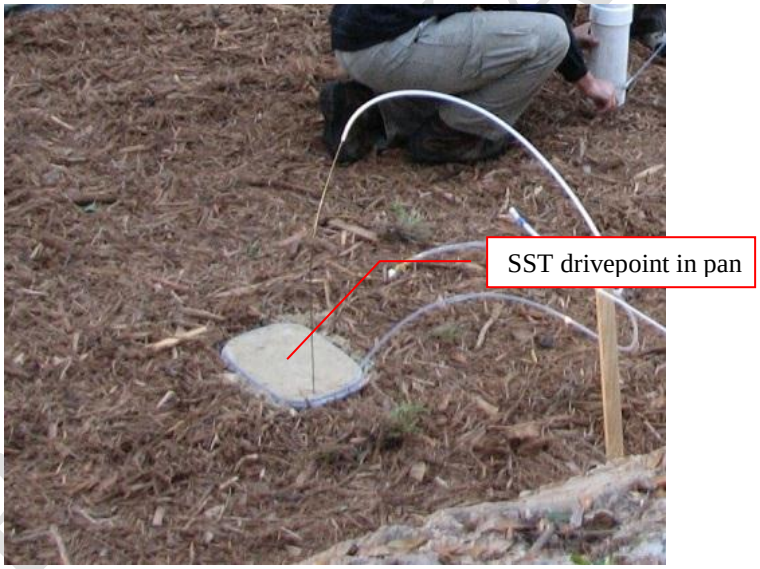


Figure 7
Stage 1 biofilter effluent sample taken from drivepoint in pan (BHS7-ST1-DP-01 sample)

Stage 2 Effluent: Directly below the 24-inch native sand Stage 1 biofilter is a 12-inch layer of lignocellulosic media, as a supplemental carbon source for denitrification, (Stage 2 biofilter), a blended urban waste wood from Wood Resource Recovery, Ocala, FL. The new Stage 2 biofilter treatment area was prepared with a 30 mil PVC liner installed below the lignocellulosic media. The liner was installed with a 6 inch lip around the

outside perimeter. Therefore, approximately 6-inches of the lignocellulosic media is saturated, promoting oxygen depletion and denitrification of the nitrified effluent. At the bottom of the Stage 2 biofilter lignocellulosic media, directly above the liner, stainless steel drivepoint samplers were installed (see Figure 8) including: BHS7-ST2-DP-02, BHS7-ST2-DP-03, BHS7-ST2-DP-04, BHS7-ST2-DP-05 BHS7-ST2-DP-06, BHS7-ST2-DP-07, and BHS7-ST2-DP-08. In addition, one suction lysimeter (BH7-ST2-SL-05) was installed with the cup at the bottom of the lignocellulosic layer to represent water quality just after downward passage through the lignocellulosic layer (see Figure 9). The Stage 2 monitoring points in the treatment evaluation cross section are BHS7-ST2-DP-07 (which is located in the center of the south end of the lined area) and BHS7-ST2-DP-08 (which is located on the southwest edge of the lined area).

Figure 8
Stage 2 biofilter effluent sample taken from drivepoint (BHS7-ST2-DP samples)

Figure 9
Stage 2 biofilter effluent sample taken from suction lysimeter (BHS7-ST2-SL-05)

Perimeter Monitoring Points: The treated effluent is discharged into the soil surrounding the perimeter of the lined area. Ceramic cup suction lysimeters (BHS7-EFF-SL-06, BHS7-EFF-SL-07, BHS7-EFF-SL-08, and BHS7-EFF-SL-09) were installed around the perimeter of the liner, with the bottom of the cup approximately 6-inches below the lip of the liner within the native sand (see Figure 10) to represent treated effluent. In addition, stainless steel drivepoints (BHS7-EFF-DP-09, BHS7-EFF-DP-10, BHS7-EFF-DP-11, BHS7-EFF-DP-12) were installed in shallow pans adjacent to the lip of the liner (see Figure 11). The treated effluent monitoring points in the treatment evaluation cross section are BHS7-EFF-SL-09 and BHS7-EFF-DP-12, which are located adjacent to the southwest lined area.

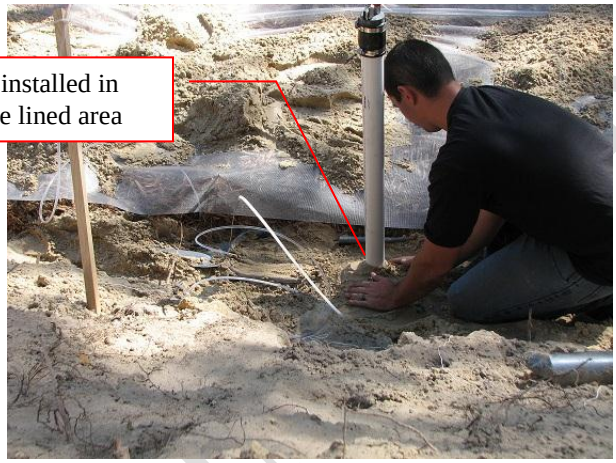


Figure 10
Treated effluent sample taken from suction lysimeter (BHS7-EFF-SL samples)

Figure 11
Treated effluent sample taken from drivepoint in pan (BHS7-EFF-DP samples)

3.4 Operational Monitoring

Start-up of the system occurred on November 19, 2013 (Experimental Day 0). However, during the Thanksgiving holiday, the homeowners projected having between thirty and forty additional people staying at the home. Therefore, since this was so soon after start-up, on November 26, 2013, the Bull Run™ diversion valve was flipped so that all the wastewater flow was diverted to the old drainfield. The diversion valve was flipped back to the PNRS system on December 2, 2014. Shortly thereafter, the homeowners planned a holiday party with a projected eighty people in attendance. Therefore on December 6, 2013, the diversion valve was flipped again so that all the wastewater flow was diverted to the old drainfield. The diversion valve was flipped back to the PNRS system on December 9, 2013, and the PNRS system has operated continually since that date.

Preliminary sampling for several key parameters was conducted December 12, 2013 (Experimental Day 23) to evaluate start-up performance. The first formal sampling event was conducted January 20, 2014 (Experimental Day 62). For this first formal sampling event, the water meter for the house and treatment system flow meters were read and recorded on January 20, 2014. The household water meter is located on the potable water line from the onsite well prior to entering the household plumbing. The water meter does not include the irrigation water use. Therefore, the water meter reading should be indicative of the wastewater flow to the system.

The PNRS treatment system flow meter (Figure 12) is located on the pump tank discharge line and records the cumulative flow in gallons pumped from the pump chamber to the low-pressure distribution network.

Three observation ports are installed along the centerline of the Stage 2 biofilter lined area (north, center and south). The observation ports are 4-inch diameter well screens that were installed with the bottom positioned on the liner. Therefore, the water level within the lined area is able to be monitored within the observation ports.

Figure 12
PNRS system flow meter

3.5 Energy Consumption

Energy consumption was monitored using an electrical meter installed between the main power box for the house and the control panel. The electrical meter records the cumulative power usage of the system in kilowatt-hours. The power usage of the system is primarily due to the single pump in the pump tank. There are no chemicals added to the system. However, the Stage 2 biofilter media (lignocellulosic) is "reactive" media which will be consumed during operation. The Stage 2 biofilter was initially filled with 12 inches of lignocellulosic media, which ostensibly will last for many years without replenishment or replacement.

3.6 Water Quality Sample Collection and Analyses

Preliminary start-up sampling was conducted on December 12, 2013 (Experimental Day 23) and consisted of monitoring the nitrogen transformation through the system. The first formal sample event (Sample Event No. 1), which is the subject of this report, was conducted on January 20, 2014 (Experimental Day 62). A full suite of influent, intermediate and effluent water quality samples were collected from the system for water quality analysis. Samples were collected at each of the monitoring points described in Section 3.2. A peristaltic pump was used to collect samples and route them directly into analysis-specific containers after sufficient flushing of the tubing had occurred. Field parameters were then recorded.

In addition, equipment blank (B-HS2-EB) sample and a potable water sample from the onsite well were taken. The equipment blank was collected by pumping deionized water through the cleaned pump tubing. The potable well water sample was collected from a hose bib near the onsite well. These samples was then analyzed for the same parameters as the monitoring samples.

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 laboratories. 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 A, were used to document the transfer of samples from field personnel to the analytical laboratory.

Field parameters were measured using portable electronic probes and included temperature (Temp), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, and specific conductance. The field parameters were measured by placing the analytical probes in a container overflowing with sample water. The influent, intermediate, and effluent samples were analyzed by the laboratory for: total alkalinity, chemical oxygen demand (COD), total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH_3-N), nitrate nitrogen (NO_3-N), nitrite nitrogen (NO_2-N), total phosphorus (TP), orthophosphate (Ortho P), total suspended solids (TSS), volatile suspended solids (VSS), total organic carbon (TOC), fecal coliform (fecal), and E.coli. All analyses were performed by independent and fully NELAC certified analytical laboratory (Southern Analytical Laboratory). Table 1 lists the analytical parameters, analytical methods, and detection limits for laboratory analyses.

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 Nitrogen (NO_3-N)	EPA 300.0	0.01 mg/L
Nitrite Nitrogen (NO_2-N)	EPA 300.0	0.01 mg/L
Nitrate+Nitrite Nitrogen (NOX-N)	EPA 300.0	0.02 mg/L
Total Phosphorus (TP)	SM 4500P-E	0.01 mg/L
Orthophosphate as P (Ortho P)	EPA 300.0	0.01 mg/L
Carbonaceous Biological Oxygen Demand ($CBOD_5$)	SM5210B	2 mg/L
Total Suspended Solids (TSS)	SM 2540D	1 mg/L
Volatile Suspended Solids (VSS)	SM 2540E	1 mg/L
Chloride	EPA 300.0	0.50 mg/L
Fecal Coliform (fecal)	SM9222D	2 ct/100mL
E.coli	SM9223B	2 ct/100mL

4.0 Results and Discussion

4.1 Operational Monitoring

Table 2 provides a summary of the household water use since the household water meter installation on October 15, 2013. The treatment system flow meter readings for the B-HS7 field site are also summarized in Table 2. The operation and maintenance log which includes actions taken since start-up is provided in Appendix B.

Table 2
Summary of Flowmeters

Date and Time Read	Household Water Meter Reading	Average Daily Household Flow between readings	PNRS Flow Meter Reading	Average Daily PNRS Flow between readings
	Cumulative Volume (gallons)	gallons/ day	Cumulative Volume (gallons)	gallons/ day
10/15/2013 13:51	2.9	XX		
10/23/2013 12:20	1,186.9	149.2		
11/14/2013 8:50	3,602.5	110.5		
11/15/2013 14:40	3,800.0	158.9		
11/19/2013 14:18	4,997.5	300.5	652.0	PNRS Start-up
11/26/2013 10:30	7,901.4	424.4	2,480.0	267.2
12/2/2013 9:45	9,148.6	209.0	2,480.0	0.0
12/6/2013 9:00	10,470.4	333.1	3,134.0	164.8
12/10/2013 10:00	11,218.9	185.2	3,302.0	41.6
12/12/2013 9:00	11,519.1	153.3	3,635.0	170.0
1/3/2014 10:50	14,722.0	145.1	6,774.0	142.2
1/17/2014 10:00	16,940.8	158.9	8,621.0	132.3
1/20/2014 12:37	17,483.4	174.5	9,134.0	165.0
Average since start-up to January 20, 2014		201.6		137.0

As discussed in Section 3.4, there were two periods during the holidays when the wastewater was diverted to the old drainfield. This is probably the reason for the difference in flow when comparing the household water meter and PNRS flow meter readings. From PNRS system installation through January 20, 2014, the household water use average was 201.6 gallons per day with periods of higher and lower flows (Table 2). The average pumped flow to the PNRS system was 137.0 gallons per day from start-up through January 20, 2014.

An additional water input to consider for evaluation of the system treatment performance is precipitation. A weather station was installed at the site on the roof of the home on January 6, 2014. Previously the homeowner had tracked the daily precipitation in a rain gauge. Data from this weather station is available from the homeowner. Recorded meteorological data is provided in Appendix C, Table C.1. Table 3 provides daily precipitation totals leading up to and during the sample event.

Table 3
Precipitation Data Daily Totals Measured
January 6, 2014 through January 20, 2014
Sample Event No. 1

Date	Precipitation (inches)
January 6, 2014	0.00
January 7, 2014	0.00
January 8, 2014	0.00
January 9, 2014	0.16
January 10, 2014	0.00
January 11, 2014	0.41
January 12, 2014	0.00
January 13, 2014	0.00
January 14, 2014	1.03
January 15, 2014	0.03
January 16, 2014	0.02
January 17, 2014	0.00
January 18, 2014	0.00
January 19, 2014	0.03
January 20, 2014	0.00

As discussed in Section 3.4, three observation ports are installed along the centerline of the Stage 2 biofilter lined area (north, center and south). The observation port measurements are summarized in Table 4 which indicate that the monitored liner water level is continuously below the overflow elevation (114.03 ft). During this sample event, the water elevation ranged between 3.6 and 4.5 inches below the overflow elevation.

Table 4
Liner Water Level within Observation Ports

Date Read	North Observation Port water elevation		Center Observation Port water elevation		South Observation Port water elevation		Range
	Water elevation (ft)	Depth below overflow (in)	Water elevation (ft)	Depth below overflow (in)	Water elevation (ft)	Depth below overflow (in)	Depth below overflow (in)
11/26/2014	113.65	4.6	113.70	4.0	113.69	4.1	4.0-4.6
12/2/2014	113.60	5.2	113.63	4.8	113.59	5.3	4.8-5.3
12/6/2014	113.64	4.7	113.67	4.3	113.64	4.7	4.3-4.7
12/12/2014	113.65	4.5	113.67	4.4	113.59	5.3	4.4-5.3
1/3/2014	113.67	4.3	113.69	4.1	113.61	5.0	4.1-5.0
1/17/2014	113.67	4.3	113.73	3.6	113.65	4.5	3.6-4.5

Overflow elevation is 114.03 ft which is 6 inches above the liner.

4.2 Energy Consumption

Energy consumption is monitored using an electrical meter installed between the main power box for the house and the control panel to record cumulative power usage of the pump in kilowatt-hours. The recorded electrical use for the system is summarized in Table 5.

Table 5
Summary of System Electrical Use

Date and Time Read	Electrical Meter Reading	Average Daily Electrical Use	Average Electrical Use per Gallon Treated
	Cumulative (kWh)	(kWh/day)	(kWh/ 1000 gal)
Recirculation mode of operation: to recirculation tank			
11/19/2013 14:18	0.2	0.03	
11/26/2013 10:30	0.6	0.06	0.219
12/2/2013 9:45	0.6	0.00	No flow
12/6/2013 9:00	0.8	0.05	0.306
12/10/2013 10:00	0.8	0.00	0.000
12/12/2013 9:00	0.9	0.05	0.300
1/3/2014 10:50	1.7	0.04	0.255
1/17/2014 10:00	2.3	0.04	0.325
1/20/2014 12:37	2.4	0.03	0.195
Total average start-up to 1/20/14		0.04	0.259

The total average electrical use through January 20, 2014 was 0.04 kWh per day. The average electrical use per 1,000 gallons treated since start-up was 0.259 kWh per 1,000 gallons treated, and this parameter has been fairly stable since start-up.

4.3 Water Quality

Water quality analytical results and raw analytical data for the preliminary start-up sampling conducted on December 12, 2013 (Experimental Day 23) is included in Appendix A. The preliminary sampling results indicated that ammonia reduction was limited through the Stage 1 biofilter.

Water quality results for the first full sampling event (Sample Event No.1) are listed in Table 6. Nitrogen results for the treatment evaluation cross section displayed in Figure 4 are graphically displayed in Figure 13. The laboratory report containing the raw analytical data is included in Appendix A. The following discussion summarizes the water quality analytical results for Sample Event No. 1. The performance of the various system components was compared by considering the changes through treatment of nitrogen species (TKN, NH_3-N, and NO_X-N), as well as supporting water quality parameters.

Sample ID	CBOD5 mg/L	TKN mg N/L	NH_3 mg N/L	NO_x mg N/L	TN mg N/L	Fecal Coliform (Ct/100 mL)
PUMP	78	51	50	Non-detect	51	32,000
ST1-SL-04	Non-detect	9.7	4.9	41	51	10
ST2-DP-07	20	7.2	0.13	Non-detect	7.2	Non-detect
ST2-DP-08	19	4.7	0.09	Non-detect	4.7	Non-detect
EFF-DP-12	NA	4.6	0.13	4.2	8.8	NA
EFF-SL-09	Non-detect	NA	0.22	40	NA	NA

NA = not analyzed

Figure 13
Graphical Representation of Nitrogen Results

Septic Tank Effluent (STE) Quality: The water quality characteristics of STE collected in Sample Event 1 were within the typical range generally expected for domestic STE. The measured STE total nitrogen (TN) concentration was 51 mg/L, which is within the range that has been typically reported for Florida single family residence STE.

Stage 1 Effluent (native sand): The sample points considered representative of Stage 1 effluent included: BHS7-ST1-SL-01, BHS7-ST1-SL-02, BHS7-ST1-SL-03, and BHS7-ST1-SL-04, and BHS7-ST1-DP-01. Based on these samples, the Stage 1 effluent mean NH_3-N level was 2.9 ± 1.8 mg/L with a mean DO level at 5.7 ± 0.4 mg/L in the Stage 1 effluent (Table 6). The Stage 1 effluent mean NO_x-N concentration was 41.8 ± 6.4 mg/L. These results indicate significant nitrification of the effluent by the Stage 1 media biofilter.

Stage 2 Biofilter Effluent (lignocellulosic): The sample points considered representative of Stage 2 biofilter lignocellulosic media effluent included: BHS7-ST2-DP-02, BHS7-ST2-DP-03, BHS7-ST2-DP-04, BHS7-ST2-DP-05 BHS7-ST2-DP-06, BHS7-ST2-DP-07, BHS7-ST2-DP-08, and BHS7-ST2-SL-05. Based on these samples, the Stage 2 effluent mean NO_x-N concentration was 0.8 ± 2.0 mg/L with a mean DO level at 0.53 ± 1.16 mg/L. The Stage 2 system produced a highly reducing environment and achieved nearly complete NO_x-N reduction. The mean total nitrogen (TN) concentration was 7.5 ± 4.2 mg/L. The effluent mean $CBOD_5$ was 19.5 ± 0.7 mg/L, an increase over the Stage 1 effluent value due to the lignocellulosic material.

Perimeter Monitoring Points: The sample points considered representative of treated effluent included: BHS7-EFF-SL-06, BHS7-EFF-SL-07, BHS7-EFF-SL-08, BHS7-EFF-SL-09, BHS7-EFF-DP-09, BHS7-EFF-DP-10, BHS7-EFF-DP-11, and BHS7-EFF-DP-12. Based on these samples, the treated effluent mean TN was 31.4 ± 15.0 mg/L of which mean TKN was 3.3 ± 1.2 and mean NO_x-N was 30.9 ± 13.8 mg/L.

Equipment Blank (EB): The equipment blank (EB) was collected by pumping deionized water through the cleaned pump tubing. This sample was then analyzed for the same parameters as the monitoring samples. As expected, all parameters measured were at or below the method detection limit.

Well water (TAP): The well water (TAP) was collected from a hose bib near the onsite well. This sample was then analyzed for the same parameters as the monitoring samples.

Table 6
Water Quality Analytical Results

Sample ID	Sample Date/Time	Temp (°C)	pH	Specific Conductance (uS/cm)	DO (mg/L)	ORP (mV)	Total Alkalinity (mg/L)	TSS (mg/L)	VSS (mg/L)	$CBOD_5$ (mg/L)	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_3-N (mg/L N)	NO_2-N (mg/L N)	NOx (mg/L N)	TIN (mg/L N)[3]	TP (mg/L)	Ortho P (mg/L P)	Fecal (Ct/100 mL)	E-coli (Ct/100 mL)	Chloride (mg/L)
BHS7-PUMP	1/20/14 12:03	18.6	7.63	2060	0.25	-95.2	310	36	33	78	120	51.02	51	1	50	0.01	0.01	0.02	50.02	6.6	5.4	32000	380	530
BHS7-PUMP-DUP	1/20/14 12:08	18.6	7.63	2060	0.25	-95.2	310	33	32	75	110	50.02	50	1	49	0.01	0.01	0.02	49.02	6.7	5.5	19000	440	530
BHS7-ST1-SL-01	1/20/14 10:45	15.5	5.62	1919	5.65	128.9						40.6	4.6	2.7	1.9	36	0.01	36	37.9					
BHS7-ST1-SL-02	1/20/14 10:55	15.4	5.26	1595	5.84	154.1						53.2	2.2	1.85	0.35	51	0.01	51	51.35					
BHS7-ST1-SL-03	1/20/14 11:07	15.8	5.87	2018	6.33	170.6						48.1	7.1	3.2	3.9	36	4.3	41	44.9					
BHS7-ST1-DP-01	1/20/14 11:25	16.8	5.12	2034	5.37	190.7						53.5	8.5	5.1	3.4	45	0.01	45	48.4					
BHS7-ST1-SL-04	1/20/14 10:58	15.3	5.8	1933	5.28	158.4		3	3	2	15	50.7	9.7	4.8	4.9	41	0.01	41	45.9	0.04	0.01	10	2	380
BHS7-ST2-DP-02	1/20/14 8:45	19.5	5.99	1994	0.11	125.6						16.4	16	15.57	0.43	0.4	0.1	0.4	0.83					
BHS7-ST2-DP-03	1/20/14 9:00	19.5	5.96	2068	0.13	125.4						5.52	5.5	5.36	0.14	0.01	0.01	0.02	0.16					
BHS7-ST2-DP-03-DUP	1/20/14 9:05	19.5	5.96	2068	0.13	125.4						5.02	5	4.85	0.15	0.01	0.01	0.02	0.17					
BHS7-ST2-DP-04	1/20/14 9:17	19.3	5.94	2094	0.08	141.9						4.72	4.7	4.619	0.081	0.01	0.01	0.02	0.101					
BHS7-ST2-DP-05	1/20/14 9:38	19.3	6.2	2133	0.18	119.4						3.27	3.2	3.145	0.055	0.07	0.01	0.07	0.125					
BHS7-ST2-SL-05	1/20/14 9:40	16	6.1	2046	3.4	139.2						10.4	4.6	4.534	0.066	5.8	0.01	5.8	5.866					
BHS7-ST2-DP-06	1/20/14 9:55	19.9	6.63	22800	0.08	60.1						7.92	7.9	7.76	0.14	0.01	0.01	0.02	0.16					
BHS7-ST2-DP-06-DUP	1/20/14 10:00	19.9	6.63	22800	0.08	60.1						7.82	7.8	7.66	0.14	0.01	0.01	0.02	0.16					
BHS7-ST2-DP-07	1/20/14 10:19	19.9	6.38	23500	0.1	69.5	210	27	17	20	380	7.22	7.2	7.07	0.13	0.01	0.01	0.02	0.15	60	35	1	2	470
BHS7-ST2-DP-08	1/20/14 10:40	18.4	6.12	2070	0.15	63.8	200	8	8	19	1100	4.72	4.7	4.608	0.092	0.01	0.01	0.02	0.112	37	20	1	2	460
BHS7-EFF-SL-06	1/20/14 8:35	12.4	5.67	469	5.7	124.1						23.9	3.9	3.838	0.062	20	0.01	20	20.062					
BHS7-EFF-SL-07	1/20/14 9:05	15.5	4.61	837	6.75	164.8						40.6	1.6	1.591	0.009	39	0.01	39	39.009					
BHS7-EFF-DP-10	1/20/14 9:15	13.3	5.74	1217	6.69	145.3						37.5	2.5	2.435	0.065	35	0.01	35	35.065					
BHS7-EFF-SL-08	1/20/14 9:50	15.8	5.15	1722	6.56	167.2						46	4	3.12	0.88	42	0.01	42	42.88					
BHS7-EFF-DP-11	1/20/14 11:10															36	0.01	36						
BHS7-EFF-SL-09	1/20/14 10:15	16.4	6.14	789	5.33	146.6		1	1	2	10				0.22	40	0.01	40	40.22	0.016	0.01			83
BHS7-EFF-DP-12	1/20/14 10:25	17.2	6.25	1837	4.03	104.6						8.8	4.6	4.47	0.13	4.2	0.01	4.2	4.33					
BHS7-TAP	1/20/14 11:35	20.1	7.14	179.3	7.15	154.2	87	1	1	2	10	0.21	0.05	0.041	0.009	0.09	0.07	0.16	0.169	0.12	0.097	1	2	4
BHS7-EB	1/20/14 11:48	15.9	7.39	1.2	9.29	58.4	2	1	1	2	10	0.06	0.05	0.041	0.009	0.01	0.01	0.01	0.019	0.01	0.01	1	2	0.05

Notes:

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and NO_X.

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and NH_3.

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of NH_3 and NO_X.

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.

o:\44237-001\002\w\docs\[Report Tables.xlsx]Table 6

5.0 B-HS7 Sample Event No. 1: Summary and Recommendations

5.1 Summary

The Sample Event No. 1 results indicate that:

- Septic tank effluent (STE) quality is characteristic of typical household STE quality. The total nitrogen concentration of 51 mg/L is within the range of values typically reported for Florida single family residence STE.

- The Stage 1 biofilter converted most of the ammonia N to oxidized nitrogen; mean effluent values contained 6.4 ± 3.0 mg/L TKN, of which 2.9 ± 1.8 mg/L was ammonia.

- The Stage 2 biofilter produced a reducing environment and mean effluent NO_x-N was 0.8 ± 2.0 mg N/L.

- The total nitrogen concentration in the perimeter monitoring points was 31.3 ± 15.0 mg/L of which mean TKN was 3.3 ± 1.2 and mean NO_x-N was 30.9 ± 13.8 mg/L. It is unclear why the perimeter monitoring points showed such an increase in NO_x-N relative to the Stage 2 points. Since the observation port measurements indicated that the liner water level was between 3.6 and 4.5 inches below the overflow elevation, at the time of sampling, the water sampled by the perimeter points is likely not water recently discharged off the liner.

5.2 Recommendations

In Sample Event 1, the unsaturated Stage 1 and 2 biofilters exhibited better nitrification and denitrification performance, respectively, as compared to the preliminary sampling event. However, the perimeter monitoring points show high total nitrogen in the effluent mostly comprised of NO_x-N, and it appears possible that these sample points may not be representative of effluent from the system. Continued observation and sampling should provide additional insight to system performance.

Appendix A: Laboratory Report

Table A.1
Preliminary Start-up Sample Event No. 1 Results

Sample ID	Sample Date/Time	Temp (°C)	pH	Specific Conductance (uS/cm)	DO (mg/L)	ORP (mV)	TSS (mg/L)	$CBOD_5$ (mg/L)	TN (mg/L N)[1]	TKN (mg/L N)	Organic N (mg/L N)[2]	NH_3-N (mg/L N)	NO_3-N (mg/L N)	NO_2-N (mg/L N)	NOx (mg/L N)	TIN (mg/L N)[3]
BHS7-PUMP	12/12/13 13:22	22.8	6.8	1684	0.07	-139.9	54	150	43.26	43	7	36	0.26	0.01	0.26	36.26
BHS7-ST1-SL-01	12/12/13 13:10	22.1	5.23	1729	5.27	84.1			21.6	16	5	11	5.6	0.01	5.6	16.6
BHS7-ST1-SL-02	12/12/13 13:20	21.3	5.1	1227					14.1	7.6	5.7	1.9	6.5	0.01	6.5	8.4
BHS7-ST1-SL-03	12/12/13 12:25	21.3	5.09	2070	3.67	110.6			34.4	26	4	22	8.4	0.01	8.4	30.4
BHS7-ST1-DP-01	12/12/13 13:00	20.9	4.28	2320	3.05	145.9			51	35	5	30	16	0.01	16	46
BHS7-ST1-SSL-01	12/12/13 12:55	20.1	4.73	2191	4.02	100.2			54	39	4	35	15	0.01	15	50
BHS7-ST1-SL-04	12/12/13 12:40	20.1	5.28	1245	3.07	59.7			21.4	14	3	11	7.4	0.01	7.4	18.4
BHS7-ST2-DP-02	12/12/13 10:00	20.7	5.38	1579	0.07	85.6	39	120	30.53	30	29.6	0.4	0.53	0.1	0.53	0.93
BHS7-ST2-OB-01	12/12/13 13:20	20.8	5.46	1774	4.61	97.6			24.53	24	23.37	0.63	0.53	0.1	0.53	1.16
BHS7-ST2-DP-03	12/12/13 13:13	21.5	5.11	1689	0.14	58.3			26.48	26	25.39	0.61	0.48	0.1	0.48	1.09
BHS7-ST2-DP-04	12/12/13 10:33	19.7	4.96	1994	0.19	122.7	40	340	25.51	25	24.47	0.53	0.51	0.1	0.51	1.04
BHS7-ST2-OB-02	12/12/13 12:33	22.2	5.09	1656	0.73	47.4			9.24	8.8	8.66	0.14	0.34	0.1	0.44	0.58
BHS7-ST2-DP-05	12/12/13 12:40	20	5.07	1655	0.12	69.8			9.02	9	8.85	0.15	0.01	0.01	0.02	0.17
BHS7-ST2-SL-05	12/12/13 12:58	20.3	5.13	1406	1.76	51.3			4.62	4.6	4.54	0.06	0.01	0.01	0.02	0.08
BHS7-ST2-DP-06	12/12/13 11:45	21.6	5.16	1468	0.15	60.4	40	120	22.42	22	21.69	0.31	0.42	0.1	0.42	0.73
BHS7-ST2-OB-03	12/12/13 12:20	23.2	5.51	1313	0.16	49.1			22.2	22	21.63	0.37	0.1	0.1	0.2	0.57
BHS7-ST2-DP-07	12/12/13 12:03	23.6	5.35	1578	0.01	-19.2			20.46	20	19.63	0.37	0.46	0.1	0.46	0.83
BHS7-ST2-DP-08	12/12/13 11:06	18.8	5.61	1494	0.18	45.4	29	88	13.2	13	12.66	0.34	0.1	0.1	0.2	0.54
BHS7-EFF-SL-06	12/12/13 9:40	16.9	5.42	466	5.62	267.3			2.88	0.68	0.669	0.011	2.2	0.01	2.2	2.211
BHS7-EFF-SL-07	12/12/13 10:10	18.6	5.23	1449	6.25	149.6			17.6	6.6	2.3	4.3	11	0.01	11	15.3
BHS7-EFF-SSL-03	12/12/13 10:47	16.9	5.03	1766	4.58	145.1			20.9	8.9	1.1	7.8	12	0.01	12	19.8
BHS7-EFF-SL-08	12/12/13 11:32	21.2	5.44	1785	5.66	165.2			18.2	11	9.9	1.1	7.2	0.01	7.2	8.3
BHS7-EFF-SSL-04	12/12/13 12:15	Not enough water for readings							7.7	4.6	1.7	2.9	3.1	0.01	3.1	6
BHS7-EFF-SL-09	12/12/13 10:57	18.7	5.44	1245	6.02	165.2			13.4	6.1	3	3.1	7.3	0.01	7.3	10.4
BHS7-EFF-DP-12	12/12/13 11:20	20	5.7	1449	2.19	107.4			16.2	15	14.08	0.92	1.2	0.1	1.2	2.12
BHS7-EFF-SSL-05	12/12/13 11:05	Not enough water for readings													0.02	

Notes:

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and NO_X.

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and NH_3.

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of NH_3 and NO_X.

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.

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ACCREDITED IN ACCORDANCE WITH nelac

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

December 27, 2013
Work Order: 1313348

Laboratory Report

Project Name **B-HS7 Preliminary SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-PUMP**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-01**						
Date/Time Collected		**12/12/13 13:22**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	36	EPA 350.1	0.80	0.19		12/24/13 11:45	20
Carbonaceous BOD	mg/L	150	SM 5210B	2	2	12/13/13 13:10	12/18/13 11:26	1
Nitrate (as N)	mg/L	0.26	EPA 300.0	0.04	0.01		12/13/13 02:19	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 02:19	1
Total Kjeldahl Nitrogen	mg/L	43	EPA 351.2	4.2	1.0	12/17/13 15:20	12/20/13 09:20	20.83
Total Suspended Solids	mg/L	54	SM 2540D	1	1	12/16/13 16:38	12/17/13 16:54	1
Nitrate+Nitrite (N)	mg/L	0.26	EPA 300.0	0.08	0.02		12/13/13 02:19	1
Sample Description		**BHS7-ST1-SL-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-02**						
Date/Time Collected		**12/12/13 13:10**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	11	EPA 350.1	0.40	0.095		12/24/13 11:25	10
Nitrate (as N)	mg/L	5.6	EPA 300.0	0.04	0.01		12/13/13 03:25	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 03:25	1
Total Kjeldahl Nitrogen	mg/L	16	EPA 351.2	1.0	0.25	12/17/13 15:20	12/19/13 16:56	5
Nitrate+Nitrite (N)	mg/L	5.6	EPA 300.0	0.08	0.02		12/13/13 03:25	1
Sample Description		**BHS7-ST1-SL-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-03**						
Date/Time Collected		**12/12/13 13:20**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	1.9	EPA 350.1	0.040	0.009		12/24/13 10:39	1
Nitrate (as N)	mg/L	6.5	EPA 300.0	0.04	0.01		12/14/13 05:17	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/14/13 05:17	1
Total Kjeldahl Nitrogen	mg/L	7.6	EPA 351.2	1.0	0.25	12/17/13 15:20	12/19/13 16:58	5
Nitrate+Nitrite (N)	mg/L	6.5	EPA 300.0	0.08	0.02		12/14/13 05:17	1

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December 27, 2013
Work Order: 1313348

Laboratory Report

Project Name **B-HS7 Preliminary SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-ST1-SL-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-04**						
Date/Time Collected		**12/12/13 12:25**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	22	EPA 350.1	0.80	0.19		12/20/13 15:39	20
Nitrate (as N)	mg/L	8.4	EPA 300.0	0.04	0.01		12/13/13 03:34	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 03:34	1
Total Kjeldahl Nitrogen	mg/L	26	EPA 351.2	1.0	0.25	12/17/13 15:20	12/19/13 17:00	5
Nitrate+Nitrite (N)	mg/L	8.4	EPA 300.0	0.08	0.02		12/13/13 03:34	1
Sample Description		**BHS7-ST1-DP-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-05**						
Date/Time Collected		**12/12/13 13:00**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	30	EPA 350.1	0.80	0.19		12/20/13 15:41	20
Nitrate (as N)	mg/L	16	EPA 300.0	0.04	0.01		12/13/13 03:44	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 03:44	1
Total Kjeldahl Nitrogen	mg/L	35	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:12	9.62
Nitrate+Nitrite (N)	mg/L	16	EPA 300.0	0.08	0.02		12/13/13 03:44	1
Sample Description		**BHS7-ST1-SSL-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-06**						
Date/Time Collected		**12/12/13 12:55**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	35	EPA 350.1	0.80	0.19		12/20/13 15:44	20
Nitrate (as N)	mg/L	15	EPA 300.0	0.04	0.01		12/13/13 03:53	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 03:53	1
Total Kjeldahl Nitrogen	mg/L	39	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:13	9.62
Nitrate+Nitrite (N)	mg/L	15	EPA 300.0	0.08	0.02		12/13/13 03:53	1

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December 27, 2013
Work Order: 1313348

Laboratory Report

Project Name **B-HS7 Preliminary SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-ST1-SL-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-07**						
Date/Time Collected		**12/12/13 12:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	11	EPA 350.1	0.40	0.095		12/20/13 14:32	10
Nitrate (as N)	mg/L	7.4	EPA 300.0	0.04	0.01		12/13/13 04:02	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 04:02	1
Total Kjeldahl Nitrogen	mg/L	14	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:14	9.62
Nitrate+Nitrite (N)	mg/L	7.4	EPA 300.0	0.08	0.02		12/13/13 04:02	1
Sample Description		**BHS7-ST2-DP-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-08**						
Date/Time Collected		**12/12/13 10:00**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.40	EPA 350.1	0.040	0.009		12/20/13 15:45	1
Carbonaceous BOD	mg/L	120	SM 5210B	2	2	12/13/13 13:10	12/18/13 11:26	1
Nitrate (as N)	mg/L	0.53	EPA 300.0	0.40	0.10		12/13/13 04:12	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 04:12	10
Total Kjeldahl Nitrogen	mg/L	30	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:16	9.62
Total Suspended Solids	mg/L	39	SM 2540D	1	1	12/16/13 16:38	12/17/13 16:54	1
Nitrate+Nitrite (N)	mg/L	0.53 I	EPA 300.0	0.80	0.20		12/13/13 04:12	10
Sample Description		**BHS7-ST2-OB-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-09**						
Date/Time Collected		**12/12/13 13:20**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.63	EPA 350.1	0.040	0.009		12/20/13 15:47	1
Nitrate (as N)	mg/L	0.53	EPA 300.0	0.40	0.10		12/13/13 04:21	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 04:21	10
Total Kjeldahl Nitrogen	mg/L	24	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:17	9.62
Nitrate+Nitrite (N)	mg/L	0.53 I	EPA 300.0	0.80	0.20		12/13/13 04:21	10

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10002 Princess Palm Ave, Suite 200
Tampa, FL 33619

December 27, 2013
Work Order: 1313348

Laboratory Report

Project Name		B-HS7 Preliminary SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST2-DP-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-10**						
Date/Time Collected		**12/12/13 13:13**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.61	EPA 350.1	0.040	0.009		12/18/13 13:42	1
Nitrate (as N)	mg/L	0.48	EPA 300.0	0.40	0.10		12/13/13 04:31	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 04:31	10
Total Kjeldahl Nitrogen	mg/L	26	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:18	9.62
Nitrate+Nitrite (N)	mg/L	0.48 I	EPA 300.0	0.80	0.20		12/13/13 04:31	10
Sample Description		**BHS7-ST2-DP-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-11**						
Date/Time Collected		**12/12/13 10:33**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.53	EPA 350.1	0.040	0.009		12/18/13 13:44	1
Carbonaceous BOD	mg/L	340	SM 5210B	2	2	12/13/13 13:10	12/18/13 11:26	1
Nitrate (as N)	mg/L	0.51	EPA 300.0	0.40	0.10		12/13/13 04:40	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 04:40	10
Total Kjeldahl Nitrogen	mg/L	25	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:19	9.62
Total Suspended Solids	mg/L	40	SM 2540D	1	1	12/16/13 16:38	12/17/13 16:54	1
Nitrate+Nitrite (N)	mg/L	0.51 I	EPA 300.0	0.80	0.20		12/13/13 04:40	10
Sample Description		**BHS7-ST2-OB-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-12**						
Date/Time Collected		**12/12/13 12:33**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.14	EPA 350.1	0.040	0.009		12/18/13 13:46	1
Nitrate (as N)	mg/L	0.34 I	EPA 300.0	0.40	0.10		12/13/13 04:49	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 04:49	10
Total Kjeldahl Nitrogen	mg/L	8.8	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:21	9.62
Nitrate+Nitrite (N)	mg/L	0.34 I	EPA 300.0	0.80	0.20		12/13/13 04:49	10

Florida Certification Number: E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q.A. Manager

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Work Order: 1313348

Laboratory Report

Project Name **B-HS7 Preliminary SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-ST2-DP-05**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-13**						
Date/Time Collected		**12/12/13 12:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.15	EPA 350.1	0.040	0.009		12/18/13 13:48	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 05:27	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 05:27	1
Total Kjeldahl Nitrogen	mg/L	9.0	EPA 351.2	1.9	0.48	12/17/13 15:25	12/19/13 17:23	9.62
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		12/13/13 05:27	1
Sample Description		**BHS7-ST2-SL-05**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-14**						
Date/Time Collected		**12/12/13 12:58**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.060	EPA 350.1	0.040	0.009		12/18/13 13:50	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 05:36	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 05:36	1
Total Kjeldahl Nitrogen	mg/L	4.6	EPA 351.2	0.20	0.05	12/17/13 15:25	12/19/13 16:33	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		12/13/13 05:36	1
Sample Description		**BHS7-ST2-DP-06**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-15**						
Date/Time Collected		**12/12/13 11:45**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.31	EPA 350.1	0.040	0.009		12/18/13 14:00	1
Carbonaceous BOD	mg/L	120	SM 5210B	2	2	12/13/13 13:10	12/18/13 11:26	1
Nitrate (as N)	mg/L	0.42	EPA 300.0	0.40	0.10		12/13/13 05:46	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 05:46	10
Total Kjeldahl Nitrogen	mg/L	22	EPA 351.2	1.9	0.48	12/19/13 10:35	12/26/13 16:19	9.62
Total Suspended Solids	mg/L	40	SM 2540D	1	1	12/16/13 16:38	12/17/13 16:54	1
Nitrate+Nitrite (N)	mg/L	0.42 I	EPA 300.0	0.80	0.20		12/13/13 05:46	10

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Laboratory Report

Project Name **B-HS7 Preliminary SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-ST2-OB-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-16**						
Date/Time Collected		**12/12/13 12:20**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.37	EPA 350.1	0.040	0.009		12/18/13 14:02	1
Nitrate (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 05:55	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 05:55	10
Total Kjeldahl Nitrogen	mg/L	22	EPA 351.2	1.9	0.48	12/19/13 10:35	12/26/13 16:21	9.62
Nitrate+Nitrite (N)	mg/L	0.20 U	EPA 300.0	0.80	0.20		12/13/13 05:55	10
Sample Description		**BHS7-ST2-DP-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-17**						
Date/Time Collected		**12/12/13 12:03**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.37	EPA 350.1	0.040	0.009		12/18/13 14:04	1
Nitrate (as N)	mg/L	0.46	EPA 300.0	0.40	0.10		12/13/13 06:04	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 06:04	10
Total Kjeldahl Nitrogen	mg/L	20	EPA 351.2	1.9	0.48	12/19/13 10:35	12/26/13 16:23	9.62
Nitrate+Nitrite (N)	mg/L	0.46 I	EPA 300.0	0.80	0.20		12/13/13 06:04	10
Sample Description		**BHS7-ST2-DP-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-18**						
Date/Time Collected		**12/12/13 11:06**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.34	EPA 350.1	0.040	0.009		12/18/13 14:06	1
Carbonaceous BOD	mg/L	88	SM 5210B	2	2	12/13/13 13:10	12/18/13 11:26	1
Nitrate (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 06:14	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/13/13 06:14	10
Total Kjeldahl Nitrogen	mg/L	13	EPA 351.2	1.9	0.48	12/19/13 10:33	12/26/13 10:18	9.62
Total Suspended Solids	mg/L	29	SM 2540D	1	1	12/16/13 16:38	12/17/13 16:54	1
Nitrate+Nitrite (N)	mg/L	0.20 U	EPA 300.0	0.80	0.20		12/13/13 06:14	10

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Laboratory Report

Project Name		**B-HS7 Preliminary SE#1**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-EFF-SL-06**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-19**						
Date/Time Collected		**12/12/13 09:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.011 I	EPA 350.1	0.040	0.009		12/18/13 14:08	1
Nitrate (as N)	mg/L	2.2	EPA 300.0	0.04	0.01		12/13/13 06:23	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 06:23	1
Total Kjeldahl Nitrogen	mg/L	0.68	EPA 351.2	0.20	0.05	12/19/13 10:33	12/26/13 12:00	1
Nitrate+Nitrite (N)	mg/L	2.2	EPA 300.0	0.08	0.02		12/13/13 06:23	1
Sample Description		**BHS7-EFF-SL-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-22**						
Date/Time Collected		**12/12/13 10:10**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	4.3	EPA 350.1	0.20	0.047		12/18/13 14:48	5
Nitrate (as N)	mg/L	11	EPA 300.0	0.04	0.01		12/13/13 06:33	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 06:33	1
Total Kjeldahl Nitrogen	mg/L	6.6	EPA 351.2	0.40	0.10	12/19/13 10:33	12/26/13 12:01	1.98
Nitrate+Nitrite (N)	mg/L	11	EPA 300.0	0.08	0.02		12/13/13 06:33	1
Sample Description		**BHS7-EFF-SSL-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-24**						
Date/Time Collected		**12/12/13 10:47**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	7.8	EPA 350.1	0.20	0.047		12/18/13 14:49	5
Nitrate (as N)	mg/L	12	EPA 300.0	0.04	0.01		12/13/13 06:42	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 06:42	1
Total Kjeldahl Nitrogen	mg/L	8.9	EPA 351.2	1.0	0.25	12/19/13 10:33	12/26/13 12:03	5
Nitrate+Nitrite (N)	mg/L	12	EPA 300.0	0.08	0.02		12/13/13 06:42	1

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Laboratory Report

Project Name **B-HS7 Preliminary SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-EFF-SL-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-25**						
Date/Time Collected		**12/12/13 11:32**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	1.1	EPA 350.1	0.040	0.009		12/18/13 14:14	1
Nitrate (as N)	mg/L	7.2	EPA 300.0	0.04	0.01		12/13/13 06:51	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/13/13 06:51	1
Total Kjeldahl Nitrogen	mg/L	11	EPA 351.2	1.9	0.48	12/19/13 10:33	12/26/13 10:25	9.62
Nitrate+Nitrite (N)	mg/L	7.2	EPA 300.0	0.08	0.02		12/13/13 06:51	1
Sample Description		**BHS7-EFF-SSL-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-27**						
Date/Time Collected		**12/12/13 12:15**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	2.9	EPA 350.1	0.20	0.047		12/20/13 15:48	5
Nitrate (as N)	mg/L	3.1	EPA 300.0	0.04	0.01		12/14/13 02:38	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/14/13 02:38	1
Total Kjeldahl Nitrogen	mg/L	4.6	EPA 351.2	1.0	0.25	12/19/13 10:33	12/26/13 12:05	5
Nitrate+Nitrite (N)	mg/L	3.1	EPA 300.0	0.08	0.02		12/14/13 02:38	1
Sample Description		**BHS7-EFF-SL-09**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-28**						
Date/Time Collected		**12/12/13 10:57**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	3.1	EPA 350.1	0.20	0.047		12/20/13 15:50	5
Nitrate (as N)	mg/L	7.3	EPA 300.0	0.04	0.01		12/14/13 02:47	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		12/14/13 02:47	1
Total Kjeldahl Nitrogen	mg/L	6.1	EPA 351.2	1.0	0.25	12/19/13 10:33	12/26/13 12:06	5
Nitrate+Nitrite (N)	mg/L	7.3	EPA 300.0	0.08	0.02		12/14/13 02:47	1

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Laboratory Report

Project Name		**B-HS7 Preliminary SE#1**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-EFF-DP-12**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-29**						
Date/Time Collected		**12/12/13 11:20**						
Collected by		**Sean Schmidt**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Ammonia as N	mg/L	0.92	EPA 350.1	0.040	0.009		12/20/13 15:52	1
Nitrate (as N)	mg/L	1.2	EPA 300.0	0.40	0.10		12/14/13 03:00	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		12/14/13 03:00	10
Total Kjeldahl Nitrogen	mg/L	15	EPA 351.2	1.9	0.48	12/19/13 10:33	12/26/13 10:30	9.62
Nitrate+Nitrite (N)	mg/L	1.2	EPA 300.0	0.80	0.20		12/14/13 03:00	10
Sample Description		**BHS7-EFF-SSL-05**						
Matrix		**Wastewater**						
SAL Sample Number		**1313348-30**						
Date/Time Collected		**12/12/13 11:05**						
Collected by		**Client**						
Date/Time Received		**12/12/13 16:00**						
Inorganics								
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		12/14/13 03:00	1

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31301 - Ion Chromatography 300.0 Prep										
Blank (BL31301-BLK1)					Prepared & Analyzed: 12/13/13					
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
LCS (BL31301-BS1)					Prepared & Analyzed: 12/13/13					
Nitrite (as N)	1.52	0.04	0.01	mg/L	1.4		109	85-115		
Nitrate (as N)	1.77	0.04	0.01	mg/L	1.7		104	85-115		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
LCS Dup (BL31301-BSD1)					Prepared & Analyzed: 12/13/13					
Nitrite (as N)	1.53	0.04	0.01	mg/L	1.4		109	85-115	0.4	200
Nitrate (as N)	1.75	0.04	0.01	mg/L	1.7		103	85-115	0.9	200
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Matrix Spike (BL31301-MS1)		**Source: 1313349-01**			Prepared & Analyzed: 12/13/13					
Nitrate (as N)	2.79	0.04	0.01	mg/L	1.7	0.879	112	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4	ND	104	85-115		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Matrix Spike (BL31301-MS2)		**Source: 1313348-01**			Prepared & Analyzed: 12/13/13					
Nitrite (as N)	1.41	0.04	0.01	mg/L	1.4	ND	101	85-115		
Nitrate (as N)	1.83	0.04	0.01	mg/L	1.7	0.263	92	85-115		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31302 - Ion Chromatography 300.0 Prep										
Blank (BL31302-BLK1)					Prepared & Analyzed: 12/13/13					
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
LCS (BL31302-BS1)					Prepared & Analyzed: 12/13/13					
Nitrite (as N)	1.52	0.04	0.01	mg/L	1.4		109	85-115		
Nitrate (as N)	1.77	0.04	0.01	mg/L	1.7		104	85-115		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
LCS Dup (BL31302-BSD1)					Prepared & Analyzed: 12/13/13					
Nitrite (as N)	1.51	0.04	0.01	mg/L	1.4		108	85-115	0.7	200
Nitrate (as N)	1.76	0.04	0.01	mg/L	1.7		104	85-115	0.3	200
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
Matrix Spike (BL31302-MS1)		**Source: 1313348-12**			Prepared & Analyzed: 12/13/13					
Nitrite (as N)	15.0	0.40	0.10	mg/L	14	ND	107	85-115		
Nitrate (as N)	16.3	0.40	0.10	mg/L	17	0.340	94	85-115		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Matrix Spike (BL31302-MS2)		**Source: 1313348-25**			Prepared & Analyzed: 12/13/13					
Nitrate (as N)	8.83	0.04	0.01	mg/L	1.7	7.18	97	85-115		
Nitrite (as N)	1.41	0.04	0.01	mg/L	1.4	ND	100	85-115		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31303 - Ion Chromatography 300.0 Prep										
Blank (BL31303-BLK1)					Prepared & Analyzed: 12/14/13					
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.901*			*mg/L*	*1.0*		*90*	*90-115*		
Surrogate: Dichloroacetate	*0.901*			*mg/L*	*1.0*		*90*	*90-115*		
LCS (BL31303-BS1)					Prepared & Analyzed: 12/14/13					
Nitrate (as N)	1.73	0.04	0.01	mg/L	1.7		102	85-115		
Nitrite (as N)	1.51	0.04	0.01	mg/L	1.4		108	85-115		
Surrogate: Dichloroacetate	*0.955*			*mg/L*	*1.0*		*96*	*90-115*		
Surrogate: Dichloroacetate	*0.955*			*mg/L*	*1.0*		*96*	*90-115*		
LCS Dup (BL31303-BSD1)					Prepared & Analyzed: 12/14/13					
Nitrate (as N)	1.72	0.04	0.01	mg/L	1.7		101	85-115	0.4	200
Nitrite (as N)	1.51	0.04	0.01	mg/L	1.4		108	85-115	0.07	200
Surrogate: Dichloroacetate	*0.956*			*mg/L*	*1.0*		*96*	*90-115*		
Surrogate: Dichloroacetate	*0.956*			*mg/L*	*1.0*		*96*	*90-115*		
Matrix Spike (BL31303-MS1)		**Source: 1313356-01**			Prepared & Analyzed: 12/16/13					
Nitrate (as N)	162	4.0	1.0	mg/L	170		95	85-115		
Nitrite (as N)	147	4.0	1.0	mg/L	140		105	85-115		
Surrogate: Dichloroacetate	*0.933*			*mg/L*	*1.0*		*93*	*90-115*		
Surrogate: Dichloroacetate	*0.933*			*mg/L*	*1.0*		*93*	*90-115*		
Matrix Spike (BL31303-MS2)		**Source: 1313078-01**			Prepared & Analyzed: 12/17/13					
Nitrite (as N)	15.4	0.40	0.10	mg/L	14	0.969	103	85-115		
Nitrate (as N)	17.0	0.40	0.10	mg/L	17	1.38	92	85-115		
Surrogate: Dichloroacetate	*0.975*			*mg/L*	*1.0*		*98*	*90-115*		
Surrogate: Dichloroacetate	*0.975*			*mg/L*	*1.0*		*98*	*90-115*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31318 - BOD										
Blank (BL31318-BLK1)					Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	2 U	2	2	mg/L						
Blank (BL31318-BLK2)					Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BL31318-BS1)					Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	180	2	2	mg/L	200		90	85-115		
LCS (BL31318-BS2)					Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	180	2	2	mg/L	200		90	85-115		
LCS Dup (BL31318-BSD1)					Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	204	2	2	mg/L	200		102	85-115	12	200
LCS Dup (BL31318-BSD2)					Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	184	2	2	mg/L	200		92	85-115	2	200
Duplicate (BL31318-DUP1)		**Source: 1313360-03**			Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	160	2	2	mg/L		160			1	25
Duplicate (BL31318-DUP2)		**Source: 1313360-04**			Prepared: 12/13/13 Analyzed: 12/18/13					
Carbonaceous BOD	210	2	2	mg/L		200			4	25
Batch BL31638 - TSS prep										
Blank (BL31638-BLK1)					Prepared: 12/16/13 Analyzed: 12/17/13					
Total Suspended Solids	1 U	1	1	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 BL31638 - TSS prep										
LCS (BL31638-BS1)					Prepared: 12/16/13 Analyzed: 12/17/13					
Total Suspended Solids	51.8	1	1	mg/L	50		104	85-115		
Duplicate (BL31638-DUP1)		**Source: 1313308-01**			Prepared: 12/16/13 Analyzed: 12/17/13					
Total Suspended Solids	5.00	1	1	mg/L		5.00			0	30
Batch BL31708 - Ammonia by SEAL										
Blank (BL31708-BLK1)					Prepared & Analyzed: 12/18/13					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BL31708-BS1)					Prepared & Analyzed: 12/18/13					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50		101	90-110		
Matrix Spike (BL31708-MS1)		**Source: 1313270-01**			Prepared & Analyzed: 12/18/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	ND	98	90-110		
Matrix Spike (BL31708-MS2)		**Source: 1313268-01**			Prepared & Analyzed: 12/18/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	ND	98	90-110		
Matrix Spike Dup (BL31708-MSD1)		**Source: 1313270-01**			Prepared & Analyzed: 12/18/13					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	ND	99	90-110	1	10
Matrix Spike Dup (BL31708-MSD2)		**Source: 1313268-01**			Prepared & Analyzed: 12/18/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	ND	99	90-110	0.6	10
Batch BL31729 - Digestion for TKN by EPA 351.2										
Blank (BL31729-BLK1)					Prepared: 12/17/13 Analyzed: 12/19/13					
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 BL31729 - Digestion for TKN by EPA 351.2										
LCS (BL31729-BS1)					Prepared: 12/17/13 Analyzed: 12/19/13					
Total Kjeldahl Nitrogen	2.61	0.20	0.05	mg/L	2.5		103	90-110		
Matrix Spike (BL31729-MS1)		**Source: 1313478-02**			Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	3.16	0.20	0.05	mg/L	2.5	0.794	93	90-110		
Matrix Spike (BL31729-MS2)		**Source: 1313466-07**			Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	3.17	0.20	0.05	mg/L	2.5	0.820	93	90-110		
Matrix Spike Dup (BL31729-MSD1)		**Source: 1313478-02**			Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	3.09	0.20	0.05	mg/L	2.5	0.794	91	90-110	2	20
Matrix Spike Dup (BL31729-MSD2)		**Source: 1313466-07**			Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	3.44	0.20	0.05	mg/L	2.5	0.820	103	90-110	8	20
Batch BL31730 - Digestion for TKN by EPA 351.2										
Blank (BL31730-BLK1)					Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BL31730-BS1)					Prepared: 12/17/13 Analyzed: 12/19/13					
Total Kjeldahl Nitrogen	2.62	0.20	0.05	mg/L	2.5		103	90-110		
Matrix Spike (BL31730-MS1)		**Source: 1313348-09**			Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	27.2	1.9	0.48	mg/L	2.5	24.0	124	90-110		
Matrix Spike Dup (BL31730-MSD1)		**Source: 1313348-09**			Prepared: 12/17/13 Analyzed: 12/20/13					
Total Kjeldahl Nitrogen	26.7	1.9	0.48	mg/L	2.5	24.0	104	90-110	2	20

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31915 - Digestion for TKN by EPA 351.2										
Blank (BL31915-BLK1)					Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BL31915-BS1)					Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.33	0.20	0.05	mg/L	2.5		92	90-110		
Matrix Spike (BL31915-MS1)		**Source: 1313552-01**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.48	0.20	0.05	mg/L	2.5	ND	98	90-110		
Matrix Spike (BL31915-MS2)		**Source: 1313528-07**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.92	0.20	0.05	mg/L	2.5	0.444	98	90-110		
Matrix Spike Dup (BL31915-MSD1)		**Source: 1313552-01**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.47	0.20	0.05	mg/L	2.5	ND	98	90-110	0.5	20
Matrix Spike Dup (BL31915-MSD2)		**Source: 1313528-07**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.90	0.20	0.05	mg/L	2.5	0.444	97	90-110	0.5	20
Batch BL31917 - Digestion for TKN by EPA 351.2										
Blank (BL31917-BLK1)					Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BL31917-BS1)					Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.29	0.20	0.05	mg/L	2.5		91	90-110		
Matrix Spike (BL31917-MS1)		**Source: 1313470-01**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.64	0.20	0.05	mg/L	2.5	0.221	95	90-110		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31917 - Digestion for TKN by EPA 351.2										
Matrix Spike (BL31917-MS2)		**Source: 1313470-02**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	ses at 90%	0.20	0.05	mg/L	2.5	0.358	90	90-110		
Matrix Spike Dup (BL31917-MSD1)		**Source: 1313470-01**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.64	0.20	0.05	mg/L	2.5	0.221	96	90-110	0.2	20
Matrix Spike Dup (BL31917-MSD2)		**Source: 1313470-02**			Prepared: 12/19/13 Analyzed: 12/26/13					
Total Kjeldahl Nitrogen	2.70	0.20	0.05	mg/L	2.5	0.358	93	90-110	3	20
Batch BL31926 - Ammonia by SEAL										
Blank (BL31926-BLK1)					Prepared & Analyzed: 12/20/13					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BL31926-BS1)					Prepared & Analyzed: 12/20/13					
Ammonia as N	0.52	0.040	0.009	mg/L	0.50		105	90-110		
Matrix Spike (BL31926-MS1)		**Source: 1313528-07**			Prepared & Analyzed: 12/20/13					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50	0.026	98	90-110		
Matrix Spike (BL31926-MS2)		**Source: 1313552-01**			Prepared & Analyzed: 12/20/13					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	ND	99	90-110		
Matrix Spike Dup (BL31926-MSD1)		**Source: 1313528-07**			Prepared & Analyzed: 12/20/13					
Ammonia as N	0.53	0.040	0.009	mg/L	0.50	0.026	100	90-110	2	10
Matrix Spike Dup (BL31926-MSD2)		**Source: 1313552-01**			Prepared & Analyzed: 12/20/13					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	ND	99	90-110	0.04	10

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BL31927 - Ammonia by SEAL										
Blank (BL31927-BLK1)					Prepared & Analyzed: 12/24/13					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BL31927-BS1)					Prepared & Analyzed: 12/24/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50		97	90-110		
Matrix Spike (BL31927-MS1)		**Source: 1313313-01**			Prepared & Analyzed: 12/24/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	ND	98	90-110		
Matrix Spike (BL31927-MS2)		**Source: 1313509-02**			Prepared & Analyzed: 12/24/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	0.023	93	90-110		
Matrix Spike Dup (BL31927-MSD1)		**Source: 1313313-01**			Prepared & Analyzed: 12/24/13					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	ND	99	90-110	1	10
Matrix Spike Dup (BL31927-MSD2)		**Source: 1313509-02**			Prepared & Analyzed: 12/24/13					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	0.023	95	90-110	1	10

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* 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 limts 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 :

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Kathryn@southernanalyticallabs.com

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1313348

Client Name: Hazen and Sawyer

Project Name / Location: B-HS7 Preliminary SE#1

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	500mLP, Cool TSS, CBOD, NOx	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx				Field Temperature	Field pH	Field Conductivity	Field DO	No. of Containers (Total per each location)
13	BHS7-ST2-DP-05	12/12/13	12:40	WW		X		1	1				20.0	5.07	1655	0.12	
14	BHS7-ST2-SL-05		12:58	WW		X		1	1				20.3	5.13	1706	1.76	
15	BHS7-ST2-DP-06		11:45	WW		X	1	1					21.6	5.16	1968	0.15	
16	BHS7-ST2-OB-03		12:20	WW		X		1	1				23.2	5.51	1383	0.16	
17	BHS7-ST2-DP-07		12:03	WW		X		1	1				23.6	5.35	1578	0.01	
18	BHS7-ST2-DP-08		11:06	WW		X	1	1					18.8	5.61	1494	0.18	
19	BHS7-EFF-SL-06		9:40	WW		X		✓	1				16.9	5.42	466	5.62	
20	~~BHS7-EFF-DP-09~~			~~WW~~		~~X~~		1	1	NO water							
21	~~BHS7-EFF-SSL-02~~			~~WW~~		~~X~~		1	1	NO water							
22	BHS7-EFF-SL-07		10:10	WW		X		1	1				18.6	5.23	1449	6.25	
23	~~BHS7-EFF-DP-10~~			~~WW~~		~~X~~		1	1	NO water							
24	BHS7-EFF-SSL-03		10:47	WW		X		✓	1				16.9	5.03	1766	4.58	

	Date/Time:	Received:	Date/Time:
Containers Prepared/ Relinquished: S Lynn	2:25PM 11/25		
Relinquished:	1400 12/12/13	Received: K Mudmark	Date/Time: 1600 12/12/13
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

Instructions / Remarks:

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. 1313348

Client Name: Hazen and Sawyer

Project Name / Location: B-HS7 Preliminary SE#1

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

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	500mLP, Cool TSS, CBOD, NOx	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx					Field Temperature	Field pH	Field Conductivity	Field DO	No. of Containers (Total per each location)
01	BHS7-PUMP	12/12/13	10:32	WW		X	1	1						22.8	6.8	1684	0.07	
02	BHS7-ST1-SL-01		13:10	WW		X		1	1					22.1	523	1929	5.27	
03	BHS7-ST1-SL-02		13:20 ~~WW~~			X		1	1					21.3	5.10	1223		OL ~~Grab~~
04	BHS7-ST1-SL-03		12:25	WW		X		1	1					21.3	5.09	2070	3.67	
05	BHS7-ST1-DP-01		13:00	WW		X		1	1					20.9	4.28	23200	3.05	
06	BHS7-ST1-SSL-01		12:55	WW		X		✗	1					20.1	4.73	2191	4.02	
07	BHS7-ST1-SL-04		12:40	WW		X		1	1					20.1	5.28	1245	3.07	
08	BHS7-ST2-DP-02		10:00	WW		X	1	1						20.7	5.38	1579	0.07	
09	BHS7-ST2-OB-01		13:20	WW		X		1	1					20.8	5.46	1774	4.61	
10	BHS7-ST2-DP-03		13:13	WW		X		1	1					21.5	5.11	1689	0.14	
11	BHS7-ST2-DP-04		10:33	WW		X	1	1						19.7	4.96	1994	0.19	
12	BHS7-ST2-OB-02		12:33					1	1					22.2	5.09	1656	0.73	

PARAMETER / CONTAINER DESCRIPTION

Containers Prepared/ Relinquished:	Date/Time: 2:20 PM 11/25	Received:	Date/Time:
Relinquished:	Date/Time: 1600 12/12/13	Received:	Date/Time: 1600 12/12/13
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

Instructions / Remarks:

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. 13133348

Client Name: Hazen and Sawyer

Project Name / Location: B-HS7 Preliminary SE#1

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

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	500mLP, Cool TSS, CBOD, NOx	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx				Field Temperature	Field pH	Field Conductivity	Field DO	No. of Containers (Total per each location)
		PARAMETER / CONTAINER DESCRIPTION															
25	BHS7-EFF-SL-08	12/12/13	11:32	WW		X		1	1				21.2	5.44	17.85	5.66	
26	BHS7-EFF-DP-11		12:20	WW		X		✓	✓				no reading				
27	BHS7-EFF-SSL-04		12:15	WW		X		✓	1				no reading				
28	BHS7-EFF-SL-09		10:57	WW		X		✓	1				18.7	5.44	1245	6.02	
29	BHS7-EFF-DP-12		11:20	WW		X		1	1				20.0	5.70	1449	2.19	
30	BHS7-EFF-SSL-05		11:05	WW		X		✓	✓				no reading				

	Date/Time	Received	Date/Time
Containers Prepared/ Relinquished:	2:25pm 11/25	Received:	Date/Time:
Relinquished:	Date/Time: 1600 12/12/13	Received: K. Mudgett	Date/Time: 1600 12/12/13
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

Instructions / Remarks:

Chain of Custody.xls
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Chain of Custody

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

February 3, 2014
Work Order: 1400292

Laboratory Report

Project Name		**B-HS7 SE#1**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-PUMP**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-01**						
Date/Time Collected		**01/20/14 12:03**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	50	EPA 350.1	2.0	0.47		01/27/14 14:47	50
Carbonaceous BOD	mg/L	78	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	120	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	530	EPA 300.0	20	5.0		01/22/14 10:17	100
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:12	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:12	1
Orthophosphate as P	mg/L	5.4	EPA 300.0	0.040	0.010		01/20/14 22:12	1
Phosphorous - Total as P	mg/L	6.6	SM 4500P-E	0.20	0.050	01/27/14 16:27	01/31/14 16:41	5
Total Alkalinity	mg/L	310	SM 2320B	8.0	2.0		01/27/14 14:16	1
Total Kjeldahl Nitrogen	mg/L	51	EPA 351.2	4.2	1.0	01/30/14 09:07	01/31/14 12:16	20.83
Total Suspended Solids	mg/L	36	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	33	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/20/14 22:12	1
Microbiology								
E. Coli	MPN/100 mL	380	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	32,000	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1
Sample Description		**BHS7-PUMP-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-02**						
Date/Time Collected		**01/20/14 12:08**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	49	EPA 350.1	2.0	0.47		01/27/14 14:49	50
Carbonaceous BOD	mg/L	75	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	110	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	530	EPA 300.0	20	5.0		01/22/14 10:27	100
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:21	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:21	1
Orthophosphate as P	mg/L	5.5	EPA 300.0	0.040	0.010		01/20/14 22:21	1
Phosphorous - Total as P	mg/L	6.7	SM 4500P-E	0.20	0.050	01/27/14 16:27	01/31/14 16:42	5
Total Alkalinity	mg/L	310	SM 2320B	8.0	2.0		01/27/14 14:25	1
Total Kjeldahl Nitrogen	mg/L	50	EPA 351.2	4.2	1.0	01/30/14 09:07	01/31/14 10:45	20.83
Total Suspended Solids	mg/L	33	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	32	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1

Florida Certification Number: E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q.A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
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Hazen and Sawyer
10002 Princess Palm Ave, Suite 200
Tampa, FL 33619

February 3, 2014
Work Order: 1400292

Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-PUMP-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-02**						
Date/Time Collected		**01/20/14 12:08**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/20/14 22:21	1
Microbiology								
E. Coli	MPN/100 mL	440	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	19,000	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1
Sample Description		**BHS7-ST1-SL-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-03**						
Date/Time Collected		**01/20/14 10:45**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	1.9	EPA 350.1	0.040	0.009		01/27/14 13:05	1
Nitrate (as N)	mg/L	36	EPA 300.0	0.40	0.10		01/22/14 10:36	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:31	1
Total Kjeldahl Nitrogen	mg/L	4.6	EPA 351.2	1.0	0.25	01/30/14 09:07	01/31/14 12:18	5
Nitrate+Nitrite (N)	mg/L	36	EPA 300.0	0.44	0.11		01/22/14 10:36	10
Sample Description		**BHS7-ST1-SL-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-04**						
Date/Time Collected		**01/20/14 10:55**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.35	EPA 350.1	0.040	0.009		01/27/14 13:07	1
Nitrate (as N)	mg/L	51	EPA 300.0	0.40	0.10		01/22/14 10:45	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:40	1
Total Kjeldahl Nitrogen	mg/L	2.2	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 10:49	1
Nitrate+Nitrite (N)	mg/L	51	EPA 300.0	0.44	0.11		01/22/14 10:45	10

Hazen and Sawyer
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February 3, 2014
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Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST1-SL-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-05**						
Date/Time Collected		**01/20/14 11:07**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	3.9	EPA 350.1	0.20	0.047		01/23/14 12:53	5
Nitrate (as N)	mg/L	36	EPA 300.0	0.40	0.10		01/22/14 10:55	10
Nitrite (as N)	mg/L	4.3	EPA 300.0	0.04	0.01		01/20/14 22:49	1
Total Kjeldahl Nitrogen	mg/L	7.1	EPA 351.2	0.40	0.10	01/30/14 09:07	01/31/14 10:50	1.98
Nitrate+Nitrite (N)	mg/L	41	EPA 300.0	0.44	0.11		01/22/14 10:55	10
Sample Description		**BHS7-ST1-DP-01**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-06**						
Date/Time Collected		**01/20/14 11:25**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	3.4	EPA 350.1	0.20	0.047		01/23/14 12:55	5
Nitrate (as N)	mg/L	45	EPA 300.0	0.40	0.10		01/22/14 11:04	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 22:59	1
Total Kjeldahl Nitrogen	mg/L	8.5	EPA 351.2	0.40	0.10	01/30/14 09:07	01/31/14 10:52	1.98
Nitrate+Nitrite (N)	mg/L	45	EPA 300.0	0.44	0.11		01/22/14 11:04	10
Sample Description		**BHS7-ST1-SL-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-07**						
Date/Time Collected		**01/20/14 10:58**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	4.9	EPA 350.1	0.20	0.047		01/23/14 12:56	5
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	15 I	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	380	EPA 300.0	20	5.0		01/23/14 18:34	100
Nitrate (as N)	mg/L	41	EPA 300.0	0.40	0.10		01/20/14 23:08	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 23:08	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		01/20/14 23:08	1
Phosphorous - Total as P	mg/L	0.040	SM 4500P-E	0.040	0.010	01/21/14 11:40	01/24/14 09:52	1
Total Kjeldahl Nitrogen	mg/L	9.7	EPA 351.2	0.40	0.10	01/30/14 09:07	01/31/14 10:54	1.98

SOUTHERN ANALYTICAL LABORATORIES, INC.
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ACCREDITED IN ACCORDANCE WITH nelac

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

February 3, 2014
Work Order: 1400292

Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST1-SL-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-07**						
Date/Time Collected		**01/20/14 10:58**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Total Suspended Solids	mg/L	3	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	3	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1
Nitrate+Nitrite (N)	mg/L	41	EPA 300.0	0.44	0.11		01/20/14 23:08	10
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	10	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1
Sample Description		**BHS7-ST2-DP-02**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-08**						
Date/Time Collected		**01/20/14 08:45**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.43	EPA 350.1	0.040	0.009		01/23/14 11:44	1
Nitrate (as N)	mg/L	0.40	EPA 300.0	0.40	0.10		01/21/14 16:30	10
Nitrite (as N)	mg/L	0.10 U	EPA 300.0	0.40	0.10		01/21/14 16:30	10
Total Kjeldahl Nitrogen	mg/L	16	EPA 351.2	1.9	0.48	01/30/14 09:07	01/31/14 12:20	9.62
Nitrate+Nitrite (N)	mg/L	0.40 I	EPA 300.0	0.80	0.20		01/21/14 16:30	10
Sample Description		**BHS7-ST2-DP-03**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-09**						
Date/Time Collected		**01/20/14 09:00**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.14	EPA 350.1	0.040	0.009		01/23/14 11:46	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 23:27	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/20/14 23:27	1
Total Kjeldahl Nitrogen	mg/L	5.5	EPA 351.2	1.0	0.25	01/30/14 09:07	01/31/14 12:23	5
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/20/14 23:27	1

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February 3, 2014
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Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST2-DP-03-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-10**						
Date/Time Collected		**01/20/14 09:05**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.15	EPA 350.1	0.040	0.009		01/23/14 11:48	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 17:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 17:43	1
Total Kjeldahl Nitrogen	mg/L	5.0	EPA 351.2	1.0	0.25	01/30/14 09:07	01/31/14 12:25	5
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 17:43	1
Sample Description		**BHS7-ST2-DP-04**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-11**						
Date/Time Collected		**01/20/14 09:17**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.081	EPA 350.1	0.040	0.009		01/23/14 11:50	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 17:53	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 17:53	1
Total Kjeldahl Nitrogen	mg/L	4.7	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 17:53	1
Sample Description		**BHS7-ST2-DP-05**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-12**						
Date/Time Collected		**01/20/14 09:38**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.055	EPA 350.1	0.040	0.009		01/23/14 11:52	1
Nitrate (as N)	mg/L	0.07	EPA 300.0	0.04	0.01		01/21/14 18:02	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:02	1
Total Kjeldahl Nitrogen	mg/L	3.2	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 11:09	1
Nitrate+Nitrite (N)	mg/L	0.07 I	EPA 300.0	0.08	0.02		01/21/14 18:02	1

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February 3, 2014
Work Order: 1400292

Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST2-SL-05**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-13**						
Date/Time Collected		**01/20/14 09:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.066	EPA 350.1	0.040	0.009		01/23/14 12:02	1
Nitrate (as N)	mg/L	5.8	EPA 300.0	0.04	0.01		01/21/14 18:11	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:11	1
Total Kjeldahl Nitrogen	mg/L	4.6	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 11:10	1
Nitrate+Nitrite (N)	mg/L	5.8	EPA 300.0	0.08	0.02		01/21/14 18:11	1
Sample Description		**BHS7-ST2-DP-06**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-14**						
Date/Time Collected		**01/20/14 09:55**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.14	EPA 350.1	0.040	0.009		01/22/14 09:37	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:21	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:21	1
Total Kjeldahl Nitrogen	mg/L	7.9	EPA 351.2	1.0	0.25	01/30/14 09:07	01/31/14 12:26	5
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 18:21	1
Sample Description		**BHS7-ST2-DP-06-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-15**						
Date/Time Collected		**01/20/14 10:00**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.14	EPA 350.1	0.040	0.009		01/22/14 09:39	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:30	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:30	1
Total Kjeldahl Nitrogen	mg/L	7.8	EPA 351.2	1.0	0.25	01/30/14 09:07	01/31/14 12:27	5
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 18:30	1

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

February 3, 2014
Work Order: 1400292

Laboratory Report

Project Name		**B-HS7 SE#1**						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST2-DP-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-16**						
Date/Time Collected		**01/20/14 10:19**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.13	EPA 350.1	0.040	0.009		01/22/14 09:41	1
Carbonaceous BOD	mg/L	20	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	380	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	470	EPA 300.0	20	5.0		01/28/14 12:42	100
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:40	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:40	1
Orthophosphate as P	mg/L	35	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Phosphorous - Total as P	mg/L	60	SM 4500P-E	2.1	0.51	01/21/14 11:40	01/24/14 12:35	51.43
Total Alkalinity	mg/L	210	SM 2320B	8.0	2.0		01/27/14 14:36	1
Total Kjeldahl Nitrogen	mg/L	7.2	EPA 351.2	1.0	0.25	01/30/14 09:07	01/31/14 12:28	5
Total Suspended Solids	mg/L	27	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	17	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 18:40	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1
Sample Description		**BHS7-ST2-DP-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-17**						
Date/Time Collected		**01/20/14 10:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.092	EPA 350.1	0.040	0.009		01/23/14 12:04	1
Carbonaceous BOD	mg/L	19	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	1,100	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	460	EPA 300.0	20	5.0		01/28/14 12:55	100
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:49	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:49	1
Orthophosphate as P	mg/L	20	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Phosphorous - Total as P	mg/L	37	SM 4500P-E	0.80	0.20	01/21/14 11:40	01/24/14 12:00	20
Total Alkalinity	mg/L	200	SM 2320B	8.0	2.0		01/27/14 14:47	1
Total Kjeldahl Nitrogen	mg/L	4.7	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 11:21	1
Total Suspended Solids	mg/L	8	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	8	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1

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February 3, 2014
Work Order: 1400292

Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-ST2-DP-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-17**						
Date/Time Collected		**01/20/14 10:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 18:49	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1
Sample Description		**BHS7-EFF-SL-06**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-18**						
Date/Time Collected		**01/20/14 08:35**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.062	EPA 350.1	0.040	0.009		01/22/14 09:43	1
Nitrate (as N)	mg/L	20	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 18:58	1
Total Kjeldahl Nitrogen	mg/L	3.9	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 11:22	1
Nitrate+Nitrite (N)	mg/L	20	EPA 300.0	0.44	0.11		01/22/14 08:30	10
Sample Description		**BHS7-EFF-SL-07**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-20**						
Date/Time Collected		**01/20/14 09:05**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.009 U	EPA 350.1	0.040	0.009		01/22/14 09:45	1
Nitrate (as N)	mg/L	39	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 19:08	1
Total Kjeldahl Nitrogen	mg/L	1.6	EPA 351.2	0.20	0.05	01/30/14 09:07	01/31/14 11:23	1
Nitrate+Nitrite (N)	mg/L	39	EPA 300.0	0.44	0.11		01/22/14 08:30	10

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Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-EFF-DP-10**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-21**						
Date/Time Collected		**01/20/14 09:15**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.065	EPA 350.1	0.040	0.009		01/22/14 09:47	1
Nitrate (as N)	mg/L	35	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 19:45	1
Total Kjeldahl Nitrogen	mg/L	2.5	EPA 351.2	0.20	0.05	01/28/14 15:20	01/30/14 13:25	1
Nitrate+Nitrite (N)	mg/L	35	EPA 300.0	0.44	0.11		01/22/14 08:30	10
Sample Description		**BHS7-EFF-SL-08**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-22**						
Date/Time Collected		**01/20/14 09:50**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.88	EPA 350.1	0.040	0.009		01/22/14 09:49	1
Nitrate (as N)	mg/L	42	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 19:55	1
Total Kjeldahl Nitrogen	mg/L	4.0	EPA 351.2	0.20	0.05	01/28/14 15:20	01/30/14 13:26	1
Nitrate+Nitrite (N)	mg/L	42	EPA 300.0	0.44	0.11		01/22/14 08:30	10
Sample Description		**BHS7-EFF-DP-11**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-23**						
Date/Time Collected		**01/20/14 11:10**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Nitrate (as N)	mg/L	36	EPA 300.0	0.40	0.10		01/22/14 08:30	10
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 20:04	1
Nitrate+Nitrite (N)	mg/L	36	EPA 300.0	0.44	0.11		01/22/14 08:30	10

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February 3, 2014
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Laboratory Report

Project Name **B-HS7 SE#1**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**BHS7-EFF-SL-09**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-24**						
Date/Time Collected		**01/20/14 10:15**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.22	EPA 350.1	0.080	0.019		01/22/14 12:06	2
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	10 U	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	83 L	EPA 300.0	0.20	0.050		01/21/14 20:13	1
Nitrate (as N)	mg/L	40 L	EPA 300.0	0.04	0.01		01/21/14 20:13	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 20:13	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		01/21/14 20:13	1
Phosphorous - Total as P	mg/L	0.016 I	SM 4500P-E	0.040	0.010	01/21/14 11:40	01/24/14 09:55	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1
Nitrate+Nitrite (N)	mg/L	40	EPA 300.0	0.08	0.02		01/21/14 20:13	1
Sample Description		**BHS7-EFF-DP-12**						
Matrix		**Wastewater**						
SAL Sample Number		**1400292-25**						
Date/Time Collected		**01/20/14 10:25**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.13	EPA 350.1	0.040	0.009		01/22/14 10:01	1
Nitrate (as N)	mg/L	4.2	EPA 300.0	0.04	0.01		01/21/14 20:23	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 20:23	1
Total Kjeldahl Nitrogen	mg/L	4.6	EPA 351.2	0.20	0.05	01/28/14 15:20	01/30/14 13:28	1
Nitrate+Nitrite (N)	mg/L	4.2	EPA 300.0	0.08	0.02		01/21/14 20:23	1
Sample Description		**BHS7-TAP**						
Matrix		**Drinking Water**						
SAL Sample Number		**1400292-26**						
Date/Time Collected		**01/20/14 11:35**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.009 U	EPA 350.1	0.040	0.009		01/22/14 10:03	1
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	10 U	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1

Florida Certification Number: E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q.A. Manager

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February 3, 2014
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Laboratory Report

Project Name		B-HS7 SE#1						
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**BHS7-TAP**						
Matrix		**Drinking Water**						
SAL Sample Number		**1400292-26**						
Date/Time Collected		**01/20/14 11:35**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Chloride	mg/L	4.0	EPA 300.0	0.20	0.050		01/21/14 20:32	1
Nitrate (as N)	mg/L	0.09	EPA 300.0	0.04	0.01		01/21/14 20:32	1
Nitrite (as N)	mg/L	0.07	EPA 300.0	0.04	0.01		01/21/14 20:32	1
Orthophosphate as P	mg/L	0.097	EPA 300.0	0.040	0.010		01/21/14 20:32	1
Phosphorous - Total as P	mg/L	0.12	SM 4500P-E	0.040	0.010	01/21/14 11:40	01/24/14 12:37	1
Total Alkalinity	mg/L	87	SM 2320B	8.0	2.0		01/27/14 14:52	1
Total Kjeldahl Nitrogen	mg/L	0.05 U	EPA 351.2	0.20	0.05	01/28/14 15:20	01/30/14 13:30	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1
Nitrate+Nitrite (N)	mg/L	0.17	EPA 300.0	0.08	0.02		01/21/14 20:32	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1
Sample Description		**BHS7-EB**						
Matrix		**Reagent Water**						
SAL Sample Number		**1400292-27**						
Date/Time Collected		**01/20/14 11:48**						
Collected by		**Sean Schmidt**						
Date/Time Received		**01/20/14 15:00**						
Inorganics								
Ammonia as N	mg/L	0.009 U	EPA 350.1	0.040	0.009		01/22/14 10:05	1
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	01/22/14 08:30	01/27/14 13:04	1
Chemical Oxygen Demand	mg/L	10 U	EPA 410.4	25	10	01/21/14 11:09	01/21/14 14:43	1
Chloride	mg/L	0.050 U	EPA 300.0	0.20	0.050		01/21/14 20:51	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 20:51	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		01/21/14 20:51	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		01/21/14 20:51	1
Phosphorous - Total as P	mg/L	0.010 U	SM 4500P-E	0.040	0.010	01/21/14 11:40	01/24/14 10:02	1
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		01/27/14 14:54	1
Total Kjeldahl Nitrogen	mg/L	0.05 U	EPA 351.2	0.20	0.05	01/28/14 15:20	01/30/14 13:31	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	01/22/14 12:02	01/24/14 12:06	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	01/22/14 12:02	01/24/14 12:06	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		01/21/14 20:51	1
Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	01/20/14 15:30	01/21/14 10:41	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	01/20/14 15:28	01/21/14 14:31	1

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42010 - COD prep										
Blank (BA42010-BLK1)					Prepared & Analyzed: 01/21/14					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BA42010-BS1)					Prepared & Analyzed: 01/21/14					
Chemical Oxygen Demand	48	25	10	mg/L	50		96	90-110		
Matrix Spike (BA42010-MS1)		**Source: 1400292-26**			Prepared & Analyzed: 01/21/14					
Chemical Oxygen Demand	52	25	10	mg/L	50	ND	104	85-115		
Matrix Spike Dup (BA42010-MSD1)		**Source: 1400292-26**			Prepared & Analyzed: 01/21/14					
Chemical Oxygen Demand	48	25	10	mg/L	50	ND	96	85-115	8	32
Batch BA42027 - Ion Chromatography 300.0 Prep										
Blank (BA42027-BLK1)					Prepared & Analyzed: 01/20/14					
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*1.13*			*mg/L*	*1.0*		*113*	*90-115*		
Surrogate: Dichloroacetate	*1.13*			*mg/L*	*1.0*		*113*	*90-115*		
Surrogate: Dichloroacetate	*1.13*			*mg/L*	*1.0*		*113*	*90-115*		
LCS (BA42027-BS1)					Prepared & Analyzed: 01/20/14					
Nitrate (as N)	1.74	0.04	0.01	mg/L	1.7		102	85-115		
Nitrite (as N)	1.49	0.04	0.01	mg/L	1.4		106	85-115		
Orthophosphate as P	0.932	0.040	0.010	mg/L	0.90		104	85-115		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		

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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42027 - Ion Chromatography 300.0 Prep										
LCS Dup (BA42027-BSD1)					Prepared & Analyzed: 01/20/14					
Nitrite (as N)	1.48	0.04	0.01	mg/L	1.4		106	85-115	0.2	200
Orthophosphate as P	0.926	0.040	0.010	mg/L	0.90		103	85-115	0.6	200
Nitrate (as N)	1.73	0.04	0.01	mg/L	1.7		102	85-115	0.6	200
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Matrix Spike (BA42027-MS2)		**Source: 1400292-09**			Prepared & Analyzed: 01/20/14					
Nitrate (as N)	1.77	0.04	0.01	mg/L	1.7	ND	104	85-115		
Nitrite (as N)	1.39	0.04	0.01	mg/L	1.4	ND	99	85-115		
Orthophosphate as P	9.00 L	0.040	0.010	mg/L	0.90	11.2	NR	85-115		
Surrogate: Dichloroacetate	*1.14*			*mg/L*	*1.0*		*114*	*90-115*		
Surrogate: Dichloroacetate	*1.14*			*mg/L*	*1.0*		*114*	*90-115*		
Surrogate: Dichloroacetate	*1.14*			*mg/L*	*1.0*		*114*	*90-115*		
Batch BA42115 - Ion Chromatography 300.0 Prep										
Blank (BA42115-BLK1)					Prepared & Analyzed: 01/21/14					
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42115 - Ion Chromatography 300.0 Prep										
LCS (BA42115-BS1)					Prepared & Analyzed: 01/21/14					
Orthophosphate as P	0.928	0.040	0.010	mg/L	0.90		103	85-115		
Nitrite (as N)	1.50	0.04	0.01	mg/L	1.4		107	85-115		
Chloride	3.12	0.20	0.050	mg/L	3.0		104	85-115		
Nitrate (as N)	1.75	0.04	0.01	mg/L	1.7		103	85-115		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
LCS Dup (BA42115-BSD1)					Prepared & Analyzed: 01/21/14					
Chloride	3.12	0.20	0.050	mg/L	3.0		104	85-115	0.3	200
Nitrite (as N)	1.50	0.04	0.01	mg/L	1.4		107	85-115	0.4	200
Nitrate (as N)	1.76	0.04	0.01	mg/L	1.7		103	85-115	0.1	200
Orthophosphate as P	0.932	0.040	0.010	mg/L	0.90		104	85-115	0.4	200
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*90-115*		
Matrix Spike (BA42115-MS1)		**Source: 1400292-20**			Prepared & Analyzed: 01/22/14					
Chloride	30.0 L	0.20	0.050	mg/L	3.0	112	NR	80-120		
Orthophosphate as P	0.846	0.040	0.010	mg/L	0.90	ND	94	85-115		
Nitrite (as N)	1.38	0.04	0.01	mg/L	1.4	ND	99	85-115		
Nitrate (as N)	17.0 L	0.04	0.01	mg/L	1.7	39.0	NR	85-115		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*90-115*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42115 - Ion Chromatography 300.0 Prep										
Matrix Spike (BA42115-MS2)		**Source: 1400292-26**			Prepared & Analyzed: 01/21/14					
Nitrite (as N)	1.52	0.04	0.01	mg/L	1.4	0.0720	103	85-115		
Chloride	7.12	0.20	0.050	mg/L	3.0	3.99	104	80-120		
Nitrate (as N)	1.84	0.04	0.01	mg/L	1.7	0.0940	103	85-115		
Orthophosphate as P	0.909	0.040	0.010	mg/L	0.90	0.0970	90	85-115		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Batch BA42122 - Digestion for TP by EPA 365.2/SM4500PE										
Blank (BA42122-BLK1)					Prepared: 01/21/14 Analyzed: 01/24/14					
Phosphorous - Total as P	0.010 U	0.040	0.010	mg/L						
LCS (BA42122-BS1)					Prepared: 01/21/14 Analyzed: 01/24/14					
Phosphorous - Total as P	0.842	0.040	0.010	mg/L	0.80		105	90-110		
Matrix Spike (BA42122-MS1)		**Source: 1400734-02**			Prepared: 01/21/14 Analyzed: 01/24/14					
Phosphorous - Total as P	1.03	0.040	0.010	mg/L	1.0	0.0234	101	90-110		
Matrix Spike (BA42122-MS2)		**Source: 1400735-02**			Prepared: 01/21/14 Analyzed: 01/24/14					
Phosphorous - Total as P	1.05	0.040	0.010	mg/L	1.0	0.0249	102	90-110		
Matrix Spike Dup (BA42122-MSD1)		**Source: 1400734-02**			Prepared: 01/21/14 Analyzed: 01/24/14					
Phosphorous - Total as P	0.980	0.040	0.010	mg/L	1.0	0.0234	96	90-110	5	25
Matrix Spike Dup (BA42122-MSD2)		**Source: 1400735-02**			Prepared: 01/21/14 Analyzed: 01/24/14					
Phosphorous - Total as P	1.04	0.040	0.010	mg/L	1.0	0.0249	102	90-110	0.5	25

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42125 - VSS Prep										
Blank (BA42125-BLK1)					Prepared: 01/22/14 Analyzed: 01/24/14					
Volatile Suspended Solids	1 U	1		mg/L						
Total Suspended Solids	1 U	1	1	mg/L						
LCS (BA42125-BS1)					Prepared: 01/22/14 Analyzed: 01/24/14					
Total Suspended Solids	49.8	1	1	mg/L	50		100	85-115		
Duplicate (BA42125-DUP1)		**Source: 1400292-01**			Prepared: 01/22/14 Analyzed: 01/24/14					
Volatile Suspended Solids	33.5	1		mg/L		33.0			2	20
Total Suspended Solids	35.0	1	1	mg/L		35.5			1	30
Batch BA42126 - Ammonia by SEAL										
Blank (BA42126-BLK1)					Prepared & Analyzed: 01/22/14					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BA42126-BS1)					Prepared & Analyzed: 01/22/14					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50		99	90-110		
Matrix Spike (BA42126-MS1)		**Source: 1400766-01**			Prepared & Analyzed: 01/22/14					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	ND	99	90-110		
Matrix Spike (BA42126-MS2)		**Source: 1400292-27**			Prepared & Analyzed: 01/22/14					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	ND	100	90-110		
Matrix Spike Dup (BA42126-MSD1)		**Source: 1400766-01**			Prepared & Analyzed: 01/22/14					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50	ND	102	90-110	3	10

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42126 - Ammonia by SEAL										
Matrix Spike Dup (BA42126-MSD2)		**Source: 1400292-27**			Prepared & Analyzed: 01/22/14					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	ND	101	90-110	0.8	10
Batch BA42201 - Ion Chromatography 300.0 Prep										
Blank (BA42201-BLK1)					Prepared & Analyzed: 01/22/14					
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
Surrogate: Dichloroacetate	*1.08*			*mg/L*	*1.0*		*108*	*90-115*		
LCS (BA42201-BS1)					Prepared & Analyzed: 01/22/14					
Chloride	3.13	0.20	0.050	mg/L	3.0		104	85-115		
Nitrate (as N)	1.77	0.04	0.01	mg/L	1.7		104	85-115		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
LCS Dup (BA42201-BSD1)					Prepared & Analyzed: 01/22/14					
Nitrate (as N)	1.73	0.04	0.01	mg/L	1.7		102	85-115	3	200
Chloride	3.09	0.20	0.050	mg/L	3.0		103	85-115	1	200
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Surrogate: Dichloroacetate	*1.09*			*mg/L*	*1.0*		*109*	*90-115*		
Matrix Spike (BA42201-MS1)		**Source: 1400292-06**			Prepared & Analyzed: 01/22/14					
Nitrite (as N)	14.1	0.40	0.10	mg/L	14	ND	101	85-115		
Chloride	300 L	2.0	0.50	mg/L	30	524	NR	80-120		
Nitrate (as N)	62.7	0.40	0.10	mg/L	17	44.7	106	85-115		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42201 - Ion Chromatography 300.0 Prep										
Matrix Spike (BA42201-MS2)		**Source: 1400775-01**			Prepared & Analyzed: 01/22/14					
Nitrate (as N)	2.06	0.04	0.01	mg/L	1.7	0.342	101	85-115		
Chloride	30.0 L	0.20	0.050	mg/L	3.0	1170	NR	80-120		
Surrogate: Dichloroacetate	*1.03*			*mg/L*	*1.0*		*103*	*90-115*		
Surrogate: Dichloroacetate	*1.03*			*mg/L*	*1.0*		*103*	*90-115*		
Batch BA42211 - BOD										
Blank (BA42211-BLK1)					Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	2 U	2	2	mg/L						
Blank (BA42211-BLK2)					Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BA42211-BS1)					Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	197	2	2	mg/L	200		99	85-115		
LCS (BA42211-BS2)					Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	187	2	2	mg/L	200		93	85-115		
LCS Dup (BA42211-BSD1)					Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	198	2	2	mg/L	200		99	85-115	0.5	200
LCS Dup (BA42211-BSD2)					Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	189	2	2	mg/L	200		95	85-115	1	200
Duplicate (BA42211-DUP1)		**Source: 1400292-02**			Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	84	2	2	mg/L		75			11	25

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42211 - BOD										
Duplicate (BA42211-DUP2)		**Source: 1400788-02**			Prepared: 01/22/14 Analyzed: 01/27/14					
Carbonaceous BOD	160	2	2	mg/L		ND				25
Batch BA42219 - Ion Chromatography 300.0 Prep										
Blank (BA42219-BLK1)					Prepared & Analyzed: 01/23/14					
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
LCS (BA42219-BS1)					Prepared & Analyzed: 01/23/14					
Orthophosphate as P	0.918	0.040	0.010	mg/L	0.90		102	85-115		
Nitrate (as N)	1.72	0.04	0.01	mg/L	1.7		101	85-115		
Chloride	3.08	0.20	0.050	mg/L	3.0		103	85-115		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
LCS Dup (BA42219-BSD1)					Prepared & Analyzed: 01/23/14					
Orthophosphate as P	0.927	0.040	0.010	mg/L	0.90		103	85-115	1	200
Chloride	3.12	0.20	0.050	mg/L	3.0		104	85-115	1	200
Nitrate (as N)	1.76	0.04	0.01	mg/L	1.7		103	85-115	2	200
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		

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Batch BA42219 - Ion Chromatography 300.0 Prep										
Matrix Spike (BA42219-MS1)		**Source: 1400741-09**			Prepared & Analyzed: 01/23/14					
Orthophosphate as P	9.06	0.40	0.10	mg/L	9.0	0.130	99	85-115		
Chloride	191	2.0	0.50	mg/L	30	158	110	80-120		
Nitrate (as N)	17.5	0.40	0.10	mg/L	17	ND	103	85-115		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Surrogate: Dichloroacetate	*1.04*			*mg/L*	*1.0*		*104*	*90-115*		
Matrix Spike (BA42219-MS2)		**Source: 1400832-01**			Prepared & Analyzed: 01/23/14					
Chloride	13.6	0.20	0.050	mg/L	3.0	10.5	102	80-120		
Orthophosphate as P	0.663 J5	0.040	0.010	mg/L	0.90	ND	74	85-115		
Nitrate (as N)	1.60	0.04	0.01	mg/L	1.7	ND	94	85-115		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Batch BA42230 - Ammonia by SEAL										
Blank (BA42230-BLK1)					Prepared & Analyzed: 01/23/14					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BA42230-BS1)					Prepared & Analyzed: 01/23/14					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50		99	90-110		
Matrix Spike (BA42230-MS1)		**Source: 1400787-07**			Prepared & Analyzed: 01/23/14					
Ammonia as N	0.54	0.040	0.009	mg/L	0.50	0.021	103	90-110		
Matrix Spike (BA42230-MS2)		**Source: 1400842-07**			Prepared & Analyzed: 01/23/14					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	0.021	96	90-110		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42230 - Ammonia by SEAL										
Matrix Spike Dup (BA42230-MSD1)		**Source: 1400787-07**			Prepared & Analyzed: 01/23/14					
Ammonia as N	0.52	0.040	0.009	mg/L	0.50	0.021	100	90-110	3	10
Matrix Spike Dup (BA42230-MSD2)		**Source: 1400842-07**			Prepared & Analyzed: 01/23/14					
Ammonia as N	0.52	0.040	0.009	mg/L	0.50	0.021	101	90-110	5	10
Batch BA42343 - Ammonia by SEAL										
Blank (BA42343-BLK1)					Prepared & Analyzed: 01/27/14					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BA42343-BS1)					Prepared & Analyzed: 01/27/14					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50		98	90-110		
Matrix Spike (BA42343-MS1)		**Source: 1400910-02**			Prepared & Analyzed: 01/27/14					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50	0.033	96	90-110		
Matrix Spike (BA42343-MS2)		**Source: 1400914-07**			Prepared & Analyzed: 01/27/14					
Ammonia as N	0.49	0.040	0.009	mg/L	0.50	0.036	92	90-110		
Matrix Spike Dup (BA42343-MSD1)		**Source: 1400910-02**			Prepared & Analyzed: 01/27/14					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50	0.033	93	90-110	3	10
Matrix Spike Dup (BA42343-MSD2)		**Source: 1400914-07**			Prepared & Analyzed: 01/27/14					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50	0.036	95	90-110	3	10
Batch BA42706 - alkalinity										
Blank (BA42706-BLK1)					Prepared & Analyzed: 01/27/14					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42706 - alkalinity										
LCS (BA42706-BS1)					Prepared & Analyzed: 01/27/14					
Total Alkalinity	130	8.0	2.0	mg/L	120		102	90-110		
Matrix Spike (BA42706-MS1)		**Source: 1400845-01**			Prepared & Analyzed: 01/27/14					
Total Alkalinity	280	8.0	2.0	mg/L	120	140	112	80-120		
Matrix Spike Dup (BA42706-MSD1)		**Source: 1400845-01**			Prepared & Analyzed: 01/27/14					
Total Alkalinity	280	8.0	2.0	mg/L	120	140	109	80-120	1	26
Batch BA42713 - Ion Chromatography 300.0 Prep										
Blank (BA42713-BLK1)					Prepared & Analyzed: 01/28/14					
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
LCS (BA42713-BS1)					Prepared & Analyzed: 01/28/14					
Chloride	3.18	0.20	0.050	mg/L	3.0		106	85-115		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
LCS Dup (BA42713-BSD1)					Prepared & Analyzed: 01/28/14					
Chloride	3.15	0.20	0.050	mg/L	3.0		105	85-115	1	200
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*90-115*		
Matrix Spike (BA42713-MS1)		**Source: 1400700-02**			Prepared & Analyzed: 01/28/14					
Chloride	20,000	200	50	mg/L	3000	16700	110	80-120		
Surrogate: Dichloroacetate	*1.01*			*mg/L*	*1.0*		*101*	*90-115*		
Matrix Spike (BA42713-MS2)		**Source: 1400910-01**			Prepared & Analyzed: 01/28/14					
Chloride	240	2.0	0.50	mg/L	30	207	110	80-120		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		

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

February 3, 2014
Work Order: 1400292

Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42731 - Digestion for TP by EPA 365.2/SM4500PE										
Blank (BA42731-BLK1)					Prepared: 01/27/14 Analyzed: 01/31/14					
Phosphorous - Total as P	0.010 U	0.040	0.010	mg/L						
LCS (BA42731-BS1)					Prepared: 01/27/14 Analyzed: 01/31/14					
Phosphorous - Total as P	0.753	0.040	0.010	mg/L	0.80		94	90-110		
Matrix Spike (BA42731-MS1)		**Source: 1400983-01**			Prepared: 01/27/14 Analyzed: 01/31/14					
Phosphorous - Total as P	0.996	0.040	0.010	mg/L	1.0	0.0238	97	90-110		
Matrix Spike (BA42731-MS2)		**Source: 1400988-07**			Prepared: 01/27/14 Analyzed: 01/31/14					
Phosphorous - Total as P	0.991	0.040	0.010	mg/L	1.0	0.0492	94	90-110		
Matrix Spike Dup (BA42731-MSD1)		**Source: 1400983-01**			Prepared: 01/27/14 Analyzed: 01/31/14					
Phosphorous - Total as P	0.985	0.040	0.010	mg/L	1.0	0.0238	96	90-110	1	25
Matrix Spike Dup (BA42731-MSD2)		**Source: 1400988-07**			Prepared: 01/27/14 Analyzed: 01/31/14					
Phosphorous - Total as P	0.991	0.040	0.010	mg/L	1.0	0.0492	94	90-110	0.01	25
Batch BA42830 - Digestion for TKN by EPA 351.2										
Blank (BA42830-BLK1)					Prepared: 01/28/14 Analyzed: 01/30/14					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BA42830-BS1)					Prepared: 01/28/14 Analyzed: 01/30/14					
Total Kjeldahl Nitrogen	2.67	0.20	0.05	mg/L				90-110		
Matrix Spike (BA42830-MS1)		**Source: 1400292-27**			Prepared: 01/28/14 Analyzed: 01/30/14					
Total Kjeldahl Nitrogen	2.64	0.20	0.05	mg/L		ND		90-110		

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February 3, 2014
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Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42830 - Digestion for TKN by EPA 351.2										
Matrix Spike (BA42830-MS2)		**Source: 1400981-02**			Prepared: 01/28/14 Analyzed: 01/30/14					
Total Kjeldahl Nitrogen	3.47	0.20	0.05	mg/L		0.756		90-110		
Matrix Spike Dup (BA42830-MSD1)		**Source: 1400292-27**			Prepared: 01/28/14 Analyzed: 01/30/14					
Total Kjeldahl Nitrogen	2.47	0.20	0.05	mg/L		ND		90-110	7	20
Matrix Spike Dup (BA42830-MSD2)		**Source: 1400981-02**			Prepared: 01/28/14 Analyzed: 01/30/14					
Total Kjeldahl Nitrogen	3.49	0.20	0.05	mg/L		0.756		90-110	0.3	20
Batch BA43003 - Digestion for TKN by EPA 351.2										
Blank (BA43003-BLK1)					Prepared: 01/30/14 Analyzed: 01/31/14					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
LCS (BA43003-BS1)					Prepared: 01/30/14 Analyzed: 01/31/14					
Total Kjeldahl Nitrogen	2.53	0.20	0.05	mg/L				90-110		
Matrix Spike (BA43003-MS1)		**Source: 1400292-04**			Prepared: 01/30/14 Analyzed: 01/31/14					
Total Kjeldahl Nitrogen	4.75	1.0	0.25	mg/L		2.16		90-110		
Matrix Spike (BA43003-MS2)		**Source: 1401033-07**			Prepared: 01/30/14 Analyzed: 01/31/14					
Total Kjeldahl Nitrogen	3.42	0.20	0.05	mg/L		0.690		90-110		
Matrix Spike Dup (BA43003-MSD1)		**Source: 1400292-04**			Prepared: 01/30/14 Analyzed: 01/31/14					
Total Kjeldahl Nitrogen	4.57	1.0	0.25	mg/L		2.16		90-110	4	20
Matrix Spike Dup (BA43003-MSD2)		**Source: 1401033-07**			Prepared: 01/30/14 Analyzed: 01/31/14					
Total Kjeldahl Nitrogen	3.24	0.20	0.05	mg/L		0.690		90-110	6	20

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Microbiology - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BA42043 - FC-MF										
Blank (BA42043-BLK1)					Prepared: 01/20/14 Analyzed: 01/21/14					
Fecal Coliforms	1 U	1	1	CFU/100 ml						
Duplicate (BA42043-DUP1)		**Source: 1400742-02**			Prepared: 01/20/14 Analyzed: 01/21/14					
Fecal Coliforms	1 U	1	1	CFU/100 ml		ND				200

SOUTHERN ANALYTICAL LABORATORIES, INC.
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February 3, 2014
Work Order: 1400292

* 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 limts 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.

L	Off-scale high. Result exceeded highest calibration standard.
J5	Matrix spike of this sample was outside typical range. All other QC criteria were acceptable.

Questions regarding this report should be directed to :

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Kathryn@southernanalyticallabs.com

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1400292

Client Name: Hazen and Sawyer

Project Name / Location: B-HS7 SE#1

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

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	1 LP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP	125mLP, H_2SO_4 COD, TKN, NH_3, TP	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	125mLP, Cool NOx		Field pH	Field Temperature	Field Conductivity µS/cm	Field DO	No. of Containers (Total per each location)
01	BHS7-PUMP	1/10/14	12:03	WW		X	4	1	1					7.63	18.6	26mS	0.25	
02	BHS7-PUMP-DUP		12:08	WW		X	4	1	1					7.63	18.6	2.6mS	0.25	
03	BHS7-ST1-SL-01		10:45	WW		X				1	1			5.62	15.5	1919	5.65	
04	BHS7-ST1-SL-02		10:55	WW		X				1	1			5.26	15.4	1595	5.84	
05	BHS7-ST1-SL-03		11:07	WW		X				1	1			5.87	15.8	2018	6.33	
06	BHS7-ST1-DP-01		11:25	WW		X				1		1		5.12	16.8	23,400	5.37	
07	BHS7-ST1-SL-04		10:58	WW		X	4	1	1					5.80	15.3	1923	5.28	
08	BHS7-ST2-DP-02		8:45	WW		X				1	1			5.99	19.5	1994	0.11	
09	BHS7-ST2-DP-03		9:00	WW		X				1	1			5.96	19.5	2068	0.13	
10	BHS7-ST2-DP-03-DUP		9:05	WW		X				1	1			5.96	19.5	2068	0.13	
11	BHS7-ST2-DP-04		9:17	WW		X				1	1			5.94	19.3	2094	0.08	
12	BHS7-ST2-DP-05		9:38	WW						1	1			6.20	19.3	2133	0.18	

Containers Prepared/ Relinquished:	Date/Time: 1615 01-09-14	Received:	Date/Time: 1/10/14 1200
Relinquished:	Date/Time: 1500 1/20/14	Received: IC Mudmouth	Date/Time: 1500 1/20/14
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

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

Instructions / Remarks:

1400292

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. 1400292

Client Name: Hazen and Sawyer

Project Name / Location: B-HS7 SE#1

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

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	1 LP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP	125mLP, H_2SO_4 COD, TKN, NH_3, TP	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	125mLP, Cool NOx		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
13	BHS7-ST2-SL-05	1/20/14	9:40	WW		X				1	1			6.10	16.0	2046	3.40	
14	BHS7-ST2-DP-06		9:55	WW		X				1	1			6.63	19.9	22,800	0.08	
15	BHS7-ST2-DP-06-DUP		10:00	WW		X				1	1			6.63	19.9	22,800	0.08	
16	BHS7-ST2-DP-07		10:19	WW		X	4	1	1					6.38	19.9	23,500	0.10	
17	BHS7-ST2-DP-08		10:40	WW		X	4	1	1					6.12	18.4	2070	0.15	
18	BHS7-EFF-SL-06		8:35	WW		X				1	1			5.67	12.4	469	5.70	
19	BHS7-EFF-DP-09			WW		X				1	1					no	water	
20	BHS7-EFF-SL-07		9:05	WW		X				1	1			4.61	15.5	837	6.75	
21	BHS7-EFF-DP-10		9:15	WW		X				1		1		5.79	13.3	1217	6.69	
22	BHS7-EFF-SL-08		9:50	WW		X				1	1			5.15	15.8	1722	6.56	
23	BHS7-EFF-DP-11		11:10	WW		X				1		1		no	readings			
24	BHS7-EFF-SL-09		10:15	WW			1	1	1					6.14	16.4	789	5.33	

Containers Prepared/ Relinquished:	Date/Time: 1650 01-09-14	Received:	Date/Time: 1/10/14 1200
Relinquished:	Date/Time: 1520 1/20/14	Received: K Wadmeck	Date/Time: 1520 1/20/14
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Q 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

Instructions / Remarks:

1400292

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. 1400292

Client Name: Hazen and Sawyer

Project Name / Location: B-HS7 SE#1

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

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	PARAMETER / CONTAINER DESCRIPTION: 125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	1 LP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP	125mLP, H_2SO_4 COD, TKN, NH_3, TP	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx	125mLP, Cool NOx		Field pH	Field Temperature	Field Conductivity	Field DO	No. of Containers (Total per each location)
25	BHS7-EFF-DP-12	1/20/14	10:25	WW		X				1		1		6.25	17.2	1837	4.03	
26	BHS7-TAP	↓	11:35	DW		X	4	1	1					7.14	20.1	179.3	7.15	
27	BHS7-EB	↓	11:48	R		X	4	1	1					7.39	15.9	1.20	9.29	

Containers Prepared/ Relinquished:	Date/Time: 1650 01-09-14	Received:	Date/Time: 1/10/14 12:40	Seal intact? N N/A
Relinquished:	Date/Time: 1500 1/20/14	Received:	Date/Time: 1500 1/20/14	Samples intact upon arrival? N N/A
Relinquished:	Date/Time:	Received:	Date/Time:	Received on ice? Temp_____ N N/A
Relinquished:	Date/Time:	Received:	Date/Time:	Proper preservatives indicated? N N/A
Relinquished:	Date/Time:	Received:	Date/Time:	Rec'd within holding time? N N/A
				Volatiles rec'd w/out headspace? Y N N/A
Relinquished:	Date/Time:	Received:	Date/Time:	Proper containers used? N N/A

Instructions / Remarks:

1400292

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

Chain of Custody

Appendix B: Operation & Maintenance Log

Table B.1
Operation and Maintenance Log

Date	Description
11/13/2013	Construction - Pump tank, liner and lignocellulosic media installed
11/14/2013	Construction - Pump, feed line, laterals, infiltrator chambers installed, wet pressure test
11/15/2013	Construction - final grading, hay and seed applied
11/18/2013	Construction - electrician finished electrical work
11/19/2013	System Start-up
	Bull run valve (BRV) switched from old drainfield to PNRS system
11/26/2013	System check
	Flipped BRV to old drainfield for Thanksgiving holiday ~ 30-40 people staying at the house
12/2/2013	System check
	Flipped BRV back to PNRS system
12/6/2013	System check
	Flipped BRV to old drainfield for holiday party ~ 80 people attending
12/9/2013	Homeowner flipped BRV back to PNRS system
12/10/2013	System check
	Preparation for preliminary sample event
12/12/2013	Preliminary sample event No. 1
1/3/2014	System check
1/17/2014	Preparation for Sample Event No. 1
1/20/2014	Sample Event No. 1

Appendix C: Weather Station Data

Table C.1
Weather Data - 2013

2013 RAIN (inches)												
DAY	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
1					0.28		0.38	0.22	0.66			
2					0.16		0.08	0.12				
3					2.06	1.20	0.18	0.12			0.36	
4	0.12			0.34	0.64	0.38	0.60	0.06				
5	0.04					0.04	0.42	0.40			0.02	
6						0.18	0.18	0.02	0.08			
7						1.00			0.86		0.08	
8		0.22						0.38	0.02	1.04		
9		0.02				0.64				0.02		
10						0.18		1.16				
11							0.06					0.04
12							0.06					
13			0.06				0.34	0.14				
14		0.28					0.26		0.02			
15		0.20		0.62			1.36	0.06				0.74
16		0.02					0.12				0.22	
17											0.40	
18			0.04					0.10				
19				0.40			0.14	0.20				
20				0.22	0.86		0.84			0.18		
21			0.12	0.10	0.92		0.20			0.04	0.02	
22			0.02	0.76	0.04		0.02	0.22	0.06	0.10		
23				0.02	0.00		0.10	0.46	0.30	0.02	0.02	
24			0.06				0.32	1.20	0.26			
25		0.04				1.86	0.36	0.56	1.14			
26							0.12				0.10	
27		0.50				0.22	0.06	0.12			0.38	
28						0.34						
29						0.30	0.04		0.26			0.06
30												0.12
31	0.06							0.96				
Total	0.22	1.28	0.3	2.46	4.96	6.34	6.24	6.50	3.66	1.40	1.60	0.96

Table C.1
Weather Station Data (continued)

MONTHLY CLIMATOLOGICAL SUMMARY for JAN. 2014										
DAY	RAIN (in)	MEAN TEMP (F)	HIGH TEMP (F)	TIME	LOW TEMP (F)	TIME	AVG. WIND SPEED (mph)	HIGH WIND SPEED (mph)	TIME	WIND DIR
1	0.00									
2	0.17									
3	0.44									
4	0.00									
5	0.00									
6	0.00	40.5	42.5	7:00p	38.0	9:30p	0.8	10.0	12:00m	NW
7	0.00	35.9	43.9	2:30p	28.6	8:30a	3.0	17.0	8:30a	NNW
8	0.00	45.0	57.7	3:00p	31.5	3:30a	2.5	13.0	12:30a	NNW
9	0.16	59.1	66.4	3:30p	49.5	1:30a	1.6	12.0	5:30p	NNW
10	0.00	71.6	84.1	3:00p	65.1	12:30a	0.5	9.0	11:30a	ENE
11	0.41	71.4	83.0	2:00p	62.9	11:00p	2.4	19.0	4:30p	SW
12	0.00	56.8	68.0	4:30p	41.5	12:00m	1.0	11.0	9:30a	NW
13	0.00	60.0	78.5	3:00p	41.7	12:30a	0.6	15.0	1:00p	ENE
14	1.03	63.6	72.1	3:30p	52.4	12:00m	0.8	13.0	4:00a	SSW
15	0.03	53.4	65.0	3:00p	42.1	7:00a	0.6	10.0	12:00p	SW
16	0.02	44.7	55.5	3:30p	32.2	12:00m	0.9	11.0	1:00p	SW
17	0.00	48.7	67.7	4:00p	30.1	7:30a	1.0	11.0	11:00p	SW
18	0.00	46.8	57.3	4:00p	34.6	11:30p	1.1	15.0	10:00a	SW
19	0.03	48.3	64.8	12:30p	30.6	3:30a	1.0	11.0	4:30p	SW
20	0.00	53.9	71.3	3:00p	39.2	7:00a	0.7	10.0	4:00p	SW
21	0.23	57.8	70.3	12:00p	48.5	12:00m	2.3	16.0	12:30p	SW
22	0.00	42.4	55.4	4:00p	32.7	12:00m	0.9	11.0	1:00a	SW
23	0.00	43.8	60.2	2:30p	29.7	2:30a	0.8	10.0	11:30a	NNW
24	0.00	43.7	52.5	1:00p	39.5	1:00a	2.5	16.0	9:30a	NNW
25	0.00	52.1	69.7	3:30p	38.9	4:00a	1.0	12.0	1:30p	SW
26	0.00	57.9	69.6	4:00p	46.5	8:00a	0.5	7.0	12:30a	SW
27	0.01	62.1	75.8	3:00p	55.8	12:00m	0.6	11.0	3:30p	SW
28	0.00	63.8	80.1	3:30p	50.4	5:00a	0.7	12.0	2:30p	SW
29	0.58	43.1	58.6	12:30a	39.1	12:00m	2.7	15.0	12:30p	NNW
30	0.52	40.7	44.5	3:30p	36.4	4:00a	2.5	16.0	6:30a	NNW
31	0.14	50.0	56.9	5:30p	41.6	2:00a	1.7	13.0	1:30a	NNW
Total	3.77									