Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B.7

B-HS3 Field System Monitoring Report No. 5

Progress Report

June 2014

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In association with:

AET

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Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK B.7
PROGRESS REPORT

B-HS3 Field System Monitoring Report No. 5

Prepared for:

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Environmental Health
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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 PNRS II. 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 fifth sample event of a passive nitrogen reduction system at home site B-HS3 in Seminole County, Florida.

2.0 Purpose

Operation of the B-HS3 system was initiated on July 12, 2013. This monitoring report documents data collected from the fifth monitoring and sampling event conducted on May 29, 2014 (Day 321). The fifth monitoring event consisted of collecting flow measurements from the household water use meter and the treatment system flow meters, recording electricity use, monitoring of field parameters, collection of water samples from eight 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-HS3 field site is located in Seminole County, FL. The nitrogen reducing onsite treatment system for the single family residence was installed in June 2013. Design and construction details were presented previously in the Task B.6 document. The B-HS3 system consists of a replacement septic tank (which was a 1,500 gallon two chamber concrete primary tank); a 600 gallon concrete STE dose tank; a two zone drip system; a Stage 1 lined drip zone; a 1,050 gallon concrete tank Stage 2 saturated media biofilter; and a treated effluent dispersal drip zone. 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.

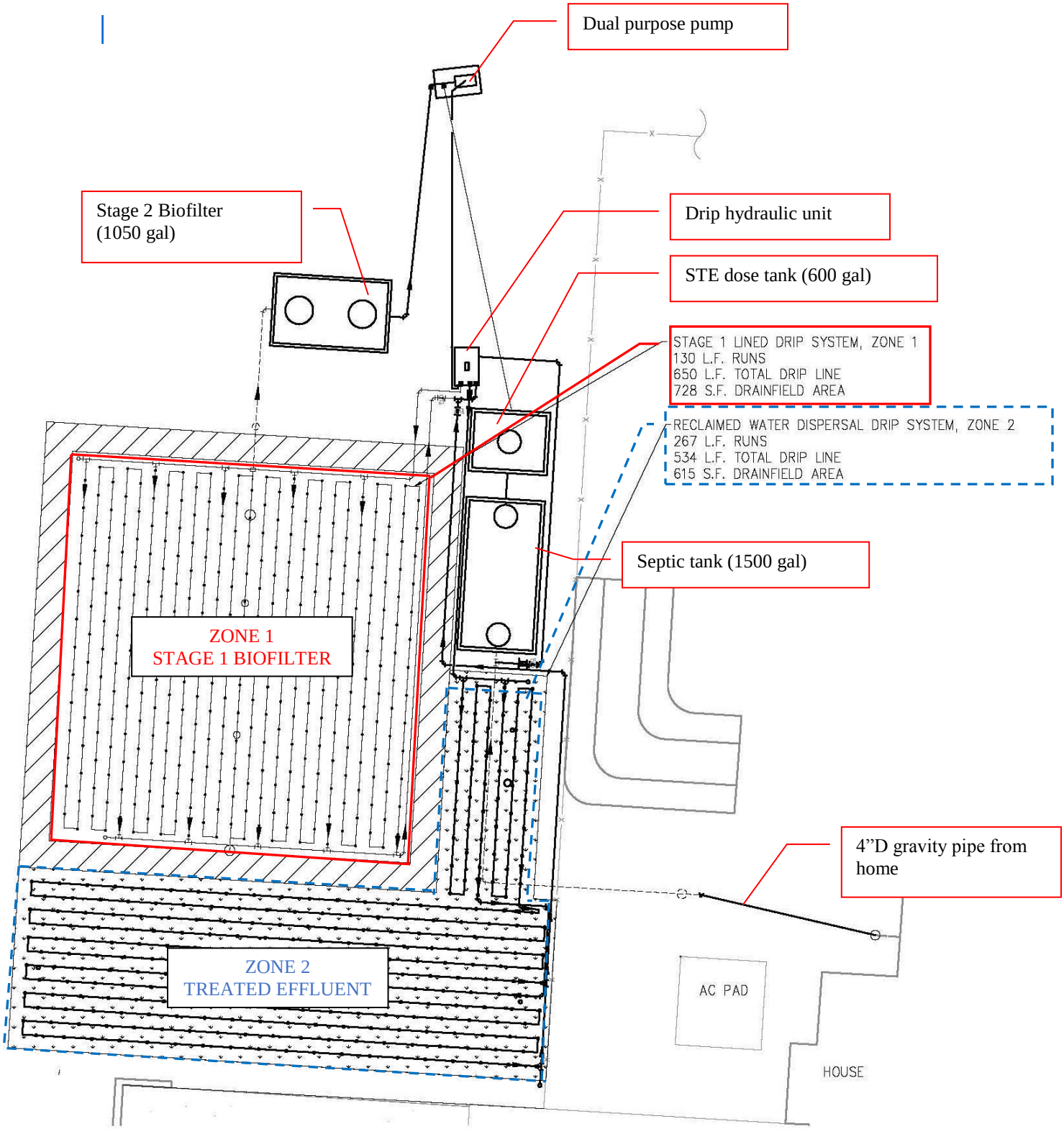

Figure 1
Plan View of B-HS3 System Layout

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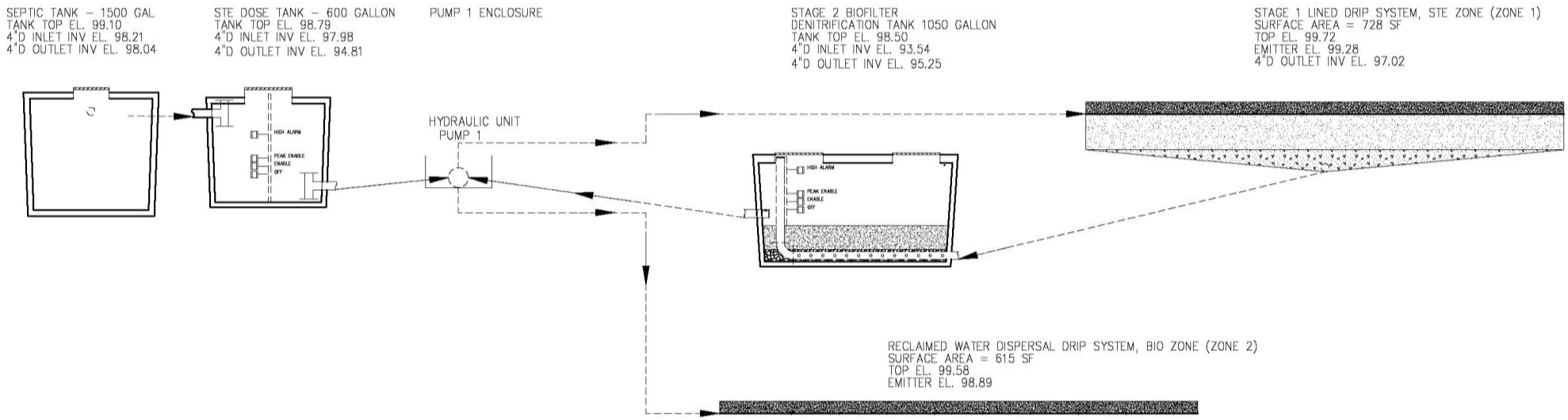

Figure 2
Flow Schematic of B-HS3 PNRS Installed in Seminole County

3.2 Monitoring and Sample Locations and Identification

This monitoring event included sample collection from eight points within the treatment system (Figure 3). The B-HS3 installation also includes five downgradient groundwater monitoring points which are standpipe piezometers that were installed as part of the C-HS2 groundwater monitoring network (Figure 4). In the treatment system, household wastewater enters the 1st chamber of the primary tank and exits the second chamber as septic tank effluent through an effluent screen into the STE dose tank. The first monitoring point, B-HS3-STE, is the effluent sampled approximately 1.5 feet below the surface of the second chamber of the primary tank (Figure 5) before the effluent filter, which is referred to as primary effluent or septic tank effluent (STE). Samples from monitoring point B-HS3-STE are of whole household wastewater after it has had some residence time in the primary tank and represent the influent to the remainder of the onsite nitrogen reduction system.

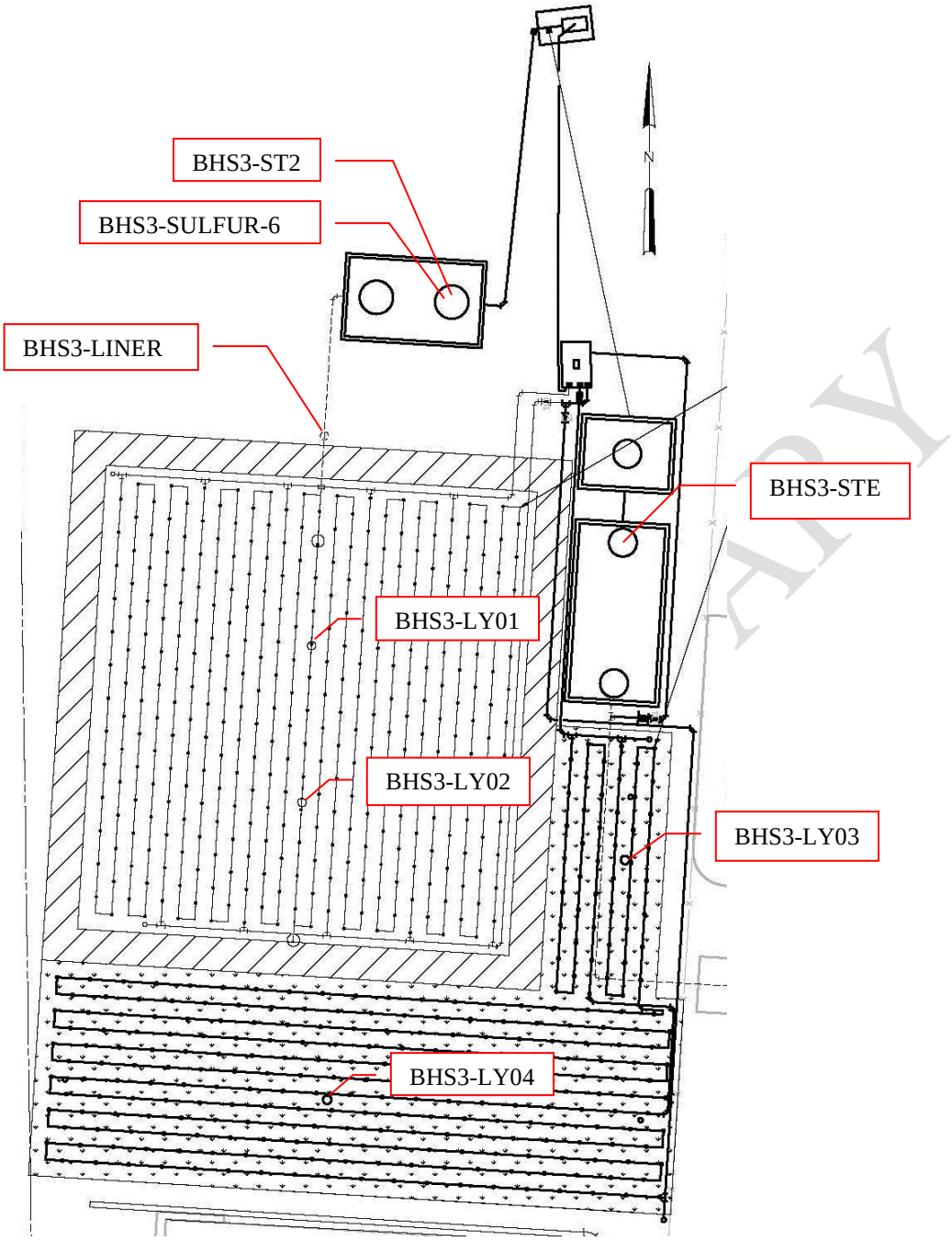

Figure 3
BHS-3 Treatment System Sampling and Monitoring Locations

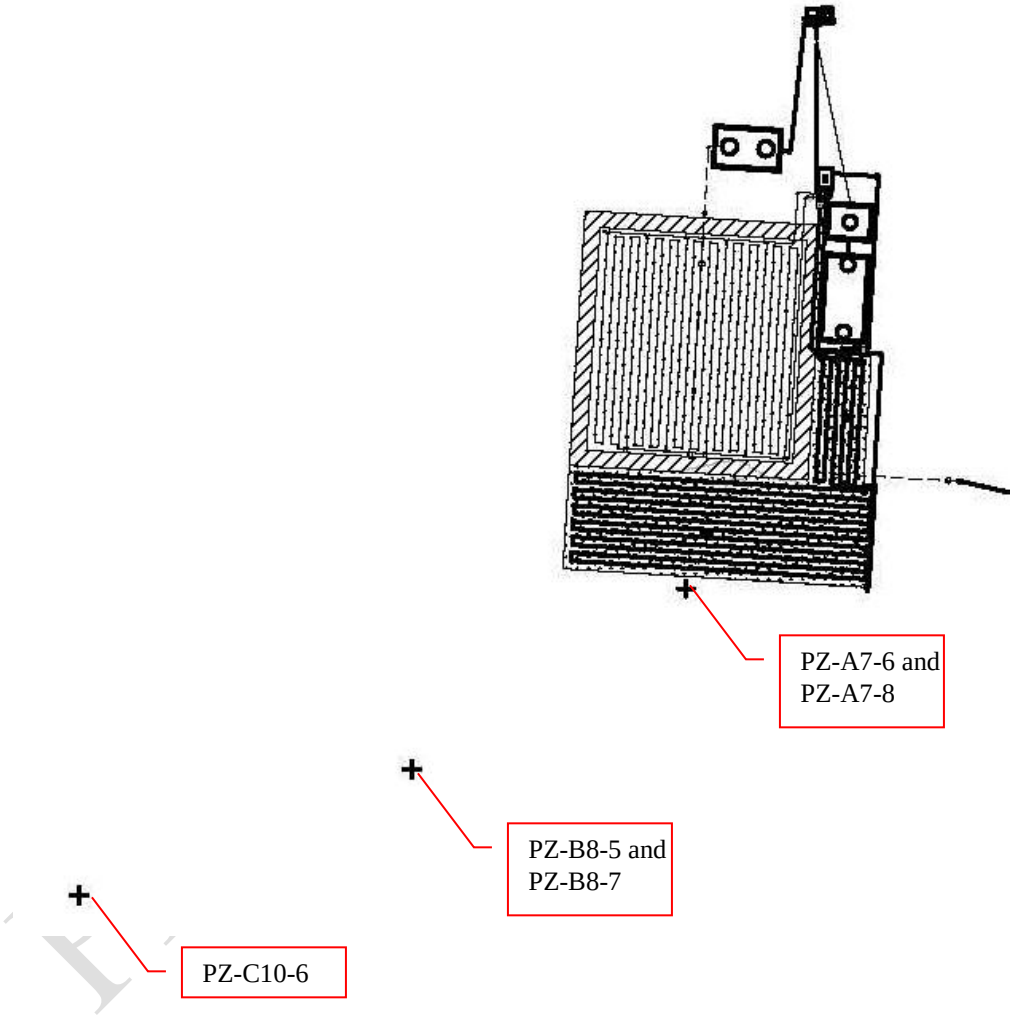

Figure 4
BHS-3 PNRS Downgradient Groundwater Sampling Locations

Figure 5
Second Chamber of Primary Tank (B-HS3-STE Sample)

The STE dose tank effluent is pumped through the drip system hydraulic unit and discharged to the Stage 1 drip system emitters (Zone 1). In the Stage 1 drip area, wastewater proceeds downward through an 18-inch layer of sand and a layer of lignocellulosic and sand media (9-inch maximum thickness) placed above a 30 mil PVC liner. The second and third sampling points are two suction lysimeters (BHS3-LY01 and BHS3-LY02) located at the interface of the overlying sand and underlying lignocellulosic/sand mixture. These sample locations ostensibly represent wastewater that has been nitrified by passage through the overlying sand layer (Figure 6).

Figure 6
Stage 1 Suction Lysimeter (BHS3-LY01 and –LY02)

The Stage 1 drip system area was prepared by grading a V-shape so that effluent would collect on the liner and flow to the center where a perforated pipe within a gravel underdrain conveys the effluent to the Stage 2 denitrification tank through a pipe boot within the liner. The fourth sampling point (BHS3-LINER) is a sample port of the Stage 1 lined area effluent prior to the Stage 2 biofilter. At the BHS3-LINER sample point, wastewater would ostensibly be denitrified by passage through the lignocellulosic media mixture.

The liner effluent is conveyed to a Stage 2 biofilter, a concrete 1,050 gallon tank, containing elemental sulfur reactive media for additional treatment (denitrification). The fifth sampling point, BHS3-SULFUR-6, is a stainless steel drivepoint sampler positioned 6-inches above the bottom of the sulfur media. The sixth sampling point, B-HS3-ST2, is the Stage 2 biofilter effluent which is sampled approximately 6 inches below the water surface of the Stage 2 biofilter tank (Figure 7).

Figure 7
Second Chamber of Stage 2 Biofilter (B-HS3-ST2 Sample)

The Stage 2 biofilter effluent is pumped through the drip system hydraulic unit and discharged to the treated effluent drip system emitters (Zone 2) to the natural soil. The seventh and eighth sampling points are two suction lysimeters (BHS3-LY03 and BHS3-LY04) located in the treated effluent drip area with the top of the 9 inch ceramic cup located 24 inches below the drip emitters to represent treatment through 24-inches of unsaturated soil (Figure 8). Also located within the treated effluent drip area, are the eighth, ninth and tenth sampling points which are standpipe piezometers (BHS3-PZ07, BHS3-PZ08, and BHS3-PZ09) positioned so that the top of the 5-foot screen is 24-inches below the drip emitters (Figure 9). Unfortunately, during this sample event BHS3-PZ07, BHS3-PZ08, and BHS3-PZ09 were dry.

Figure 8
Treated Effluent Suction Lysimeter (B-HS3-LY03 and –LY04 sample)

Figure 9
Treated Effluent Area Standpipe Piezometers (B-HS3-PZ07, -PZ08 and –PZ09)

3.3 Operational Monitoring

Start-up of the system occurred on July 12, 2013 (Experimental Day 0) and the system has almost operated continually since that date. Between September 10, 2013 and Sep-

tember 17, 2013 the system was not operating because a replacement part for the hydraulic unit was required. The fifth formal sampling event was conducted May 29, 2014 (Experimental Day 321). For the fifth formal sampling event, the water meter for the house and the treatment system flow meters were read and recorded on May 29, 2014.

The household potable water use is recorded via a water meter located in the front yard. The combined pump flow meter is located inside the hydraulic unit following the hydraulic unit filters prior to the split between the two zones, and records the cumulative pumped flow in gallons pumped from both the STE dose tank and Stage 2 biofilter tank. Therefore, the measurement of the combined flow meter includes both the STE flow from the household and the treated effluent flow from the Stage 2 biofilter. The Stage 2 treated effluent flow meter is located following the split on the line from the pump to the treated effluent drip system and records the cumulative flow in gallons pumped from the Stage 2 biofilter tank. The control panel includes telemetry which logs alarms, cumulative pump cycles, and cumulative field flush cycles.

3.4 Energy, Chemical and/or Additives 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, although a small amount of power is used by the control panel itself. There are no chemicals added to the system. However, the denitrification media (lignocellulosic and sulfur) are “reactive” media which will be consumed during operation. The Stage 1 lined area was initially filled with 9 inches of lignocellulosic and sand media mixture and the Stage 2 biofilter was initially filled with 12 inches of sulfur and oyster shell media mixture, which ostensibly will last for many years without replenishment or replacement.

3.5 Water Quality Sample Collection and Analyses

The fifth formal sample event was conducted on May 29, 2014 and included a full suite of influent, intermediate and effluent water quality samples from the system. Samples were collected at each of the thirteen monitoring points described previously in Section 3.2 and illustrated in Figures 3 and 4: eight treatment system monitoring points and five groundwater sampling points. 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, an equipment blank (EB) sample was taken. The equipment blank was collected by pumping deionized water through the cleaned pump tubing. These samples were 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), chloride, fecal coliform (fecal), and E. coli. The influent and sulfur media samples included sulfate, sulfide, and hydrogen sulfide (unionized). All analyses were performed by an independent and fully NELAC certified analytical laboratory (Southern Analytical Laboratory). Table 1 lists the analytical parameters, analytical methods, and detection limits for these 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
Total Organic Carbon (TOC)	SM5310B	0.06 mg/L
Chloride	EPA 300.0	0.50 mg/L
Sulfate	EPA 300.0	2.0 mg/L
Sulfide	SM 4500SF	0.10 mg/L
Hydrogen Sulfide (unionized)	SM 4550SF	0.01 mg/L
Fecal Coliform (fecal)	SM 9222D	2 ct/100mL
E.coli	SM 9223B	2 ct/100mL

4.0 Results and Discussion

4.1 Operational Monitoring

Table 2 provides a summary of the household water use since July 13, 2011. The treatment system flow meter readings for the B-HS3 field site are summarized in Table 3. The operation and maintenance log which includes actions taken since start-up is provided in Appendix B.

Table 2
Summary of Household Water Use

Date	Cumulative Volume (gallons)	Average Daily Household Flow, Q Between read-ings (gpd)	Comments
7/13/2011 14:45	5302677.9		Installed
7/20/2011 17:50	5304207.8	214.6	
7/26/2011 15:19	5305257.9	178.1	
10/27/2011 15:19	5327920.4	243.7	
11/30/2011 8:00	5355610.4	821.8	
3/13/2012 8:10	5378780.2	222.8	
7/10/2012 16:15	5453899.3	629.5	
10/18/2012 15:30	5470593.1	167.0	
3/7/2013 14:00	5488517.4	128.1	
6/7/2013 14:00	5504725.9	176.2	
7/9/2013 12:50	5508873.0	129.8	
PNRS System Start-up			PNRS start-up
7/12/13 14:01	5509172.1	98.1	
7/17/13 13:55	5509884.1	142.5	
7/29/13 9:50	5510830.9	80.0	
8/6/13 10:40	5511588.8	94.3	
8/12/13 11:07	5512244.8	109.0	
8/15/13 8:48	5513128.8	304.5	Prelim Event No. 1
9/5/13 15:31	5514810.2	79.0	
9/10/13			Septic tank pumped
9/17/13			System running again
9/27/13 8:00	5517331.9	116.3	
9/30/13 8:00	5517622.5	96.9	Sample Event No. 1
10/11/13 8:30	5518421.6	72.5	
10/17/13 11:00	5519187.0	125.4	
11/15/2013 10:00	5524455.0	181.9	
11/27/2013 9:10	5525784.8	111.1	
12/2/2013 8:30	5527623.5	369.8	Several guests stayed in the home over the Thanksgiving holiday
12/4/2013 8:51	5527809.2	92.2	Sample Event No. 2
12/23/2013 11:45	5529755.3	101.8	
1/23/2014 11:00	5532487.5	88.2	
1/30/2014 9:00	5533156.8	96.8	
2/3/2014 8:00	5533482.0	82.2	Sample Event No. 3
2/4/2014 8:15	5533499.6	17.4	Sample Event No. 4

Table 2
Summary of Household Water Use

Date	Cumulative Volume (gallons)	Average Daily Household Flow, Q Between readings (gpd)	Comments
2/5/2014 10:45	5533558.4	53.3	Sample Event No. 5
2/6/2014 10:45	5533690.6	132.2	Sample Event No. 6
2/7/2014 8:00	5533788.6	110.7	Sample Event No. 7
2/12/14 10:00	5534282.7	97.2	
3/14/14 8:24	5537363.8	102.9	
4/3/14 8:45	5539932.0	128.3	Sample Event No. 8 (formal No. 4)
4/29/14 10:10	5544794.2	186.6	
5/29/14 10:00	5549396.9	153.5	Sample Event No. 9 (formal No. 5)
Total average PNRS start-up to 5/29/14		125.4	

Table 3
Summary of System Flow

Date and Time Read	Combined Pumped Flow, Stage 1 and Treated Effluent Drip Zones	Average Daily Combined Pumped Flow between readings	Calculated Flow to Stage 1	Average Daily Calculated Flow to Stage 1 between readings	Treated Effluent Flow	Average Daily Treated Effluent Flow between readings	Difference in Stage 1 and Treated Effluent Flow between readings [(+)Rainfall/ Precipitation/ Irrigation (-) ET]
	Cumulative Volume (gallons)	Gallons/ day	Cumulative Volume (gallons)	Gallons/ Day	Cumulative Volume (gallons)	Gallons/ Day	Gallons/ Day
7/12/2013	206.9	Start-up	Start-up	Start-up	58.6	Start-up	Start-up
7/17/2013	423.0	44.0	40.6		234.2	35.7	
7/29/2013	3,345.1	245.3	765.3	60.8	2,431.6	184.5	123.6
8/6/2013	6,541.1	399.7	1,045.1	35.0	5,347.8	364.8	329.8
8/12/2013	8,953.1	398.2	2,360.0	217.1	6,444.9	181.1	-36.0
8/15/2013	10,131.2	405.8	3,084.3	249.4	6,898.7	156.3	-93.1
9/5/2013	18,696.5	402.5	7,734.4	218.5	10,813.8	184.0	-34.5
9/9/2013	19,884.6	318.7	8,287.6	148.4	11,448.8	170.3	22.0
9/17/2013	20,912.4	127.7	8,785.2	61.8	11,979.0	65.9	4.0
9/27/2013	22,142.0	124.1	9,239.3	45.8	12,754.5	78.3	32.4
9/30/2013	22,885.0	247.7	9,692.2	151.0	13,044.6	96.7	-54.2
10/11/2013	26,428.9	321.6	11,417.0	156.5	14,863.7	165.1	8.5
10/17/2013	28,781.4	385.4	12,823.8	230.5	15,809.4	154.9	-75.5
11/8/2013	34,278.1	249.1	15,844.0	136.9	18,285.9	112.2	-24.6
11/27/2013	39,031.1	252.0	18,656.6	149.1	20,226.3	102.9	-46.2
12/2/2013	42,081.5	613.5	20,437.6	358.2	21,495.7	255.3	-102.9
12/4/2013	42,599.8	257.3	20,729.5	144.9	21,722.1	112.4	-32.6
12/23/2013	47,135.0	237.2	23,494.6	144.6	23,640.5	100.3	-44.3
1/23/2014	54,702.9	244.4	27,634.5	133.7	27,068.4	110.7	-23.0
1/30/2014	56,954.9	325.6	28,768.0	163.9	28,187.0	161.7	-2.2
2/3/2014	58,390.4	362.7	29,353.4	147.9	29,037.1	214.8	66.9
2/4/2014	58,688.7	295.2	29,446.4	92.0	29,242.4	203.2	111.1
2/5/2014	58,870.7	164.8	29,542.1	86.7	29,328.6	78.1	-8.6
2/6/2014	59,118.7	248.0	29,702.1	159.9	29,416.7	88.1	-71.9
2/7/2014	59,354.0	265.8	29,852.9	170.4	29,501.1	95.4	-75.0

Table 3 (con't)
Summary of System Flow

Date and Time Read	Combined Pumped Flow, Stage 1 and Treated Effluent Drip Zones	Average Daily Combined Pumped Flow between readings	Calculated Flow to Stage 1	Average Daily Calculated Flow to Stage 1 between readings	Treated Effluent Flow	Average Daily Treated Effluent Flow between readings	Difference in Stage 1 and Treated Effluent Flow between readings [(+)Rainfall/ Precipitation/ Irrigation (-) ET]
	Cumulative Volume (gallons)	Gallons/ day	Cumulative Volume (gallons)	Gallons/ Day	Cumulative Volume (gallons)	Gallons/ Day	Gallons/ Day
2/12/2014	61,023.9	328.5	30,284.0	84.8	30,739.9	243.7	158.9
3/14/2014	67,901.2	229.8	34,539.3	142.2	33,361.9	87.6	-54.6
4/3/2014	73,953.4	302.4	37,614.2	153.6	36,339.2	148.8	-4.9
4/29/2014	81,273.0	280.9	41,858.6	162.9	39,414.4	118.0	-44.9
5/29/2014	86,833.4	185.4	44,776.5	97.3	42,057.0	88.1	-9.2
Avg start-up to 5/29/14		272.0		141.6		130.9	0.7

The average household water use since the PNRS system start-up was 125.4 gallons per day with periods of higher and lower flows. Since the PNRS system start-up, the average combined pumped flow (flow to the Stage 1 drip system and treated effluent drip system) was 272 gallons per day, the average calculated Stage 1 drip system (STE) flow was 142 gallons per day and the average treated effluent drip system (Stage 2 biofilter effluent) flow was 131 gallons per day. The average calculated Stage 1 drip system (STE) flow correlates with the household water use water meter.

The difference between the flow to the Stage 1 drip system (STE) and the treated effluent drip system (Stage 2 biofilter effluent) are due to water inputs and outputs. Water inputs include precipitation, overland flow, and irrigation water collected in the Stage 1 lined area. Water outputs include evapotranspiration. The last column in Table 3 summarizes the difference in the Stage 1 and treated effluent flows for each time period. The positive values indicate higher treated effluent flow (water inputs) which are likely attributed to precipitation and irrigation water collected in the lined area. The negative values indicate higher Stage 1 flow (water outputs) which is likely attributed to evapotranspiration.

A weather station (Lake Wayman Heights, Longwood, FL) is located approximately 5 miles from the site. Data from this weather station is available at the following website: http://www.wunderground.com. Recorded meteorological data is provided in Appendix C, Table C.1 from this weather station. Table 4 provides daily precipitation totals leading up to and during the sample event.

Table 4
Precipitation Data Daily Totals Measured May 9, 2014 through May 29, 2014
Sample Event No. 5

Date	Precipitation (inches)
5/9/2014	0
5/10/2014	0
5/11/2014	0
5/12/2014	0
5/13/2014	0
5/14/2014	0.13
5/15/2014	1.63
5/16/2014	0
5/17/2014	0
5/18/2014	0
5/19/2014	0
5/20/2014	0
5/21/2014	0
5/22/2014	0
5/23/2014	0
5/24/2014	0
5/25/2014	0
5/26/2014	0
5/27/2014	0.26
5/28/2014	0
5/29/2014	0.61

4.2 Energy, Chemical and/or Additives 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. The total average electrical use through May 29, 2014 was 0.90 kWh per day. The average electrical use per 1,000 gallons pumped was 3.343 kWh per 1,000 gallons, and this parameter appears fairly stable since start-up.

Table 5
Summary of System Electrical Use

Date and Time Read	Electrical Meter Reading	Average Daily Electrical Use between readings	Average Electrical Use per Gallon Pumped between readings	Average Electrical Use per 1,000 Gal-lons Pumped between readings
	Cumulative (kWh)	(kWh/day)	(kWh/gal)	(kWh/ 1,000 gal)
7/12/13 14:01	0.6	Start-up	Start-up	Start-up
7/17/13 11:57	1.1	0.10	0.002	2.314
7/29/13 9:52	8.9	0.65	0.003	2.669
8/6/13 9:45	19.1	1.28	0.003	3.191
8/12/13 11:07	27.9	1.45	0.004	3.648
8/15/13 8:48	32.5	1.58	0.004	3.905
9/5/13 15:31	69.6	1.74	0.004	4.331
9/9/13 9:00	82.3	3.41	0.011	10.689
9/17/13 10:12	86.2	0.48	0.004	3.795
9/27/13 8:00	88.8	0.26	0.002	2.115
9/30/13 8:00	90.6	0.60	0.002	2.423
10/11/13 8:30	98.5	0.72	0.002	2.229
10/17/13 11:00	104.7	1.02	0.003	2.635
11/8/13 12:30	121.1	0.74	0.003	2.984
11/27/13 9:10	135.6	0.77	0.003	3.051
12/2/13 8:30	145.1	1.91	0.003	3.114
12/4/13 8:51	146.8	0.84	0.003	3.280
1/23/14 11:00	185.1	0.76	0.003	3.129
1/30/14 9:00	192.3	1.04	0.003	3.197
2/3/14 8:00	197.0	1.09	0.003	3.017
2/4/14 8:15	198.0	1.15	0.004	3.886
2/5/14 10:45	198.6	0.76	0.005	4.590
2/6/14 10:45	199.3	0.63	0.003	2.546
2/7/14 8:00	200.2	0.85	0.003	3.193
2/12/14 10:00	205.7	1.07	0.003	3.249
3/14/14 8:24	228.2	0.80	0.003	3.480
4/3/14 8:45	248.3	0.85	0.003	2.820
4/29/14 10:10	272.5	0.96	0.003	3.423
5/29/14 10:00	290.2	0.75	0.004	4.032
Total average start-up to 5/29/14		0.90	0.003	3.343

4.3 Water Quality

Water quality analytical results, for Sample Event No. 5 are listed in Table 6 and graphically displayed in Figure 10. A summary of the water quality data collected to date for the test system is presented in Table 7. The laboratory report containing the raw analytical data is included in Appendix A. The following discussion summarizes the water quality analytical results for the Sample Event No. 5. 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.

Q	STE	STAGE 1 LY01 & LY02		STAGE 1 LINER	STAGE 2 SULFUR
$CBOD_5$ mg/L	51	Not analyzed	10	4	15
TKN mg N/L	50	1.9	2.2	1.5	1.3
NH_3 mg N/L	3.9	0.06	0.2	0.11	0.4
NO_x mg N/L	Non-detect	18	9	Non-detect	Non-detect
TN mg N/L	50	20	11	1.5	1.3
Sulfate mg/L	24	43	39	6.7	82
Fecal Coliform (Ct/100mL)	20,000	Not analyzed	Not analyzed	Non-detect	Non-detect

Note: Ammonia N values in red font are likely an analytical error and have been requested to be re-run by the laboratory

Figure 10
Graphical Representation of Water Quality Results
Sample Event No. 5, May 29, 2014

Septic Tank Effluent (STE) Quality: The water quality characteristics of STE collected in Sample Event 5 were within the typical range generally expected for domestic STE. The measured STE total nitrogen (TN) concentration was 50 mg/L, which is within the range that has been typically reported for Florida single family residence STE.

Stage 1 (Bottom of Sand Layer) Soil Suction Lysimeters (LY01 and LY02): The soil suction lysimeters effluent NH_3-N levels were 0.06 mg/L and 0.2 mg/L, respectively

(Table 6). The NO_x-N was 18 mg/L and 8.8 mg/L, respectively. Total inorganic nitrogen was substantially reduced by passage through the unsaturated sand layer. The Stage 1 biofilter showed nearly complete nitrification and some denitrification with an effluent concentration equal to or less than NH_3-N of 0.2 mg/L, NO_x-N of 18 mg/L and TKN of 2.2 mg/L.

Stage 1 Liner Effluent (Liner): The Stage 1 effluent NH_3-N level was 0.11 mg/L with a DO level at 0.42 mg/L (Table 6). TSS and $CBOD_5$ were 125 mg/L and 4 mg/L, respectively. The Stage 1 effluent NO_x-N was below the method detection limit of 0.02 mg/L. These results indicate significant denitrification by passage through the lignocellulosic/sand layer in the Stage 1 lined area (100% reduction NO_x-N). The combined Stage 1/liner area biofilter showed nearly complete ammonium removal and substantial removal of (NO3+NO2) with an effluent NH_3-N of 0.11 mg/L, NOx-N of 0.02 mg/L and TKN of 1.5 mg/L.

Stage 2 Biofilter Effluent (ST2): Effluent NO_x-N from the Stage 2 biofilter was below the method detection limit of 0.02 mg/L with a DO level at 0.32 mg/L and ORP at -219 mV. Final total nitrogen (TN) in the passive nitrogen removal system effluent was 1.3 mg/L. The Stage 2 biofilter effluent $CBOD_5$ concentration was 15 mg/L, TSS was 4 mg/L and sulfate was 82 mg/L.

Treated Effluent Soil Suction Lysimeters (LY03 and LY04): The treated effluent drip system monitoring devices LY03 and LY04 NO_x-N concentrations were 16 mg/L and 4.8 mg/L, respectively, which is higher than the Stage 2 effluent concentration.

Table 6
Sample Event 5 Water Quality 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)	Chloride (mg/L)	Sulfate (mg/L)	Hydrogen Sulfide (mg/L)	Sulfide (mg/L)	Fecal (Ct/100 mL)	E-coli (Ct/100 mL)
BHS3-STE	5/29/14 9:25	25.4	7.36	1174	0.10	-268.5	440	15	14	51	120	50.0	50	46.1	3.9	0.01	0.01	0.02	3.9	6.8	3.9	49	24	2.6	7.7	20,000	9,100
BHS3-STE-FILTERED	5/29/14 9:25	25.4	7.36	1174	0.10	-268.5				11		61.0	61	12.0	49	0.01	0.01	0.02	49.0								
BHS3-LY01	5/29/14 9:10	25.4	7.13	534	7.51	171.8	79	1	1		33	19.9	1.9	1.8	0.061	18	0.01	18.01	18.1	0.2	0.01	44	43				
BHS3-LY02	5/29/14 9:20	25.9	6.18	753	1.48	126.0	180	1	1	10	49	11.0	2.2	2.0	0.2	8.8	0.01	8.81	9.0	1.4	0.4	43	39				
BHS3-LINER	5/29/14 9:00	25.3	6.43	925	0.42	-86.2	360	125	45	4	60	1.5	1.5	1.4	0.11	0.01	0.01	0.02	0.1	2.9	0.01	36	6.7			1	2
BHS3-LINER-FILTERED	5/29/14 9:00	25.3	6.43	925	0.42	-86.2				3		1.4	1.4	1.3	0.099	0.01	0.01	0.02	0.1								
BHS3-SULFUR-6	5/29/14 9:10	25.0	6.54	991	0.25	-280.3						3.7	3.7	2.0	1.7	0.01	0.01	0.02	1.7				21	23	30		
BHS3-ST2	5/29/14 8:35	25.3	6.77	936	0.32	-219.1	310	4	2	15	50	1.3	1.3	0.9	0.4	0.01	0.01	0.02	0.4	0.15	0.01	33	82	6.3	9.7	1	2
BHS3-ST2-DUP	5/29/14 8:40	25.3	6.77	936	0.32	-219.1	260	4	4	17	16	1.1	1.1	0.6	0.46	0.01	0.01	0.02	0.5	0.14	0.01	34	99	6.7	10	1	2
BHS3-ST2-FILTERED	5/29/14 8:35	25.3	6.77	936	0.32	-219.1				10		4.8	4.8	4.4	0.41	0.01	0.01	0.02	0.4			0.05	84				
BHS3-LY03	5/29/14 9:35	26.3	6.57	75.7	5.43	150.1					18	18.0	2	1.8	0.25	16	0.01	16.01	16.3	0.089	0.01	35	110				
BHS3-LY04	5/29/14 9:30	26.7	6.62	818	4.63	124.0	210				18	6.1	1.3	1.2	0.1	4.8	0.01	4.81	4.9	0.01	0.01	34	94				
PZ-A7-6	5/28/14 9:22	25.4	6.04	682	3.66	249.9						0.6	0.56	0.4	0.12	0.01	0.01	0.02	0.1				86				
PZ-A7-8	5/28/14 9:40	23.8	6.31	784	0.22	-59.2						1.2	0.89	0.6	0.31	0.34	0.01	0.35	0.7				84				
PZ-B8-5	5/28/14 9:13	23.1	5.92	586	0.69	-4.9						1.0	1	0.7	0.28	0.01	0.01	0.02	0.3				75				
PZ-B8-7	5/28/14 9:27	22.6	5.84	292	0.32	32.1						0.8	0.75	0.6	0.15	0.01	0.01	0.02	0.2				4				
PZ-C10-6	5/28/14 8:58	23.8	6.30	689	0.56	-57.5						3.7	3.7	3.5	0.19	0.01	0.01	0.02	0.2				23				
EB	5/29/14 9:55	29.8	6.94	2	7.28	27.6	2	1	1	2	10	0.1	0.05	0.02	0.03	0.01	0.01	0.02	0.1	0.01	0.01	0.05	0.2	0.01	0.1	1	2

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.

Too many colonies were present. The numeric value represents the filtration volume.

Results based on colony counts outside the ideal range.

Sample held beyond the acceptable holding time

Off-scale high. Result exceeded highest calibration standard.

Note: Ammonia N values in red font are likely an analytical error and have been requested to be re-run by the laboratory.

Table 7
Summary of Water Quality Data

Sample ID	Statistic	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)	Chloride	Sulfate (mg/L)	Hydrogen Sulfide (mg/L)	Sulfide (mg/L)	Fecal (Ct/100 mL)	E-coli (Ct/100 mL)
STE	n	15	15	15	15	10	14	11	9	11	10	15	15	15	15	13	12	15	15	11	11	13	12	10	10	11	7
	MEAN	23.61	7.25	1087.07	0.34	-295.12	412.14	24.64	20.33	84.09	191.00	61.42	61.27	14.14	47.13	0.09	0.09	0.16	47.28	5.69	3.98	52.85	19.28	4.15	8.94	62,237	28,671
	STD. DEV.	4.00		148.35	0.47	31.23	41.36	15.54	13.78	49.75	78.66	20.35	20.21	14.73	19.85	0.22	0.27	0.45	19.94	1.94	1.56	8.78	12.95	2.61	2.40		
	MIN	18.50	6.88	868.00	0.00	-341.70	330.00	12.00	9.00	43.00	120.00	30.05	30.00	0.00	3.90	0.01	0.01	0.02	3.92	3.50	2.20	41.00	0.82	1.70	5.10	20,000	10,000
	MAX	29.60	7.82	1322.00	1.20	-253.90	490.00	61.00	55.00	210.00	400.00	110.06	110.00	46.10	85.00	0.82	0.94	1.80	85.06	9.00	7.50	75.00	39.00	8.90	12.00	420,000	240,000
Stage 1 LY01	n	9	9	9	8	8	2	3	3	3	8	9	9	9	9	9	9	9	9	8	8	8	9	0	0	0	0
	MEAN	22.54	6.82	528.89	6.97	132.69	89.50	1.67	1.33	2.00	43.38	15.94	1.72	1.65	0.07	14.19	0.02	14.22	14.29	0.11	0.02	35.38	39.78				
	STD. DEV.	4.44		120.16	2.10	47.00	14.85	1.15	0.58	0.00	56.56	8.33	0.51	0.49	0.09	8.12	0.04	8.11	8.15	0.05	0.04	9.96	11.17				
	MIN	15.80	6.33	330.00	2.39	36.20	79.00	1.00	1.00	2.00	10.00	2.50	0.99	0.93	0.01	1.30	0.01	1.30	1.38	0.05	0.01	15.00	24.00				
	MAX	30.90	7.24	711.00	9.92	180.50	100.00	3.00	2.00	2.00	180.00	30.21	2.70	2.66	0.30	28.00	0.13	28.01	28.31	0.20	0.12	45.00	54.00				
Stage 1 LY02	n	10	10	10	10	10	3	6	6	6	9	10	10	10	10	10	10	10	10	9	9	9	9	0	0	1	1
	MEAN	22.43	6.57	760.10	4.98	106.29	150.00	2.50	1.83	3.83	21.56	27.92	1.88	1.68	0.20	25.89	0.09	26.04	26.25	2.22	1.64	42.78	39.56			1,000	2
	STD. DEV.	4.42		102.63	2.75	61.52	43.59	1.64	1.60	3.25	12.39	10.09	0.81	0.98	0.50	10.49	0.17	10.61	10.75	1.03	1.04	8.27	9.30				
	MIN	14.60	6.18	559.00	1.48	-25.30	100.00	1.00	1.00	2.00	10.00	9.90	1.00	0.10	0.01	7.10	0.01	7.10	7.12	0.18	0.01	23.00	26.00			1,000	2
	MAX	30.20	6.99	871.00	10.23	182.00	180.00	5.00	5.00	10.00	49.00	37.70	3.70	3.69	1.60	35.00	0.47	36.00	37.60	3.20	2.80	52.00	54.00			1,000	2
Stage 1 Liner	n	10	10	10	10	10	9	9	9	9	9	10	10	10	10	10	10	10	10	9	9	9	8	5	5	9	8
	MEAN	22.63	6.77	723.50	3.09	-0.77	270.00	20.44	9.78	3.56	28.44	7.92	1.99	1.84	0.15	5.91	0.01	5.93	6.08	0.53	0.01	36.11	24.90	0.42	0.66	38	4
	STD. DEV.	4.51		112.54	2.61	97.93	46.90	39.38	13.41	3.97	15.31	4.27	0.48	0.44	0.17	4.30	0.01	4.30	4.31	0.96	0.00	8.28	14.03	0.42	0.60		
	MIN	18.10	6.43	552.00	0.42	-199.70	210.00	4.00	3.00	2.00	10.00	1.52	1.40	1.29	0.05	0.01	0.01	0.02	0.07	0.01	0.01	15.00	5.50	0.01	0.10	1	2
	MAX	31.80	7.15	925.00	9.09	124.50	360.00	125.00	45.00	14.00	60.00	16.01	2.80	2.62	0.63	14.00	0.05	14.01	14.07	2.90	0.01	43.00	47.00	1.10	1.60	6,800	310
Stage 2	n	10	10	10	10	10	9	9	9	9	9	10	10	10	10	10	10	10	10	9	9	9	10	10	10	9	8
	MEAN	22.00	6.87	841.40	0.29	-209.91	278.89	5.00	3.44	14.89	33.11	2.09	1.31	0.97	0.34	0.45	0.34	0.78	1.12	0.09	0.01	36.11	103.60	3.04	4.85	6	2
	STD. DEV.	3.98		91.04	0.29	94.47	28.48	3.32	2.07	25.21	14.07	1.93	0.38	0.38	0.23	1.01	0.72	1.72	1.66	0.12	0.00	8.64	43.59	3.73	5.15		
	MIN	18.70	6.53	653.00	0.01	-299.90	240.00	2.00	1.00	2.00	10.00	0.91	0.89	0.44	0.10	0.01	0.01	0.02	0.15	0.01	0.01	15.00	27.00	0.01	0.10	1	2
	MAX	29.70	7.15	942.00	0.91	38.20	310.00	12.00	6.00	81.00	50.00	7.10	1.80	1.58	0.87	3.20	2.10	5.30	5.52	0.39	0.01	45.00	150.00	12.00	16.00	300	10
Treated Effluent LY03	n	6	6	6	6	6	2	3	3	4	5	6	6	6	6	6	6	6	6	5	5	5	6	3	3	1	1
	MEAN	24.64	6.40	714.28	4.96	128.52	250.00	3.00	3.00	30.50	49.20	14.54	2.42	2.35	0.06	12.12	0.02	12.12	12.18	0.14	0.03	30.00	86.50	0.32	0.41	1	2
	STD. DEV.	2.71		318.73	2.35	22.70	0.00	1.73	1.73	53.08	58.03	5.86	0.68	0.71	0.09	5.43	0.02	5.42	5.46	0.04	0.04	9.92	30.68	0.30	0.31		
	MIN	21.81	6.27	75.70	2.05	103.30	250.00	1.00	1.00	2.00	10.00	8.61	1.80	1.75	0.01	6.10	0.01	6.11	6.12	0.09	0.01	13.00	50.00	0.01	0.10	1	2
	MAX	29.00	6.64	934.00	9.09	159.00	250.00	4.00	4.00	110.00	150.00	21.60	3.60	3.57	0.25	18.00	0.05	18.00	18.04	0.20	0.11	38.00	120.00	0.60	0.71	1	2
Treated Effluent LY04	n	6	6	6	6	6	4	3	3	4	5	6	6	6	6	6	6	6	6	5	5	5	6	3	3	1	1
	MEAN	25.23	6.46	792.17	4.36	111.68	240.00	1.33	1.33	3.75	30.40	7.72	1.81	1.77	0.05	5.90	0.01	5.90	5.95	0.09	0.01	31.80	81.50	0.28	0.37	1	2
	STD. DEV.	2.68	0.17	47.44	2.99	20.11	25.82	0.58	0.58	3.50	15.44	7.12	1.22	1.20	0.04	5.92	0.00	5.92	5.94	0.10	0.00	9.60	32.54	0.24	0.25		
	MIN	22.10	6.21	698.00	1.41	71.20	210.00	1.00	1.00	2.00	18.00	1.79	0.80	0.79	0.01	0.99	0.01	0.99	1.00	0.01	0.01	16.00	40.00	0.01	0.10	1	2
	MAX	29.40	6.62	821.00	9.98	124.00	270.00	2.00	2.00	9.00	56.00	21.00	4.00	3.91	0.10	17.00	0.01	17.00	17.09	0.25	0.01	42.00	130.00	0.48	0.60	1	2
Groundwater PZ07	n	4	4	4	4	4	2	2	2	3	3	4	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2
	MEAN	24.53	6.32	786.50	2.87	-40.23	275.00	6.50	4.50	2.67	24.00	7.72	2.19	1.96	0.22	5.53	0.01	5.53	5.75	0.12	0.07	25.67	71.33	0.35	0.41	1	2
	STD. DEV.	3.38	0.12	63.27	1.94	141.89	21.21	4.95	2.12	1.15	12.12	4.67	1.35	1.04	0.35	3.70	0.00	3.69	3.82	0.07	0.09	12.50	43.82	0.01	0.01		
	MIN	21.31	6.18	693.00	0.59	-248.70	260.00	3.00	3.00	2.00	10.00	2.65	0.84	0.83	0.01	1.80	0.01	1.81	1.82	0.04	0.01	17.00	35.00	0.34	0.40	1	2
	MAX	27.50	6.44	833.00	4.85	65.60	290.00	10.00	6.00	4.00	31.00	12.30	4.00	3.26	0.74	10.00	0.01	10.00	10.08	0.18	0.17	40.00	120.00	0.35	0.41	1	2

Table 7 (continued)
Summary of Water Quality Data

Sample ID	Statistic	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)	Chloride	Sulfate (mg/L)	Hydrogen Sulfide (mg/L)	Sulfide (mg/L)	Fecal (Ct/100 mL)	E-coli (Ct/100 mL)
Groundwater PZ08	n	4	4	4	4	4	2	2	2	3	3	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3
	MEAN	23.41	6.19	708.75	3.18	51.75	180.00	13.50	6.00	5.00	26.67	9.96	1.78	1.76	0.02	8.18	0.01	8.18	8.20	0.39	0.16	25.67	78.00	0.17	0.24	2	2
	STD. DEV.	3.60		190.35	1.29	57.43	14.14	13.44	5.66	5.20	17.56	8.46	0.84	0.84	0.02	7.76	0.00	7.76	7.75	0.09	0.17	12.90	48.14	0.16	0.16		
	MIN	20.04	5.67	527.00	2.12	-21.90	170.00	4.00	2.00	2.00	10.00	3.51	0.93	0.92	0.01	2.30	0.01	2.31	2.36	0.29	0.05	15.00	35.00	0.01	0.10	1	2
	MAX	27.00	6.44	962.00	4.90	110.20	190.00	23.00	10.00	11.00	45.00	21.50	2.50	2.48	0.05	19.00	0.01	19.00	19.02	0.47	0.36	40.00	130.00	0.32	0.41	10	2
Groundwater PZ09	n	3	3	3	3	3	1	1	1	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2
	MEAN	25.00	5.52	534.67	2.94	51.30	120.00	11.00	11.00	2.00	167.50	14.57	2.47	2.42	0.05	12.10	0.01	12.10	12.15	2.85	2.12	29.50	72.50	0.48	0.51	1	2
	STD. DEV.	3.21		15.89	2.13	14.80				0.00	187.38	3.10	0.65	0.62	0.04	2.48	0.00	2.47	2.50	2.33	1.95	16.26	53.03	0.15	0.13		
	MIN	21.30	5.09	525.00	0.62	38.30	120.00	11.00	11.00	2.00	35.00	11.11	1.80	1.79	0.01	9.30	0.01	9.31	9.32	1.20	0.74	18.00	35.00	0.37	0.41	1	2
	MAX	27.00	5.94	553.00	4.81	67.40	120.00	11.00	11.00	2.00	300.00	17.10	3.10	3.03	0.07	14.00	0.01	14.00	14.07	4.50	3.50	41.00	110.00	0.58	0.60	1	2
Groundwater PZA7-6	n	9	9	9	9	5	8	0	0	0	3	9	9	9	9	6	5	9	9	2	1	7	6	0	0	1	1
	MEAN	22.95	6.04	486.56	2.16	59.66	109.00				186.67	5.03	2.02	1.83	0.18	0.54	0.02	3.01	3.20	0.62	1.00	22.67	47.20			1	2
	STD. DEV.	3.19		195.01	2.16	122.07	49.80				15.28	6.48	1.13	1.11	0.11	0.66	0.02	5.70	5.73	0.51		12.23	42.00				
	MIN	18.50	5.80	242.00	0.09	-51.40	58.00				170.00	0.58	0.56	0.44	0.07	0.01	0.01	0.02	0.14	0.26	1.00	5.70	0.20			1	2
	MAX	26.30	6.30	701.00	5.50	249.90	190.00				200.00	20.60	3.60	3.30	0.35	1.70	0.06	17.00	17.30	0.98	1.00	42.00	110.00			1	2
Groundwater PZA7-8	n	10	10	10	10	5	9	0	0	0	4	10	10	10	10	8	8	10	10	2	2	8	7	0	0	1	1
	MEAN	23.29	5.99	552.30	0.51	-40.14	99.22				90.50	14.76	3.34	2.39	0.95	7.39	0.04	11.42	12.38	5.00	3.00	24.24	47.14			1	2
	STD. DEV.	2.16		167.33	0.45	113.86	104.69				57.88	13.05	1.51	1.36	1.32	9.41	0.04	12.88	12.89	0.42	1.41	12.88	24.31				
	MIN	20.00	5.60	186.00	0.11	-200.20	2.00				36.00	1.24	0.89	0.58	0.01	0.34	0.01	0.35	0.66	4.70	2.00	3.90	14.00			1	2
	MAX	26.00	6.38	784.00	1.60	115.30	270.00				150.00	39.20	5.80	4.87	4.10	23.00	0.12	37.00	37.01	5.30	4.00	40.00	84.00			1	2
Groundwater PZB8-5	n	10	10	10	10	5	9	0	0	0	5	10	10	10	10	9	8	10	10	2	3	8	9	0	0	1	1
	MEAN	23.18	5.81	453.10	0.69	101.38	77.89				86.20	14.05	2.90	2.80	0.10	7.81	0.06	11.15	11.25	0.75	0.70	22.13	36.56			1	2
	STD. DEV.	2.31		87.43	0.61	84.44	47.91				51.74	14.50	1.10	1.16	0.08	9.92	0.07	13.72	13.67	0.92	0.26	7.16	20.26				
	MIN	19.79	5.50	296.00	0.10	-4.90	21.00				0.00	1.02	1.00	0.72	0.03	0.01	0.01	0.02	0.30	0.10	0.49	13.00	0.00			1	2
	MAX	26.40	6.16	586.00	2.19	213.30	180.00				130.00	39.70	4.70	4.67	0.28	28.00	0.18	35.00	35.03	1.40	0.99	34.00	75.00			1	2
Groundwater PZB8-7	n	10	10	10	9	5	8	0	0	0	4	10	10	10	10	6	6	10	10	2	0	8	5	0	0	1	1
	MEAN	23.22	5.87	352.50	0.43	110.16	50.75				55.25	6.52	1.65	1.55	0.09	2.89	0.06	4.88	4.97	0.50		27.86	16.42			1	2
	STD. DEV.	1.95		95.13	0.32	76.26	26.66				23.82	6.78	0.62	0.61	0.11	6.43	0.12	6.29	6.32	0.38		12.53	11.59				
	MIN	20.84	5.46	249.00	0.10	32.10	2.00				36.00	0.77	0.75	0.60	0.01	0.01	0.01	0.02	0.13	0.23		6.90	4.00			1	2
	MAX	26.50	6.10	518.00	1.13	207.00	93.00				90.00	18.00	2.50	2.36	0.38	16.00	0.30	16.00	16.02	0.77		44.00	30.00			1	2
Groundwater PZC10-6	n	10	10	10	10	5	9	0	0	0	4	10	10	10	10	7	6	10	10	2	1	8	6	0	0	1	1
	MEAN	23.70	5.89	381.27	0.91	32.50	112.44				97.75	5.76	3.45	2.73	0.72	1.43	0.03	2.31	3.03	0.10	0.01	17.13	15.57			1	2
	STD. DEV.	2.65		161.44	1.03	120.36	100.95				17.75	2.67	0.61	0.58	0.48	1.12	0.04	2.75	2.69	0.02		9.14	7.13				
	MIN	19.19	5.10	200.70	0.10	-68.40	15.00				77.00	2.98	2.70	1.50	0.11	0.01	0.01	0.02	0.21	0.08	0.01	8.00	6.90			1	2
	MAX	27.00	6.30	689.00	2.78	230.00	270.00				120.00	11.90	4.60	3.51	1.40	2.80	0.12	9.20	9.51	0.11	0.01	32.00	23.00			1	2

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.

5.0 B-HS3 Sample Event No. 5: Summary and Recommendations

5.1 Summary

The results of the fifth sampling event indicate that the system is operating well and no adjustments are recommended at this time. The Sample Event No. 5 results indicate that:

- Septic tank effluent (STE) quality is characteristic of typical household STE quality. The total nitrogen concentration of 50 mg/L is within the range of values typically reported for Florida single family residence STE.

- The combined Stage 1 and lined drip system was effective in converting ammonium to oxidized nitrogen; effluent contained 1.5 mg/L TKN, of which 0.11 mg/L was ammonia. The system produced a reducing environment and effluent NO_x-N was below the method detection limit of 0.02 mg/L.

- The Stage 2 biofilter effluent NO_x-N was below the method detection limit of 0.02 mg/L.

- The total nitrogen concentration in the final effluent from the total treatment system was approximately 1.3 mg/L, an approximately 97% reduction from STE.

5.2 Recommendations

No operational adjustments are recommended at this time, and continued sampling should provide additional insight to system performance.

Appendix A: Laboratory Report

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

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

July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Volatile Organic Compounds								
Acetone	ug/L	57	EPA 8260	4.0	2.0		06/12/14 16:41	1
Acetone	ug/L	57	EPA 8260b	4.0	2.0		06/12/14 16:41	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/12/14 16:41	1
Acrylonitrile	ug/L	1.3 U	EPA 8260	4.0	1.3		06/12/14 16:41	1
Benzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Bromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Bromoform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Bromomethane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 16:41	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 16:41	1
2-Butanone	ug/L	5.2	EPA 8260	4.0	2.0		06/12/14 16:41	1
2-Butanone	ug/L	5.2	EPA 8260b	4.0	2.0		06/12/14 16:41	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Carbon disulfide	ug/L	0.6 I	EPA 8260	0.8	0.2		06/12/14 16:41	1
Carbon disulfide	ug/L	0.6 I	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Chlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 16:41	1
Chloroethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 16:41	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Chloroform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Chloromethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 16:41	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 16:41	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 16:41	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1

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10002 Princess Palm Ave, Suite 200
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July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Dibromomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/12/14 16:41	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260	0.8	0.3		06/12/14 16:41	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 16:41	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 16:41	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 16:41	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/12/14 16:41	1
Ethylbenzene	ug/L	0.08 U	EPA 8260	0.8	0.08		06/12/14 16:41	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 16:41	1
2-Hexanone	ug/L	2.1 U	EPA 8260	4.0	2.1		06/12/14 16:41	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/12/14 16:41	1
Iodomethane	ug/L	0.2 U,J5	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Iodomethane	ug/L	0.2 U,J5	EPA 8260	0.8	0.2		06/12/14 16:41	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1

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July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
4-Isopropyltoluene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 16:41	1
Methylene Chloride	ug/L	0.6 I	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Methylene Chloride	ug/L	0.6 I	EPA 8260	0.8	0.2		06/12/14 16:41	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260	4.0	2.6		06/12/14 16:41	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/12/14 16:41	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Styrene	ug/L	0.05 U	EPA 8260	0.8	0.05		06/12/14 16:41	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/12/14 16:41	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Toluene	ug/L	5.3	EPA 8260b	0.8	0.09		06/12/14 16:41	1
Toluene	ug/L	5.3	EPA 8260	0.8	0.09		06/12/14 16:41	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 16:41	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Trichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 16:41	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 16:41	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Vinyl acetate	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 16:41	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/12/14 16:41	1
Vinyl chloride	ug/L	0.3 U	EPA 8260	1.6	0.3		06/12/14 16:41	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 16:41	1
Xylene-m,p	ug/L	0.2 U	EPA 8260	1.6	0.2		06/12/14 16:41	1
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 16:41	1

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Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-STE**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-01**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Xylene-o	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 16:41	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 16:41	1
Xylenes- Total	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 16:41	1
Surrogate for EPA 8260	*Dibromofluoromethane*	*103 %*	*Limits*		*65-135*			
DRAFT: Pesticide Analyses								
1,2-Dibromo-3-chloropropane	ug/L	0.0056 U	EPA 504.1	0.022	0.0056	05/30/14 11:37	05/30/14 19:41	1
1,2-Dibromoethane	ug/L	0.0056 U	EPA 504.1	0.022	0.0056	05/30/14 11:37	05/30/14 19:41	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*	*109 %*	*Limits*		*70-130*			
DRAFT: Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	2.6	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	3.9 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	51	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	120	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	49	EPA 300.0	2.0	0.50		06/13/14 22:22	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	3.9	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	6.8	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	24	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	7.7	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	440	SM 2320B	8.0	2.0		05/30/14 11:19	1
Total Kjeldahl Nitrogen	mg/L	50	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	15	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	14	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
DRAFT: Microbiology								
E. Coli	MPN/100 mL	9,100	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	20,000	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1

Sample Description	**DRAFT: BHS3-STE-FILTERED**
Matrix	**Wastewater**
SAL Sample Number	**1405265-02**
Date/Time Collected	**05/29/14 09:25**
Collected by	**Josefin Hirst**
Date/Time Received	**05/29/14 15:15**

DRAFT: Inorganic, Dissolved

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DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-STE-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-02**						
Date/Time Collected		**05/29/14 09:25**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Ammonia as N	mg/L	49	EPA 350.1	0.040	0.009		06/25/14 17:46	1
Carbonaceous BOD	mg/L	11	SM 5210B	2	2	05/29/14 12:05	06/03/14 09:47	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Total Kjeldahl Nitrogen	mg/L	61	EPA 351.2	0.20	0.050	06/23/14 15:10	06/27/14 15:45	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: BHS3-LY01**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-03**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.061 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Chemical Oxygen Demand	mg/L	33	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	44 L	EPA 300.0	0.20	0.050		05/30/14 08:39	1
Nitrate (as N)	mg/L	18	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.20	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	43	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Total Alkalinity	mg/L	79	SM 2320B	8.0	2.0		05/30/14 11:25	1
Total Kjeldahl Nitrogen	mg/L	1.9	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	18	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: BHS3-LY02**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-04**						
Date/Time Collected		**05/29/14 09:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.20 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1

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Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-LY02**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-04**						
Date/Time Collected		**05/29/14 09:20**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Carbonaceous BOD	mg/L	10	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	49	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	43	EPA 300.0	2.0	0.50		06/13/14 22:34	10
Nitrate (as N)	mg/L	8.8	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.40	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	1.4	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	39	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Total Alkalinity	mg/L	180	SM 2320B	8.0	2.0		05/30/14 11:33	1
Total Kjeldahl Nitrogen	mg/L	2.2	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	1	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	8.8	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: BHS3-LINER**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-05**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.11 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	4	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	60	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	36	EPA 300.0	2.0	0.50		06/13/14 22:45	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	2.9	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	6.7	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Total Alkalinity	mg/L	360	SM 2320B	8.0	2.0		05/30/14 11:50	1
Total Kjeldahl Nitrogen	mg/L	1.5	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	125	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	45	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
DRAFT: Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1

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Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-LINER**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-05**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1
Sample Description		**DRAFT: BHS3-LINER-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-06**						
Date/Time Collected		**05/29/14 09:00**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganic, Dissolved								
Ammonia as N	mg/L	0.099	EPA 350.1	0.040	0.009		06/25/14 17:46	1
Carbonaceous BOD	mg/L	3	SM 5210B	2	2	05/29/14 12:05	06/03/14 09:47	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U,J5,J6	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Total Kjeldahl Nitrogen	mg/L	1.4	EPA 351.2	0.20	0.050	06/23/14 15:10	06/25/14 12:09	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: BHS3-SULFUR-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-07**						
Date/Time Collected		**05/29/14 09:10**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	23	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	1.7 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Sulfate	mg/L	21	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	30	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Kjeldahl Nitrogen	mg/L	3.7	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1

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Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Volatile Organic Compounds								
Acetone	ug/L	2.0 I	EPA 8260b	4.0	2.0		06/12/14 17:13	1
Acetone	ug/L	2.0 I	EPA 8260	4.0	2.0		06/12/14 17:13	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/12/14 17:13	1
Acrylonitrile	ug/L	1.3 U	EPA 8260	4.0	1.3		06/12/14 17:13	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Benzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Bromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Bromoform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:13	1
Bromomethane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:13	1
2-Butanone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/12/14 17:13	1
2-Butanone	ug/L	2.0 U	EPA 8260	4.0	2.0		06/12/14 17:13	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Carbon disulfide	ug/L	0.7 I	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Carbon disulfide	ug/L	0.7 I	EPA 8260	0.8	0.2		06/12/14 17:13	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Chlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:13	1
Chloroethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:13	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Chloroform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:13	1
Chloromethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:13	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:13	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1

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Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Dibromomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/12/14 17:13	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260	0.8	0.3		06/12/14 17:13	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:13	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:13	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:13	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Ethylbenzene	ug/L	0.08 U	EPA 8260	0.8	0.08		06/12/14 17:13	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/12/14 17:13	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:13	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/12/14 17:13	1
2-Hexanone	ug/L	2.1 U	EPA 8260	4.0	2.1		06/12/14 17:13	1
Iodomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Iodomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1

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

July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name	BHS3 SE#9
Sample Description	DRAFT: BHS3-ST2
Matrix	Wastewater
SAL Sample Number	1405265-08
Date/Time Collected	05/29/14 08:35
Collected by	Josefin Hirst
Date/Time Received	05/29/14 15:15

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
4-Isopropyltoluene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:13	1
Methylene Chloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Methylene Chloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/12/14 17:13	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260	4.0	2.6		06/12/14 17:13	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Styrene	ug/L	0.05 U	EPA 8260	0.8	0.05		06/12/14 17:13	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/12/14 17:13	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Toluene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:13	1
Toluene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:13	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:13	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Trichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:13	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:13	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Vinyl acetate	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:13	1
Vinyl chloride	ug/L	0.3 U	EPA 8260	1.6	0.3		06/12/14 17:13	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/12/14 17:13	1
Xylene-m,p	ug/L	0.2 U	EPA 8260	1.6	0.2		06/12/14 17:13	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:13	1
Xylene-o	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:13	1

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Tampa, FL 33619

July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-08**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:13	1
Xylenes- Total	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:13	1
Xylenes- Total	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:13	1
Surrogate for EPA 8260b	*Dibromofluoromethane*	*101 %*	*Limits*		*65-135*			
DRAFT: Pesticide Analyses								
1,2-Dibromo-3-chloropropane	ug/L	0.0055 U	EPA 504.1	0.022	0.0055	05/30/14 11:37	05/30/14 20:03	1
1,2-Dibromoethane	ug/L	0.0055 U	EPA 504.1	0.022	0.0055	05/30/14 11:37	05/30/14 20:03	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*	*102 %*	*Limits*		*70-130*			
DRAFT: Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	6.3	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	0.40 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	15	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	50	EPA 410.4	25	10	06/09/14 12:07	06/09/14 17:00	1
Chloride	mg/L	33	EPA 300.0	2.0	0.50		06/14/14 00:26	10
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.15	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	82	EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	9.7	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	310	SM 2320B	8.0	2.0		05/30/14 12:01	1
Total Kjeldahl Nitrogen	mg/L	1.3	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	4	SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	2	EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
DRAFT: Microbiology								
E. Coli	MPN/100 mL	2.0 U,Q	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1

Sample Description	**DRAFT: BHS3-ST2-DUP**
Matrix	**Wastewater**
SAL Sample Number	**1405265-09**
Date/Time Collected	**05/29/14 08:40**
Collected by	**Josefin Hirst**
Date/Time Received	**05/29/14 15:15**

DRAFT: Volatile Organic Compounds

Hazen and Sawyer
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Tampa, FL 33619

July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Acetone	ug/L	2.0 U	EPA 8260	4.0	2.0		06/12/14 17:45	1
Acetone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/12/14 17:45	1
Acrylonitrile	ug/L	1.3 U	EPA 8260b	4.0	1.3		06/12/14 17:45	1
Acrylonitrile	ug/L	1.3 U	EPA 8260	4.0	1.3		06/12/14 17:45	1
Benzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Benzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Bromobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Bromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Bromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Bromodichloromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Bromoform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Bromoform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Bromomethane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:45	1
Bromomethane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:45	1
2-Butanone	ug/L	2.0 U	EPA 8260	4.0	2.0		06/12/14 17:45	1
2-Butanone	ug/L	2.0 U	EPA 8260b	4.0	2.0		06/12/14 17:45	1
n-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
sec-Butylbenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
t-Butylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Carbon disulfide	ug/L	0.6 I	EPA 8260	0.8	0.2		06/12/14 17:45	1
Carbon disulfide	ug/L	0.6 I	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Carbon tetrachloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Chlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Chlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Chloroethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:45	1
Chloroethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:45	1
Chloroform	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Chloroform	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Chloromethane	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:45	1
Chloromethane	ug/L	0.4 U	EPA 8260b	1.6	0.4		06/12/14 17:45	1
1,2-Dibromoethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2-Dibromo-3-chloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
2-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
2-Chloroethylvinyl Ether	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:45	1
4-Chlorotoluene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Dibromochloromethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1

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July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name	BHS3 SE#9							
Parameters	**Units**	**Results ***	**Method**	**PQL**	**MDL**	**Prepared**	**Analyzed**	**Dilution**
Sample Description		**DRAFT: BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Dibromochloromethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Dibromomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Dibromomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
1,2-Dichlorobenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
1,3-Dichlorobenzene	ug/L	0.07 U	EPA 8260b	0.8	0.07		06/12/14 17:45	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,4-Dichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260	0.8	0.3		06/12/14 17:45	1
trans-1,4-Dichloro-2-butene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
Dichlorodifluoromethane	ug/L	0.5 U	EPA 8260b	1.6	0.5		06/12/14 17:45	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1-Dichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
1,2-Dichloroethane	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:45	1
cis-1,2-Dichloroethene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:45	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
trans-1,2-Dichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,2-Dichloropropane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
2,2-Dichloropropane	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
1,1-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
cis-1,3-Dichloropropene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
trans-1,3-Dichloropropene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Ethylbenzene	ug/L	0.08 U	EPA 8260	0.8	0.08		06/12/14 17:45	1
Ethylbenzene	ug/L	0.08 U	EPA 8260b	0.8	0.08		06/12/14 17:45	1
Hexachlorobutadiene	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:45	1
2-Hexanone	ug/L	2.1 U	EPA 8260b	4.0	2.1		06/12/14 17:45	1
2-Hexanone	ug/L	2.1 U	EPA 8260	4.0	2.1		06/12/14 17:45	1
Iodomethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Iodomethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Isopropylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
4-Isopropyltoluene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1

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July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2-DUP**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-09**						
Date/Time Collected		**05/29/14 08:40**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Methyl-t-butyl ether	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:45	1
Methylene Chloride	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Methylene Chloride	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260	4.0	2.6		06/12/14 17:45	1
4-Methyl-2-pentanone	ug/L	2.6 U	EPA 8260b	4.0	2.6		06/12/14 17:45	1
Naphthalene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
n-Propylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Styrene	ug/L	0.05 U	EPA 8260	0.8	0.05		06/12/14 17:45	1
Styrene	ug/L	0.05 U	EPA 8260b	0.8	0.05		06/12/14 17:45	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1,1,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2,2-Tetrachloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Tetrachloroethene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Toluene	ug/L	0.09 U	EPA 8260b	0.8	0.09		06/12/14 17:45	1
Toluene	ug/L	0.09 U	EPA 8260	0.8	0.09		06/12/14 17:45	1
1,2,3-Trichlorobenzene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2,4-Trichlorobenzene	ug/L	0.3 U	EPA 8260b	0.8	0.3		06/12/14 17:45	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
1,1,1-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,1,2-Trichloroethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Trichloroethene	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Trichloroethene	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1
Trichlorofluoromethane	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260	0.8	0.4		06/12/14 17:45	1
1,2,3-Trichloropropane	ug/L	0.4 U	EPA 8260b	0.8	0.4		06/12/14 17:45	1
1,2,4-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
1,3,5-Trimethylbenzene	ug/L	0.1 U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Vinyl acetate	ug/L	0.4 U	EPA 8260	1.6	0.4		06/12/14 17:45	1
Vinyl chloride	ug/L	0.3 U	EPA 8260b	1.6	0.3		06/12/14 17:45	1
Vinyl chloride	ug/L	0.3 U	EPA 8260	1.6	0.3		06/12/14 17:45	1
Xylene-m,p	ug/L	0.2 U	EPA 8260b	1.6	0.2		06/12/14 17:45	1
Xylene-m,p	ug/L	0.2 U	EPA 8260	1.6	0.2		06/12/14 17:45	1
Xylene-o	ug/L	0.2 U	EPA 8260b	0.8	0.2		06/12/14 17:45	1
Xylene-o	ug/L	0.2 U	EPA 8260	0.8	0.2		06/12/14 17:45	1

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July 7, 2014
Work Order: 1405265
DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *		Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2-DUP**							
Matrix		**Wastewater**							
SAL Sample Number		**1405265-09**							
Date/Time Collected		**05/29/14 08:40**							
Collected by		**Josefin Hirst**							
Date/Time Received		**05/29/14 15:15**							
Xylenes- Total	ug/L	0.1	U	EPA 8260b	0.8	0.1		06/12/14 17:45	1
Xylenes- Total	ug/L	0.1	U	EPA 8260	0.8	0.1		06/12/14 17:45	1
Surrogate for EPA 8260	*Dibromofluoromethane*	*103 %*		*Limits*		*65-135*			
DRAFT: Pesticide Analyses									
1,2-Dibromo-3-chloropropane	ug/L	0.0051	U	EPA 504.1	0.021	0.0051	06/04/14 09:24	06/04/14 20:37	1
1,2-Dibromoethane	ug/L	0.0051	U	EPA 504.1	0.021	0.0051	06/04/14 09:24	06/04/14 20:37	1
Surrogate for EPA 504.1	*2-Bromo-1-chloropropane*	*101 %*		*Limits*		*70-130*			
DRAFT: Inorganics									
Hydrogen Sulfide (Unionized)	mg/L	6.7		SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	0.46	Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	17		SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	16	I	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	34		EPA 300.0	2.0	0.50		06/13/14 08:31	10
Nitrate (as N)	mg/L	0.01	U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01	U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010	U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.14		SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	99		EPA 300.0	0.60	0.20		05/30/14 08:39	1
Sulfide	mg/L	10		SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	260		SM 2320B	8.0	2.0		06/06/14 11:12	1
Total Kjeldahl Nitrogen	mg/L	1.1		EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	4		SM 2540D	1	1	06/04/14 10:58	06/10/14 11:04	1
Volatile Suspended Solids	mg/L	4		EPA 160.4	1	1	06/04/14 10:58	06/10/14 11:07	1
Nitrate+Nitrite (N)	mg/L	0.02	U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
DRAFT: Microbiology									
E. Coli	MPN/100 mL	2.0	U	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1	U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1

Sample Description		**DRAFT: BHS3-ST2-DUP**							
Matrix		**Wastewater**							
SAL Sample Number		**1405265-09RE1**							
Date/Time Collected		**05/29/14 08:40**							
Collected by		**Josefin Hirst**							
Date/Time Received		**05/29/14 15:15**							
DRAFT: Inorganics									
Chloride	mg/L	0.050	U	EPA 300.0	0.20	0.050		06/09/14 09:26	1

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DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-ST2-FILTERED**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-10**						
Date/Time Collected		**05/29/14 08:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Sulfate	mg/L	84	EPA 300.0	0.60	0.20		05/30/14 08:39	1
DRAFT: Inorganic, Dissolved								
Ammonia as N	mg/L	0.41	EPA 350.1	0.040	0.009		06/25/14 17:46	1
Carbonaceous BOD	mg/L	10	SM 5210B	2	2	05/29/14 12:05	06/03/14 09:47	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Total Kjeldahl Nitrogen	mg/L	4.8	EPA 351.2	0.20	0.050	06/23/14 15:10	06/25/14 12:09	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: BHS3-LY03**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-11**						
Date/Time Collected		**05/29/14 09:35**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.25 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Chemical Oxygen Demand	mg/L	18 I	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	35	EPA 300.0	2.0	0.50		06/14/14 00:37	10
Nitrate (as N)	mg/L	16	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.089	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	110	EPA 300.0	6.0	2.0		06/14/14 00:37	10
Total Kjeldahl Nitrogen	mg/L	2.0	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	16	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: BHS3-LY04**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-12**						
Date/Time Collected		**05/29/14 09:30**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.10 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1

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DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: BHS3-LY04**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-12**						
Date/Time Collected		**05/29/14 09:30**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
Chemical Oxygen Demand	mg/L	18 I	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	34	EPA 300.0	2.0	0.50		06/14/14 00:49	10
Nitrate (as N)	mg/L	4.8	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/30/14 08:39	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/30/14 08:39	1
Phosphorous - Total as P	mg/L	0.010 U	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	94	EPA 300.0	6.0	2.0		06/14/14 00:49	10
Total Alkalinity	mg/L	210	SM 2320B	8.0	2.0		05/30/14 12:09	1
Total Kjeldahl Nitrogen	mg/L	1.3	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	4.8	EPA 300.0	0.08	0.02		05/30/14 08:39	1
Sample Description		**DRAFT: PZ-A-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-16**						
Date/Time Collected		**05/28/14 09:22**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.12 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	86	EPA 300.0	6.0	2.0		06/14/14 01:00	10
Total Kjeldahl Nitrogen	mg/L	0.56	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**DRAFT: PZ-A7-8**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-17**						
Date/Time Collected		**05/28/14 09:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.31 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.34	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	84	EPA 300.0	0.60	0.20		05/29/14 11:43	1

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Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: PZ-A7-8**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-17**						
Date/Time Collected		**05/28/14 09:40**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
Total Kjeldahl Nitrogen	mg/L	0.89	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.34	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**DRAFT: PZ-B8-5**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-18**						
Date/Time Collected		**05/28/14 09:13**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.28 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	75	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	1.0	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**DRAFT: PZ-B8-7**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-19**						
Date/Time Collected		**05/28/14 09:27**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.15 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	4.0	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	0.75	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1

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DRAFT REPORT

Laboratory Report

Project Name **BHS3 SE#9**

Parameters	Units	Results *	Method	PQL	MDL	Prepared	Analyzed	Dilution
Sample Description		**DRAFT: PZ-C10-6**						
Matrix		**Wastewater**						
SAL Sample Number		**1405265-20**						
Date/Time Collected		**05/28/14 08:58**						
Collected by		**Sean Schmidt**						
Date/Time Received		**05/28/14 14:35**						
DRAFT: Inorganics								
Ammonia as N	mg/L	0.19 Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Sulfate	mg/L	23	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Total Kjeldahl Nitrogen	mg/L	3.7	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
Sample Description		**DRAFT: EB**						
Matrix		**Reagent Water**						
SAL Sample Number		**1405265-21**						
Date/Time Collected		**05/29/14 09:55**						
Collected by		**Josefin Hirst**						
Date/Time Received		**05/29/14 15:15**						
DRAFT: Inorganics								
Hydrogen Sulfide (Unionized)	mg/L	0.01 U	SM 4550SF	0.04	0.01	06/03/14 17:02	06/03/14 17:05	1
Ammonia as N	mg/L	0.030 I,Q	EPA 350.1	0.040	0.009	06/20/14 14:57	07/02/14 14:57	1
Carbonaceous BOD	mg/L	2 U	SM 5210B	2	2	05/30/14 13:27	06/04/14 09:34	1
Chemical Oxygen Demand	mg/L	10 U	EPA 410.4	25	10	06/11/14 17:07	06/23/14 17:44	1
Chloride	mg/L	0.050 U	EPA 300.0	0.20	0.050		05/29/14 11:43	1
Nitrate (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Nitrite (as N)	mg/L	0.01 U	EPA 300.0	0.04	0.01		05/29/14 11:43	1
Orthophosphate as P	mg/L	0.010 U	EPA 300.0	0.040	0.010		05/29/14 11:43	1
Phosphorous - Total as P	mg/L	0.010 U	SM 4500P-E	0.040	0.010	06/11/14 09:52	06/23/14 14:26	1
Sulfate	mg/L	0.20 U	EPA 300.0	0.60	0.20		05/29/14 11:43	1
Sulfide	mg/L	0.10 U	SM 4500SF	0.40	0.10		06/03/14 16:28	1
Total Alkalinity	mg/L	2.0 U	SM 2320B	8.0	2.0		05/30/14 12:12	1
Total Kjeldahl Nitrogen	mg/L	0.05 U	EPA 351.2	0.20	0.05	06/11/14 09:52	06/23/14 14:26	1
Total Suspended Solids	mg/L	1 U	SM 2540D	1	1	05/29/14 14:13	06/04/14 09:54	1
Volatile Suspended Solids	mg/L	1 U	EPA 160.4	1	1	05/29/14 14:13	06/04/14 09:57	1
Nitrate+Nitrite (N)	mg/L	0.02 U	EPA 300.0	0.08	0.02		05/29/14 11:43	1
DRAFT: Microbiology								
E. Coli	MPN/100 mL	2.0 U	SM 9223B	2.0	2.0	05/29/14 16:39	05/30/14 10:50	1
Fecal Coliforms	CFU/100 ml	1 U	SM 9222D	1	1	05/29/14 16:33	05/30/14 14:50	1

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DRAFT REPORT

DRAFT: Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Blank (BF41217-BLK1)					Prepared & Analyzed: 06/12/14 13:35					
Acetone	2.0 U	4.0	2.0	ug/L						
Acetone	2.0 U	4.0	2.0	ug/L						
Acrylonitrile	1.3 U	4.0	1.3	ug/L						
Acrylonitrile	1.3 U	4.0	1.3	ug/L						
Benzene	0.1 U	0.8	0.1	ug/L						
Benzene	0.1 U	0.8	0.1	ug/L						
Bromobenzene	0.2 U	0.8	0.2	ug/L						
Bromochloromethane	0.1 U	0.8	0.1	ug/L						
Bromochloromethane	0.1 U	0.8	0.1	ug/L						
Bromodichloromethane	0.2 U	0.8	0.2	ug/L						
Bromodichloromethane	0.2 U	0.8	0.2	ug/L						
Bromoform	0.2 U	0.8	0.2	ug/L						
Bromoform	0.2 U	0.8	0.2	ug/L						
Bromomethane	0.4 U	0.8	0.4	ug/L						
Bromomethane	0.4 U	0.8	0.4	ug/L						
2-Butanone	2.0 U	4.0	2.0	ug/L						
2-Butanone	2.0 U	4.0	2.0	ug/L						
n-Butylbenzene	0.2 U	0.8	0.2	ug/L						
sec-Butylbenzene	0.2 U	0.8	0.2	ug/L						
t-Butylbenzene	0.1 U	0.8	0.1	ug/L						
Carbon disulfide	0.2 U	0.8	0.2	ug/L						
Carbon disulfide	0.2 U	0.8	0.2	ug/L						
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L						
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L						
Chlorobenzene	0.1 U	0.8	0.1	ug/L						
Chlorobenzene	0.1 U	0.8	0.1	ug/L						
Chloroethane	0.4 U	1.6	0.4	ug/L						
Chloroethane	0.4 U	1.6	0.4	ug/L						
Chloroform	0.2 U	0.8	0.2	ug/L						
Chloroform	0.2 U	0.8	0.2	ug/L						
Chloromethane	0.4 U	1.6	0.4	ug/L						
Chloromethane	0.4 U	1.6	0.4	ug/L						
1,2-Dibromoethane	0.2 U	0.8	0.2	ug/L						
1,2-Dibromo-3-chloropropane	0.3 U	0.8	0.3	ug/L						
2-Chlorotoluene	0.1 U	0.8	0.1	ug/L						
2-Chloroethylvinyl Ether	0.5 U	1.6	0.5	ug/L						
4-Chlorotoluene	0.1 U	0.8	0.1	ug/L						
Dibromochloromethane	0.1 U	0.8	0.1	ug/L						
Dibromochloromethane	0.1 U	0.8	0.1	ug/L						
Dibromomethane	0.2 U	0.8	0.2	ug/L						
Dibromomethane	0.2 U	0.8	0.2	ug/L						
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L						
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L						
1,3-Dichlorobenzene	0.07 U	0.8	0.07	ug/L						
1,4-Dichlorobenzene	0.2 U	0.8	0.2	ug/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Blank (BF41217-BLK1)					Prepared & Analyzed: 06/12/14 13:35					
1,4-Dichlorobenzene	0.2 U	0.8	0.2	ug/L						
trans-1,4-Dichloro-2-butene	0.3 U	0.8	0.3	ug/L						
trans-1,4-Dichloro-2-butene	0.3 U	0.8	0.3	ug/L						
Dichlorodifluoromethane	0.5 U	1.6	0.5	ug/L						
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L						
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L						
1,2-Dichloroethane	0.1 U	0.8	0.1	ug/L						
1,2-Dichloroethane	0.1 U	0.8	0.1	ug/L						
1,1-Dichloroethene	0.2 U	0.8	0.2	ug/L						
1,1-Dichloroethene	0.2 U	0.8	0.2	ug/L						
cis-1,2-Dichloroethene	0.09 U	0.8	0.09	ug/L						
cis-1,2-Dichloroethene	0.09 U	0.8	0.09	ug/L						
trans-1,2-Dichloroethene	0.2 U	0.8	0.2	ug/L						
trans-1,2-Dichloroethene	0.2 U	0.8	0.2	ug/L						
1,2-Dichloropropane	0.2 U	0.8	0.2	ug/L						
1,2-Dichloropropane	0.2 U	0.8	0.2	ug/L						
2,2-Dichloropropane	0.3 U	0.8	0.3	ug/L						
1,1-Dichloropropene	0.2 U	0.8	0.2	ug/L						
cis-1,3-Dichloropropene	0.2 U	0.8	0.2	ug/L						
cis-1,3-Dichloropropene	0.2 U	0.8	0.2	ug/L						
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L						
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L						
Ethylbenzene	0.08 U	0.8	0.08	ug/L						
Ethylbenzene	0.08 U	0.8	0.08	ug/L						
Hexachlorobutadiene	0.4 U	0.8	0.4	ug/L						
2-Hexanone	2.1 U	4.0	2.1	ug/L						
2-Hexanone	2.1 U	4.0	2.1	ug/L						
Iodomethane	0.2 U	0.8	0.2	ug/L						
Iodomethane	0.2 U	0.8	0.2	ug/L						
Isopropylbenzene	0.1 U	0.8	0.1	ug/L						
4-Isopropyltoluene	0.2 U	0.8	0.2	ug/L						
Methyl-t-butyl ether	0.2 U	1.6	0.2	ug/L						
Methylene Chloride	0.2 U	0.8	0.2	ug/L						
Methylene Chloride	0.2 U	0.8	0.2	ug/L						
4-Methyl-2-pentanone	2.6 U	4.0	2.6	ug/L						
4-Methyl-2-pentanone	2.6 U	4.0	2.6	ug/L						
Naphthalene	0.2 U	0.8	0.2	ug/L						
n-Propylbenzene	0.1 U	0.8	0.1	ug/L						
Styrene	0.05 U	0.8	0.05	ug/L						
Styrene	0.05 U	0.8	0.05	ug/L						
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L						
Tetrachloroethene	0.1 U	0.8	0.1	ug/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Blank (BF41217-BLK1)					Prepared & Analyzed: 06/12/14 13:35					
Tetrachloroethene	0.1 U	0.8	0.1	ug/L						
Toluene	0.09 U	0.8	0.09	ug/L						
Toluene	0.09 U	0.8	0.09	ug/L						
1,2,3-Trichlorobenzene	0.2 U	0.8	0.2	ug/L						
1,2,4-Trichlorobenzene	0.3 U	0.8	0.3	ug/L						
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L						
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2-Trichloroethane	0.2 U	0.8	0.2	ug/L						
1,1,2-Trichloroethane	0.2 U	0.8	0.2	ug/L						
Trichloroethene	0.2 U	0.8	0.2	ug/L						
Trichloroethene	0.2 U	0.8	0.2	ug/L						
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L						
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L						
1,2,3-Trichloropropane	0.4 U	0.8	0.4	ug/L						
1,2,3-Trichloropropane	0.4 U	0.8	0.4	ug/L						
1,2,4-Trimethylbenzene	0.1 U	0.8	0.1	ug/L						
1,3,5-Trimethylbenzene	0.1 U	0.8	0.1	ug/L						
Vinyl acetate	0.4 U	1.6	0.4	ug/L						
Vinyl chloride	0.3 U	1.6	0.3	ug/L						
Vinyl chloride	0.3 U	1.6	0.3	ug/L						
Xylene-m,p	0.2 U	1.6	0.2	ug/L						
Xylene-m,p	0.2 U	1.6	0.2	ug/L						
Xylene-o	0.2 U	0.8	0.2	ug/L						
Xylene-o	0.2 U	0.8	0.2	ug/L						
Xylenes- Total	0.1 U	0.8	0.1	ug/L						
Xylenes- Total	0.1 U	0.8	0.1	ug/L						
Surrogate: 4-Bromofluorobenzene	*20.8*			*ug/L*	*20*		*104*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*20.8*			*ug/L*	*20*		*104*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Toluene-d8	*20.3*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Toluene-d8	*20.3*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*65-135*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
LCS (BF41217-BS1)					Prepared & Analyzed: 06/12/14 14:07					
Acetone	96.8	4.0	2.0	ug/L	100		97	70-130		
Acetone	96.8	4.0	2.0	ug/L	100		97	70-130		
Acrylonitrile	99.5	4.0	1.3	ug/L	100		100	70-130		
Acrylonitrile	99.5	4.0	1.3	ug/L	100		100	70-130		
Benzene	20.4	0.8	0.1	ug/L	20		102	70-130		
Benzene	20.4	0.8	0.1	ug/L	20		102	37-151		
Bromobenzene	20.1	0.8	0.2	ug/L	20		101	70-130		
Bromochloromethane	21.1	0.8	0.1	ug/L	20		106	70-130		
Bromochloromethane	21.1	0.8	0.1	ug/L	20		106	70-130		
Bromodichloromethane	20.7	0.8	0.2	ug/L	20		104	35-155		
Bromodichloromethane	20.7	0.8	0.2	ug/L	20		104	70-130		
Bromoform	19.6	0.8	0.2	ug/L	20		98	45-169		
Bromoform	19.6	0.8	0.2	ug/L	20		98	70-130		
Bromomethane	34.1	0.8	0.4	ug/L	40		85	70-130		
Bromomethane	34.1	0.8	0.4	ug/L	40		85	0-242		
2-Butanone	99.3	4.0	2.0	ug/L	100		99	70-130		
2-Butanone	99.3	4.0	2.0	ug/L	100		99	70-130		
n-Butylbenzene	21.2	0.8	0.2	ug/L	20		106	70-130		
sec-Butylbenzene	20.3	0.8	0.2	ug/L	20		102	70-130		
t-Butylbenzene	20.2	0.8	0.1	ug/L	20		101	70-130		
Carbon disulfide	20.6	0.8	0.2	ug/L	20		103	70-130		
Carbon disulfide	20.6	0.8	0.2	ug/L	20		103	70-130		
Carbon tetrachloride	20.9	0.8	0.2	ug/L	20		105	70-130		
Carbon tetrachloride	20.9	0.8	0.2	ug/L	20		105	70-140		
Chlorobenzene	20.8	0.8	0.1	ug/L	20		104	70-130		
Chlorobenzene	20.8	0.8	0.1	ug/L	20		104	37-160		
Chloroethane	46.5	1.6	0.4	ug/L	40		116	70-130		
Chloroethane	46.5	1.6	0.4	ug/L	40		116	14-230		
Chloroform	20.8	0.8	0.2	ug/L	20		104	70-130		
Chloroform	20.8	0.8	0.2	ug/L	20		104	51-138		
Chloromethane	41.8	1.6	0.4	ug/L	40		104	70-130		
Chloromethane	41.8	1.6	0.4	ug/L	40		104	1-273		
2-Chlorotoluene	20.7	0.8	0.1	ug/L	20		104	70-130		
4-Chlorotoluene	21.1	0.8	0.1	ug/L	20		105	70-130		
Dibromochloromethane	21.8	0.8	0.1	ug/L	20		109	70-130		
Dibromochloromethane	21.8	0.8	0.1	ug/L	20		109	53-149		
Dibromomethane	20.5	0.8	0.2	ug/L	20		102	70-130		
Dibromomethane	20.5	0.8	0.2	ug/L	20		102	70-130		
1,2-Dichlorobenzene	20.3	0.8	0.1	ug/L	20		101	18-190		
1,2-Dichlorobenzene	20.3	0.8	0.1	ug/L	20		101	70-130		
1,3-Dichlorobenzene	20.1	0.8	0.07	ug/L	20		101	70-130		
1,4-Dichlorobenzene	20.4	0.8	0.2	ug/L	20		102	18-190		
1,4-Dichlorobenzene	20.4	0.8	0.2	ug/L	20		102	70-130		
trans-1,4-Dichloro-2-butene	19.2	0.8	0.3	ug/L	20		96	70-130		
trans-1,4-Dichloro-2-butene	19.2	0.8	0.3	ug/L	20		96	70-130		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
LCS (BF41217-BS1)					Prepared & Analyzed: 06/12/14 14:07					
Dichlorodifluoromethane	47.6	1.6	0.5	ug/L	40		119	70-130		
1,1-Dichloroethane	20.7	0.8	0.2	ug/L	20		103	59-155		
1,1-Dichloroethane	20.7	0.8	0.2	ug/L	20		103	70-130		
1,2-Dichloroethane	21.0	0.8	0.1	ug/L	20		105	49-155		
1,2-Dichloroethane	21.0	0.8	0.1	ug/L	20		105	70-130		
1,1-Dichloroethene	21.1	0.8	0.2	ug/L	20		106	1-234		
1,1-Dichloroethene	21.1	0.8	0.2	ug/L	20		106	70-130		
cis-1,2-Dichloroethene	20.9	0.8	0.09	ug/L	20		105	70-130		
cis-1,2-Dichloroethene	20.9	0.8	0.09	ug/L	20		105	70-130		
trans-1,2-Dichloroethene	20.7	0.8	0.2	ug/L	20		104	54-156		
trans-1,2-Dichloroethene	20.7	0.8	0.2	ug/L	20		104	70-130		
1,2-Dichloropropane	20.9	0.8	0.2	ug/L	20		104	1-210		
1,2-Dichloropropane	20.9	0.8	0.2	ug/L	20		104	70-130		
2,2-Dichloropropane	21.9	0.8	0.3	ug/L	20		109	70-130		
1,1-Dichloropropene	21.3	0.8	0.2	ug/L	20		107	70-130		
cis-1,3-Dichloropropene	21.3	0.8	0.2	ug/L	20		107	70-130		
cis-1,3-Dichloropropene	21.3	0.8	0.2	ug/L	20		107	1-227		
trans-1,3-Dichloropropene	22.0	0.8	0.1	ug/L	20		110	17-183		
trans-1,3-Dichloropropene	22.0	0.8	0.1	ug/L	20		110	70-130		
Ethylbenzene	21.6	0.8	0.08	ug/L	20		108	70-130		
Ethylbenzene	21.6	0.8	0.08	ug/L	20		108	37-162		
Hexachlorobutadiene	19.6	0.8	0.4	ug/L	20		98	70-130		
2-Hexanone	102	4.0	2.1	ug/L	100		102	70-130		
2-Hexanone	102	4.0	2.1	ug/L	100		102	70-130		
Iodomethane	16.9	0.8	0.2	ug/L	20		84	70-130		
Iodomethane	16.9	0.8	0.2	ug/L	20		84	70-130		
Isopropylbenzene	21.5	0.8	0.1	ug/L	20		107	70-130		
4-Isopropyltoluene	20.9	0.8	0.2	ug/L	20		105	70-130		
Methyl-t-butyl ether	20.8	1.6	0.2	ug/L	20		104	70-130		
Methylene Chloride	20.7	0.8	0.2	ug/L	20		104	70-130		
Methylene Chloride	20.7	0.8	0.2	ug/L	20		104	1-221		
4-Methyl-2-pentanone	97.4	4.0	2.6	ug/L	100		97	70-130		
4-Methyl-2-pentanone	97.4	4.0	2.6	ug/L	100		97	70-130		
Naphthalene	19.6	0.8	0.2	ug/L	20		98	70-130		
n-Propylbenzene	21.0	0.8	0.1	ug/L	20		105	70-130		
Styrene	21.9	0.8	0.05	ug/L	20		110	70-130		
Styrene	21.9	0.8	0.05	ug/L	20		110	70-130		
1,1,1,2-Tetrachloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
1,1,1,2-Tetrachloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
1,1,2,2-Tetrachloroethane	19.6	0.8	0.2	ug/L	20		98	46-157		
1,1,2,2-Tetrachloroethane	19.6	0.8	0.2	ug/L	20		98	70-130		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20		105	70-130		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20		105	64-148		
Toluene	21.3	0.8	0.09	ug/L	20		107	70-130		
Toluene	21.3	0.8	0.09	ug/L	20		107	47-150		

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Batch BF41217 - VOC - Prep										
LCS (BF41217-BS1)					Prepared & Analyzed: 06/12/14 14:07					
1,2,3-Trichlorobenzene	19.2	0.8	0.2	ug/L	20		96	70-130		
1,2,4-Trichlorobenzene	18.8	0.8	0.3	ug/L	20		94	70-130		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20		106	52-162		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20		106	70-130		
1,1,2-Trichloroethane	21.0	0.8	0.2	ug/L	20		105	52-150		
1,1,2-Trichloroethane	21.0	0.8	0.2	ug/L	20		105	70-130		
Trichloroethene	20.6	0.8	0.2	ug/L	20		103	70-130		
Trichloroethene	20.6	0.8	0.2	ug/L	20		103	71-157		
Trichlorofluoromethane	21.7	0.8	0.2	ug/L	20		109	70-130		
Trichlorofluoromethane	21.7	0.8	0.2	ug/L	20		109	17-181		
1,2,3-Trichloropropane	19.7	0.8	0.4	ug/L	20		98	70-130		
1,2,3-Trichloropropane	19.7	0.8	0.4	ug/L	20		98	70-130		
1,2,4-Trimethylbenzene	20.9	0.8	0.1	ug/L	20		105	70-130		
1,3,5-Trimethylbenzene	21.1	0.8	0.1	ug/L	20		105	70-130		
Vinyl acetate	43.6	1.6	0.4	ug/L	40		109	70-130		
Vinyl chloride	40.6	1.6	0.3	ug/L	40		102	70-130		
Vinyl chloride	40.6	1.6	0.3	ug/L	40		102	1-251		
Xylene-m,p	43.1	1.6	0.2	ug/L	40		108	70-130		
Xylene-m,p	43.1	1.6	0.2	ug/L	40		108	70-130		
Xylene-o	21.3	0.8	0.2	ug/L	20		106	70-130		
Xylene-o	21.3	0.8	0.2	ug/L	20		106	70-130		
Surrogate: 4-Bromofluorobenzene	*19.8*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*19.8*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.1*			*ug/L*	*20*		*96*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.1*			*ug/L*	*20*		*96*	*65-135*		
Surrogate: Toluene-d8	*20.1*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Toluene-d8	*20.1*			*ug/L*	*20*		*101*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.4*			*ug/L*	*20*		*102*	*65-135*		

Hazen and Sawyer
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Tampa, FL 33619

July 7, 2014
Work Order: 1405265
DRAFT REPORT

DRAFT: Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Duplicate (BF41217-DUP1)		**Source: 1405266-16**			Prepared & Analyzed: 06/12/14 19:54					
Acetone	59.3 J3	4.0	2.0	ug/L		104			55	20
Acetone	59.3 J3	4.0	2.0	ug/L		104			55	20
Acrylonitrile	1.3 U	4.0	1.3	ug/L		ND				20
Acrylonitrile	1.3 U	4.0	1.3	ug/L		ND				20
Benzene	0.1 U	0.8	0.1	ug/L		ND				20
Benzene	0.1 U	0.8	0.1	ug/L		ND				20
Bromobenzene	0.2 U	0.8	0.2	ug/L		ND				20
Bromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Bromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Bromodichloromethane	0.2 U	0.8	0.2	ug/L		ND				20
Bromodichloromethane	0.2 U	0.8	0.2	ug/L		ND				20
Bromoform	0.2 U	0.8	0.2	ug/L		ND				20
Bromoform	0.2 U	0.8	0.2	ug/L		ND				20
Bromomethane	0.4 U	0.8	0.4	ug/L		ND				20
Bromomethane	0.4 U	0.8	0.4	ug/L		ND				20
2-Butanone	2.0 U	4.0	2.0	ug/L		2.18				20
2-Butanone	2.0 U	4.0	2.0	ug/L		2.18				20
n-Butylbenzene	0.2 U	0.8	0.2	ug/L		ND				20
sec-Butylbenzene	0.2 U	0.8	0.2	ug/L		ND				20
t-Butylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
Carbon disulfide	0.526 I	0.8	0.2	ug/L		0.470			11	20
Carbon disulfide	0.526 I	0.8	0.2	ug/L		0.470			11	20
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L		ND				20
Carbon tetrachloride	0.2 U	0.8	0.2	ug/L		ND				20
Chlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
Chlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
Chloroethane	0.4 U	1.6	0.4	ug/L		ND				20
Chloroethane	0.4 U	1.6	0.4	ug/L		ND				20
Chloroform	0.2 U	0.8	0.2	ug/L		ND				20
Chloroform	0.2 U	0.8	0.2	ug/L		ND				20
Chloromethane	0.4 U	1.6	0.4	ug/L		ND				20
Chloromethane	0.4 U	1.6	0.4	ug/L		ND				20
1,2-Dibromoethane	0.2 U	0.8	0.2	ug/L		ND				200
2-Chlorotoluene	0.1 U	0.8	0.1	ug/L		ND				20
1,2-Dibromo-3-chloropropane	0.3 U	0.8	0.3	ug/L		ND				200
2-Chloroethylvinyl Ether	0.5 U	1.6	0.5	ug/L		ND				200
4-Chlorotoluene	0.1 U	0.8	0.1	ug/L		ND				20
Dibromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Dibromochloromethane	0.1 U	0.8	0.1	ug/L		ND				20
Dibromomethane	0.2 U	0.8	0.2	ug/L		ND				20
Dibromomethane	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
1,2-Dichlorobenzene	0.1 U	0.8	0.1	ug/L		ND				20
1,3-Dichlorobenzene	0.07 U	0.8	0.07	ug/L		ND				20
1,4-Dichlorobenzene	0.2 U	0.8	0.2	ug/L		ND				20

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Duplicate (BF41217-DUP1)		**Source: 1405266-16**			Prepared & Analyzed: 06/12/14 19:54					
1,4-Dichlorobenzene	0.2 U	0.8	0.2	ug/L		ND				20
trans-1,4-Dichloro-2-butene	0.3 U	0.8	0.3	ug/L		ND				20
trans-1,4-Dichloro-2-butene	0.3 U	0.8	0.3	ug/L		ND				20
Dichlorodifluoromethane	0.5 U	1.6	0.5	ug/L		ND				20
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1-Dichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichloroethane	0.1 U	0.8	0.1	ug/L		ND				20
1,2-Dichloroethane	0.1 U	0.8	0.1	ug/L		ND				20
1,1-Dichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
1,1-Dichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
cis-1,2-Dichloroethene	0.09 U	0.8	0.09	ug/L		ND				20
cis-1,2-Dichloroethene	0.09 U	0.8	0.09	ug/L		ND				20
trans-1,2-Dichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
trans-1,2-Dichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichloropropane	0.2 U	0.8	0.2	ug/L		ND				20
1,2-Dichloropropane	0.2 U	0.8	0.2	ug/L		ND				20
2,2-Dichloropropane	0.3 U	0.8	0.3	ug/L		ND				20
1,1-Dichloropropene	0.2 U	0.8	0.2	ug/L		ND				20
cis-1,3-Dichloropropene	0.2 U	0.8	0.2	ug/L		ND				20
cis-1,3-Dichloropropene	0.2 U	0.8	0.2	ug/L		ND				20
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L		ND				20
trans-1,3-Dichloropropene	0.1 U	0.8	0.1	ug/L		ND				20
Ethylbenzene	0.08 U	0.8	0.08	ug/L		ND				20
Ethylbenzene	0.08 U	0.8	0.08	ug/L		ND				20
Hexachlorobutadiene	0.4 U	0.8	0.4	ug/L		ND				20
2-Hexanone	2.1 U	4.0	2.1	ug/L		ND				20
2-Hexanone	2.1 U	4.0	2.1	ug/L		ND				20
Iodomethane	0.2 U	0.8	0.2	ug/L		ND				20
Iodomethane	0.2 U	0.8	0.2	ug/L		ND				20
Isopropylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
4-Isopropyltoluene	0.267 I	0.8	0.2	ug/L		0.261			2	20
Methyl-t-butyl ether	0.2 U	1.6	0.2	ug/L		ND				20
Methylene Chloride	0.603 I	0.8	0.2	ug/L		ND				20
Methylene Chloride	0.603 I	0.8	0.2	ug/L		ND				20
4-Methyl-2-pentanone	2.6 U	4.0	2.6	ug/L		ND				20
4-Methyl-2-pentanone	2.6 U	4.0	2.6	ug/L		ND				20
Naphthalene	0.2 U	0.8	0.2	ug/L		ND				20
n-Propylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
Styrene	0.05 U	0.8	0.05	ug/L		ND				20
Styrene	0.05 U	0.8	0.05	ug/L		ND				20
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,1,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,2,2-Tetrachloroethane	0.2 U	0.8	0.2	ug/L		ND				20
Tetrachloroethene	0.1 U	0.8	0.1	ug/L		ND				20

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Duplicate (BF41217-DUP1)		**Source: 1405266-16**			Prepared & Analyzed: 06/12/14 19:54					
Tetrachloroethene	0.1 U	0.8	0.1	ug/L		ND				20
Toluene	0.557 I	0.8	0.09	ug/L		0.468			17	20
Toluene	0.557 I	0.8	0.09	ug/L		0.468			17	20
1,2,3-Trichlorobenzene	0.2 U	0.8	0.2	ug/L		ND				20
1,2,4-Trichlorobenzene	0.3 U	0.8	0.3	ug/L		ND				20
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,1-Trichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,2-Trichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
1,1,2-Trichloroethane	0.2 U	0.8	0.2	ug/L		ND				20
Trichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
Trichloroethene	0.2 U	0.8	0.2	ug/L		ND				20
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L		ND				20
Trichlorofluoromethane	0.2 U	0.8	0.2	ug/L		ND				20
1,2,3-Trichloropropane	0.4 U	0.8	0.4	ug/L		ND				20
1,2,3-Trichloropropane	0.4 U	0.8	0.4	ug/L		ND				20
1,2,4-Trimethylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
1,3,5-Trimethylbenzene	0.1 U	0.8	0.1	ug/L		ND				20
Vinyl acetate	0.4 U	1.6	0.4	ug/L		ND				20
Vinyl chloride	0.3 U	1.6	0.3	ug/L		ND				20
Vinyl chloride	0.3 U	1.6	0.3	ug/L		ND				20
Xylene-m,p	0.2 U	1.6	0.2	ug/L		ND				20
Xylene-m,p	0.2 U	1.6	0.2	ug/L		ND				20
Xylene-o	0.2 U	0.8	0.2	ug/L		ND				20
Xylene-o	0.2 U	0.8	0.2	ug/L		ND				20
Xylenes- Total	0.1 U	0.8	0.1	ug/L		ND				20
Xylenes- Total	0.1 U	0.8	0.1	ug/L		ND				20
Surrogate: 4-Bromofluorobenzene	*20.5*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*20.5*			*ug/L*	*20*		*103*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*99*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.3*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.3*			*ug/L*	*20*		*102*	*65-135*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Matrix Spike (BF41217-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/12/14 15:36					
Acetone	187	4.0	2.0	ug/L	100	56.9	130	65-135		
Acetone	187	4.0	2.0	ug/L	100	56.9	130	65-135		
Acrylonitrile	96.8	4.0	1.3	ug/L	100	ND	97	65-135		
Acrylonitrile	96.8	4.0	1.3	ug/L	100	ND	97	60-140		
Benzene	20.1	0.8	0.1	ug/L	20	ND	100	37-151		
Benzene	20.1	0.8	0.1	ug/L	20	ND	100	65-135		
Bromobenzene	21.1	0.8	0.2	ug/L	20	ND	105	65-135		
Bromochloromethane	21.3	0.8	0.1	ug/L	20	ND	106	65-135		
Bromochloromethane	21.3	0.8	0.1	ug/L	20	ND	106	65-135		
Bromodichloromethane	20.3	0.8	0.2	ug/L	20	ND	102	65-135		
Bromodichloromethane	20.3	0.8	0.2	ug/L	20	ND	102	35-155		
Bromoform	19.5	0.8	0.2	ug/L	20	ND	97	65-135		
Bromoform	19.5	0.8	0.2	ug/L	20	ND	97	45-169		
Bromomethane	26.1	0.8	0.4	ug/L	40	ND	65	65-135		
Bromomethane	25.0	0.8	0.4	ug/L	40	ND	62	1-242		
2-Butanone	113	4.0	2.0	ug/L	100	5.20	108	65-135		
2-Butanone	113	4.0	2.0	ug/L	100	5.20	108	65-135		
n-Butylbenzene	20.8	0.8	0.2	ug/L	20	ND	104	65-135		
sec-Butylbenzene	20.3	0.8	0.2	ug/L	20	ND	101	65-135		
t-Butylbenzene	19.7	0.8	0.1	ug/L	20	ND	98	65-135		
Carbon disulfide	20.5	0.8	0.2	ug/L	20	0.588	100	65-135		
Carbon disulfide	20.5	0.8	0.2	ug/L	20	0.588	100	65-135		
Carbon tetrachloride	20.8	0.8	0.2	ug/L	20	ND	104	65-135		
Carbon tetrachloride	20.8	0.8	0.2	ug/L	20	ND	104	70-140		
Chlorobenzene	21.3	0.8	0.1	ug/L	20	ND	107	65-135		
Chlorobenzene	21.3	0.8	0.1	ug/L	20	ND	107	37-160		
Chloroethane	41.0	1.6	0.4	ug/L	40	ND	102	65-135		
Chloroethane	41.0	1.6	0.4	ug/L	40	ND	102	14-230		
Chloroform	21.0	0.8	0.2	ug/L	20	ND	105	65-135		
Chloroform	21.0	0.8	0.2	ug/L	20	ND	105	51-138		
Chloromethane	36.4	1.6	0.4	ug/L	40	ND	91	0-273		
Chloromethane	36.4	1.6	0.4	ug/L	40	ND	91	65-135		
2-Chlorotoluene	21.2	0.8	0.1	ug/L	20	ND	106	65-135		
4-Chlorotoluene	21.6	0.8	0.1	ug/L	20	ND	108	65-135		
Dibromochloromethane	21.2	0.8	0.1	ug/L	20	ND	106	53-149		
Dibromochloromethane	21.2	0.8	0.1	ug/L	20	ND	106	65-135		
Dibromomethane	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
Dibromomethane	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
1,2-Dichlorobenzene	20.6	0.8	0.1	ug/L	20	ND	103	65-135		
1,2-Dichlorobenzene	20.6	0.8	0.1	ug/L	20	ND	103	18-190		
1,3-Dichlorobenzene	20.9	0.8	0.07	ug/L	20	ND	104	65-135		
1,4-Dichlorobenzene	21.0	0.8	0.2	ug/L	20	ND	105	65-135		
1,4-Dichlorobenzene	21.0	0.8	0.2	ug/L	20	ND	105	18-190		
trans-1,4-Dichloro-2-butene	18.4	0.8	0.3	ug/L	20	ND	92	65-135		
trans-1,4-Dichloro-2-butene	18.4	0.8	0.3	ug/L	20	ND	92	65-135		

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Batch BF41217 - VOC - Prep										
Matrix Spike (BF41217-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/12/14 15:36					
Dichlorodifluoromethane	36.1	1.6	0.5	ug/L	40	ND	90	65-135		
1,1-Dichloroethane	20.3	0.8	0.2	ug/L	20	ND	102	65-135		
1,1-Dichloroethane	20.3	0.8	0.2	ug/L	20	ND	102	59-155		
1,2-Dichloroethane	20.9	0.8	0.1	ug/L	20	ND	104	65-135		
1,2-Dichloroethane	20.9	0.8	0.1	ug/L	20	ND	104	49-155		
1,1-Dichloroethene	20.0	0.8	0.2	ug/L	20	ND	100	65-135		
1,1-Dichloroethene	20.0	0.8	0.2	ug/L	20	ND	100	1-234		
cis-1,2-Dichloroethene	21.1	0.8	0.09	ug/L	20	ND	105	65-135		
cis-1,2-Dichloroethene	21.1	0.8	0.09	ug/L	20	ND	105	65-135		
trans-1,2-Dichloroethene	20.5	0.8	0.2	ug/L	20	ND	102	65-135		
trans-1,2-Dichloroethene	20.5	0.8	0.2	ug/L	20	ND	102	54-156		
1,2-Dichloropropane	20.8	0.8	0.2	ug/L	20	ND	104	65-135		
1,2-Dichloropropane	20.8	0.8	0.2	ug/L	20	ND	104	0-210		
2,2-Dichloropropane	22.9	0.8	0.3	ug/L	20	ND	114	65-135		
1,1-Dichloropropene	21.3	0.8	0.2	ug/L	20	ND	107	65-135		
cis-1,3-Dichloropropene	20.0	0.8	0.2	ug/L	20	ND	100	65-135		
cis-1,3-Dichloropropene	20.0	0.8	0.2	ug/L	20	ND	100	1-227		
trans-1,3-Dichloropropene	21.4	0.8	0.1	ug/L	20	ND	107	17-183		
trans-1,3-Dichloropropene	21.4	0.8	0.1	ug/L	20	ND	107	65-135		
Ethylbenzene	21.0	0.8	0.08	ug/L	20	ND	105	37-162		
Ethylbenzene	21.0	0.8	0.08	ug/L	20	ND	105	65-135		
Hexachlorobutadiene	22.4	0.8	0.4	ug/L	20	ND	112	65-135		
2-Hexanone	109	4.0	2.1	ug/L	100	ND	109	65-135		
2-Hexanone	109	4.0	2.1	ug/L	100	ND	109	65-135		
Iodomethane	30.5 J2	0.8	0.2	ug/L	20	ND	152	65-135		
Iodomethane	30.5 J2	0.8	0.2	ug/L	20	ND	152	65-135		
Isopropylbenzene	20.9	0.8	0.1	ug/L	20	ND	104	65-135		
4-Isopropyltoluene	21.1	0.8	0.2	ug/L	20	ND	105	65-135		
Methyl-t-butyl ether	19.8	1.6	0.2	ug/L	20	ND	99	65-135		
Methylene Chloride	21.4	0.8	0.2	ug/L	20	0.570	104	1-221		
Methylene Chloride	21.4	0.8	0.2	ug/L	20	0.570	104	65-135		
4-Methyl-2-pentanone	101	4.0	2.6	ug/L	100	ND	101	65-135		
4-Methyl-2-pentanone	101	4.0	2.6	ug/L	100	ND	101	65-135		
Naphthalene	19.4	0.8	0.2	ug/L	20	ND	97	65-135		
n-Propylbenzene	20.7	0.8	0.1	ug/L	20	ND	104	65-135		
Styrene	21.6	0.8	0.05	ug/L	20	ND	108	65-135		
Styrene	21.6	0.8	0.05	ug/L	20	ND	108	65-135		
1,1,1,2-Tetrachloroethane	20.5	0.8	0.2	ug/L	20	ND	102	65-135		
1,1,1,2-Tetrachloroethane	20.5	0.8	0.2	ug/L	20	ND	102	65-135		
1,1,2,2-Tetrachloroethane	19.1	0.8	0.2	ug/L	20	ND	95	46-157		
1,1,2,2-Tetrachloroethane	19.1	0.8	0.2	ug/L	20	ND	95	65-135		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20	ND	105	64-148		
Tetrachloroethene	21.0	0.8	0.1	ug/L	20	ND	105	65-135		
Toluene	26.0	0.8	0.09	ug/L	20	5.26	104	65-135		
Toluene	26.0	0.8	0.09	ug/L	20	5.26	104	47-150		

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DRAFT: Volatile Organic Compounds - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41217 - VOC - Prep										
Matrix Spike (BF41217-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/12/14 15:36					
1,2,3-Trichlorobenzene	19.3	0.8	0.2	ug/L	20	ND	97	65-135		
1,2,4-Trichlorobenzene	19.6	0.8	0.3	ug/L	20	ND	98	65-135		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20	ND	106	52-162		
1,1,1-Trichloroethane	21.1	0.8	0.2	ug/L	20	ND	106	65-135		
1,1,2-Trichloroethane	20.2	0.8	0.2	ug/L	20	ND	101	65-135		
1,1,2-Trichloroethane	20.2	0.8	0.2	ug/L	20	ND	101	52-150		
Trichloroethene	20.7	0.8	0.2	ug/L	20	ND	104	71-157		
Trichloroethene	20.7	0.8	0.2	ug/L	20	ND	104	65-135		
Trichlorofluoromethane	21.1	0.8	0.2	ug/L	20	ND	105	17-181		
Trichlorofluoromethane	21.1	0.8	0.2	ug/L	20	ND	105	65-135		
1,2,3-Trichloropropane	19.5	0.8	0.4	ug/L	20	ND	98	65-135		
1,2,3-Trichloropropane	19.5	0.8	0.4	ug/L	20	ND	98	65-135		
1,2,4-Trimethylbenzene	20.4	0.8	0.1	ug/L	20	ND	102	65-135		
1,3,5-Trimethylbenzene	20.7	0.8	0.1	ug/L	20	ND	104	65-135		
Vinyl acetate	42.0	1.6	0.4	ug/L	40	ND	105	65-135		
Vinyl chloride	40.8	1.6	0.3	ug/L	40	ND	102	1-251		
Vinyl chloride	40.8	1.6	0.3	ug/L	40	ND	102	65-135		
Xylene-m,p	42.2	1.6	0.2	ug/L	40	ND	106	60-140		
Xylene-m,p	42.2	1.6	0.2	ug/L	40	ND	106	65-135		
Xylene-o	20.9	0.8	0.2	ug/L	20	ND	104	60-140		
Xylene-o	20.9	0.8	0.2	ug/L	20	ND	104	65-135		
Surrogate: 4-Bromofluorobenzene	*19.5*			*ug/L*	*20*		*97*	*65-135*		
Surrogate: 4-Bromofluorobenzene	*19.5*			*ug/L*	*20*		*97*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: 1,2-Dichloroethane-d4	*19.9*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Toluene-d8	*20.4*			*ug/L*	*20*		*102*	*65-135*		
Surrogate: Dibromofluoromethane	*20.0*			*ug/L*	*20*		*100*	*65-135*		
Surrogate: Dibromofluoromethane	*20.0*			*ug/L*	*20*		*100*	*65-135*		

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DRAFT: Pesticide Analyses - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43011 - EPA 504 Micro extraction										
Blank (BE43011-BLK1)					Prepared & Analyzed: 05/30/14 17:52					
1,2-Dibromo-3-chloropropane	0.0050 U	0.020	0.0050	ug/L						
1,2-Dibromoethane	0.0050 U	0.020	0.0050	ug/L						
Surrogate: 2-Bromo-1-chloropropane	*0.103*			*ug/L*	*0.10*		*103*	*70-130*		
LCS (BE43011-BS1)					Prepared & Analyzed: 05/30/14 18:14					
1,2-Dibromo-3-chloropropane	0.112	0.020	0.0050	ug/L	0.10		112	70-130		
1,2-Dibromoethane	0.106	0.020	0.0050	ug/L	0.10		106	70-130		
Surrogate: 2-Bromo-1-chloropropane	*0.0958*			*ug/L*	*0.10*		*96*	*70-130*		
LCS Dup (BE43011-BSD1)					Prepared & Analyzed: 05/30/14 18:35					
1,2-Dibromoethane	0.0972	0.020	0.0050	ug/L	0.10		97	70-130	9	20
1,2-Dibromo-3-chloropropane	0.108	0.020	0.0050	ug/L	0.10		108	70-130	4	20
Surrogate: 2-Bromo-1-chloropropane	*0.0992*			*ug/L*	*0.10*		*99*	*70-130*		
Matrix Spike (BE43011-MS1)		**Source: 1405536-04**			Prepared & Analyzed: 05/30/14 18:57					
1,2-Dibromoethane	0.0986	0.022	0.0056	ug/L	0.11	ND	88	65-135		
1,2-Dibromo-3-chloropropane	0.128	0.022	0.0056	ug/L	0.11	ND	115	65-135		
Surrogate: 2-Bromo-1-chloropropane	*0.110*			*ug/L*	*0.11*		*98*	*70-130*		
Matrix Spike Dup (BE43011-MSD1)		**Source: 1405536-04**			Prepared & Analyzed: 05/30/14 19:19					
1,2-Dibromo-3-chloropropane	0.124	0.021	0.0054	ug/L	0.11	ND	116	65-135	3	20
1,2-Dibromoethane	0.0908	0.021	0.0054	ug/L	0.11	ND	85	65-135	8	20
Surrogate: 2-Bromo-1-chloropropane	*0.106*			*ug/L*	*0.11*		*99*	*70-130*		
Batch BF40406 - EPA 504 Micro extraction										
Blank (BF40406-BLK1)					Prepared & Analyzed: 06/04/14 18:48					
1,2-Dibromo-3-chloropropane	0.0050 U	0.020	0.0050	ug/L						
1,2-Dibromoethane	0.0050 U	0.020	0.0050	ug/L						
Surrogate: 2-Bromo-1-chloropropane	*0.105*			*ug/L*	*0.10*		*105*	*70-130*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40406 - EPA 504 Micro extraction										
LCS (BF40406-BS1)					Prepared & Analyzed: 06/04/14 19:10					
1,2-Dibromo-3-chloropropane	0.107	0.020	0.0050	ug/L	0.10		107	70-130		
1,2-Dibromoethane	0.109	0.020	0.0050	ug/L	0.10		109	70-130		
Surrogate: 2-Bromo-1-chloropropane	*0.104*			*ug/L*	*0.10*		*104*	*70-130*		
LCS Dup (BF40406-BSD1)					Prepared & Analyzed: 06/04/14 19:32					
1,2-Dibromo-3-chloropropane	0.110	0.020	0.0050	ug/L	0.10		110	70-130	3	20
1,2-Dibromoethane	0.103	0.020	0.0050	ug/L	0.10		103	70-130	6	20
Surrogate: 2-Bromo-1-chloropropane	*0.105*			*ug/L*	*0.10*		*105*	*70-130*		
Matrix Spike (BF40406-MS1)		**Source: 1405567-01**			Prepared & Analyzed: 06/04/14 19:53					
1,2-Dibromo-3-chloropropane	0.116	0.021	0.0054	ug/L	0.11	ND	108	65-135		
1,2-Dibromoethane	0.0977	0.021	0.0054	ug/L	0.11	ND	91	65-135		
Surrogate: 2-Bromo-1-chloropropane	*0.108*			*ug/L*	*0.11*		*101*	*70-130*		
Matrix Spike Dup (BF40406-MSD1)		**Source: 1405567-01**			Prepared & Analyzed: 06/04/14 20:15					
1,2-Dibromoethane	0.111	0.020	0.0051	ug/L	0.10	ND	109	65-135	13	20
1,2-Dibromo-3-chloropropane	0.114	0.020	0.0051	ug/L	0.10	ND	112	65-135	2	20
Surrogate: 2-Bromo-1-chloropropane	*0.111*			*ug/L*	*0.10*		*109*	*70-130*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42912 - Ion Chromatography 300.0 Prep										
Blank (BE42912-BLK1)					Prepared & Analyzed: 05/29/14 11:43					
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Sulfate	0.20 U	0.60	0.20	mg/L						
Nitrate (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						
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.951*			*mg/L*	*1.0*		*95*	*78-120*		
LCS (BE42912-BS1)					Prepared & Analyzed: 05/29/14 11:43					
Sulfate	9.05	0.60	0.20	mg/L	9.0		101	85-115		
Chloride	2.94	0.20	0.050	mg/L	3.0		98	85-115		
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7		97	85-115		
Orthophosphate as P	0.936	0.040	0.010	mg/L	0.90		104	85-115		
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		101	85-115		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
LCS Dup (BE42912-BSD1)					Prepared & Analyzed: 05/29/14 11:43					
Sulfate	9.06	0.60	0.20	mg/L	9.0		101	85-115	0.1	200
Chloride	2.96	0.20	0.050	mg/L	3.0		99	85-115	0.5	200
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7		97	85-115	0	200
Nitrite (as N)	1.42	0.04	0.01	mg/L	1.4		101	85-115	0.2	200
Orthophosphate as P	0.926	0.040	0.010	mg/L	0.90		103	85-115	1	200
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		
Surrogate: Dichloroacetate	*1.05*			*mg/L*	*1.0*		*105*	*78-120*		

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Analyte	Result		PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42912 - Ion Chromatography 300.0 Prep											
Matrix Spike (BE42912-MS1)			**Source: 1405267-02**			Prepared & Analyzed: 05/29/14 11:43					
Sulfate	21.5	J2,J6	0.60	0.20	mg/L	9.0	9.61	132	85-115		
Orthophosphate as P	6.19		0.040	0.010	mg/L	0.90	5.16	115	85-115		
Nitrate (as N)	0.359	J2,J6	0.04	0.01	mg/L	1.7	ND	21	85-115		
Chloride	86.7	L	0.20	0.050	mg/L	3.0	84.2	81	80-120		
Nitrite (as N)	2.86	J2,J6	0.04	0.01	mg/L	1.4	ND	204	85-115		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Surrogate: Dichloroacetate	*0.932*				*mg/L*	*1.0*		*93*	*78-120*		
Matrix Spike (BE42912-MS2)			**Source: 1405267-12**			Prepared & Analyzed: 05/29/14 11:43					
Nitrite (as N)	2.22	J2,J6	0.04	0.01	mg/L	1.4	ND	159	85-115		
Sulfate	137	L	0.60	0.20	mg/L	9.0	105	357	85-115		
Nitrate (as N)	1.66		0.04	0.01	mg/L	1.7	ND	98	85-115		
Orthophosphate as P	1.43		0.040	0.010	mg/L	0.90	0.450	108	85-115		
Chloride	84.8	L	0.20	0.050	mg/L	3.0	82.1	90	80-120		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Surrogate: Dichloroacetate	*0.949*				*mg/L*	*1.0*		*95*	*78-120*		
Batch BE42927 - TSS prep											
Blank (BE42927-BLK1)						Prepared: 05/29/14 Analyzed: 06/04/14 09:54					
Total Suspended Solids	1	U	1	1	mg/L						
Volatile Suspended Solids	1	U	1		mg/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42927 - TSS prep										
LCS (BE42927-BS1)					Prepared: 05/29/14 Analyzed: 06/04/14 09:54					
Total Suspended Solids	50.5	1	1	mg/L	50		101	85-115		
Duplicate (BE42927-DUP1)		**Source: 1405267-01**			Prepared: 05/29/14 Analyzed: 06/04/14 09:57					
Volatile Suspended Solids	30.8	1		mg/L		30.8			0	20
Total Suspended Solids	34.0	1	1	mg/L		34.0			0	30
Batch BE43003 - Ion Chromatography 300.0 Prep										
Blank (BE43003-BLK1)					Prepared & Analyzed: 05/30/14 08:39					
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Sulfate	0.20 U	0.60	0.20	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
LCS (BE43003-BS1)					Prepared & Analyzed: 05/30/14 08:39					
Sulfate	9.20	0.60	0.20	mg/L	9.0		102	85-115		
Orthophosphate as P	0.915	0.040	0.010	mg/L	0.90		102	85-115		
Chloride	3.00	0.20	0.050	mg/L	3.0		100	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4		105	85-115		
Nitrate (as N)	1.68	0.04	0.01	mg/L	1.7		99	85-115		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		

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Analyte	Result		PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43003 - Ion Chromatography 300.0 Prep											
LCS Dup (BE43003-BSD1)						Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.75		0.04	0.01	mg/L	1.7		103	85-115	4	200
Orthophosphate as P	0.876		0.040	0.010	mg/L	0.90		97	85-115	4	200
Sulfate	9.40		0.60	0.20	mg/L	9.0		104	85-115	2	200
Chloride	3.02		0.20	0.050	mg/L	3.0		101	85-115	1	200
Nitrite (as N)	1.47		0.04	0.01	mg/L	1.4		105	85-115	0.1	200
Surrogate: Dichloroacetate	*1.12*				*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*				*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*				*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*				*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*				*mg/L*	*1.0*		*112*	*78-120*		
Matrix Spike (BE43003-MS1)			**Source: 1405265-06**			Prepared & Analyzed: 05/30/14 08:39					
Orthophosphate as P	0.010	U,J2,J6	0.040	0.010	mg/L	0.90	ND		85-115		
Nitrite (as N)	2.02	J2,J6	0.04	0.01	mg/L	1.4	ND	144	85-115		
Chloride	43.8	L	0.20	0.050	mg/L	3.0	39.0	162	80-120		
Nitrate (as N)	1.64		0.04	0.01	mg/L	1.7	ND	96	85-115		
Sulfate	18.8		0.60	0.20	mg/L	9.0	9.15	108	85-115		
Surrogate: Dichloroacetate	*1.10*				*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*				*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*				*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*				*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*				*mg/L*	*1.0*		*110*	*78-120*		
Matrix Spike (BE43003-MS2)			**Source: 1405266-01**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	2.69	J2,J6	0.04	0.01	mg/L	1.4	ND	192	85-115		
Nitrate (as N)	1.61		0.04	0.01	mg/L	1.7	0.0240	93	85-115		
Chloride	67.1	L	0.20	0.050	mg/L	3.0	74.0	NR	80-120		
Sulfate	10.3		0.60	0.20	mg/L	9.0	1.17	101	85-115		
Orthophosphate as P	7.66		0.040	0.010	mg/L	0.90	6.83	91	85-115		
Surrogate: Dichloroacetate	*0.987*				*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*				*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*				*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*				*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*				*mg/L*	*1.0*		*99*	*78-120*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43005 - Ion Chromatography 300.0 Prep										
Blank (BE43005-BLK1)					Prepared & Analyzed: 05/30/14 08:39					
Sulfate	0.20 U	0.60	0.20	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Nitrate (as N)	0.01 U	0.04	0.01	mg/L						
Orthophosphate as P	0.010 U	0.040	0.010	mg/L						
Nitrite (as N)	0.01 U	0.04	0.01	mg/L						
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
Surrogate: Dichloroacetate	*0.917*			*mg/L*	*1.0*		*92*	*90-115*		
LCS (BE43005-BS1)					Prepared & Analyzed: 05/30/14 08:39					
Chloride	2.95	0.20	0.050	mg/L	3.0		98	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4		104	85-115		
Sulfate	9.13	0.60	0.20	mg/L	9.0		101	85-115		
Orthophosphate as P	0.936	0.040	0.010	mg/L	0.90		104	85-115		
Nitrate (as N)	1.68	0.04	0.01	mg/L	1.7		99	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*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*90-115*		
LCS Dup (BE43005-BSD1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.71	0.04	0.01	mg/L	1.7		101	85-115	2	200
Sulfate	9.46	0.60	0.20	mg/L	9.0		105	85-115	4	200
Orthophosphate as P	0.910	0.040	0.010	mg/L	0.90		101	85-115	3	200
Nitrite (as N)	1.49	0.04	0.01	mg/L	1.4		106	85-115	2	200
Chloride	3.00	0.20	0.050	mg/L	3.0		100	85-115	2	200
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*		
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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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43005 - Ion Chromatography 300.0 Prep										
Matrix Spike (BE43005-MS1)		**Source: 1405185-02**			Prepared & Analyzed: 05/30/14 08:39					
Chloride	109	2.0	0.50	mg/L	30	76.0	109	80-120		
Orthophosphate as P	9.07	0.40	0.10	mg/L	9.0		101	85-115		
Nitrite (as N)	14.8	0.40	0.10	mg/L	14		105	85-115		
Nitrate (as N)	15.8	0.40	0.10	mg/L	17	0.315	91	85-115		
Sulfate	100	6.0	2.0	mg/L	90	13.0	97	85-115		
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*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Surrogate: Dichloroacetate	*1.11*			*mg/L*	*1.0*		*111*	*90-115*		
Matrix Spike (BE43005-MS2)		**Source: 1405265-09**			Prepared & Analyzed: 05/30/14 08:39					
Chloride	42.4 L	0.20	0.050	mg/L	3.0	ND	NR	80-120		
Sulfate	90.0 L	0.60	0.20	mg/L	9.0	98.8	NR	85-115		
Orthophosphate as P	0.828	0.040	0.010	mg/L	0.90	ND	92	85-115		
Nitrate (as N)	1.72	0.04	0.01	mg/L	1.7	ND	101	85-115		
Nitrite (as N)	1.48	0.04	0.01	mg/L	1.4	ND	105	85-115		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Surrogate: Dichloroacetate	*1.07*			*mg/L*	*1.0*		*107*	*90-115*		
Batch BE43007 - alkalinity										
Blank (BE43007-BLK1)					Prepared & Analyzed: 05/30/14 11:00					
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 BE43007 - alkalinity										
LCS (BE43007-BS1)					Prepared & Analyzed: 05/30/14 11:05					
Total Alkalinity	130	8.0	2.0	mg/L	120		102	90-110		
Matrix Spike (BE43007-MS1)		**Source: 1405298-01**			Prepared & Analyzed: 05/30/14 14:07					
Total Alkalinity	220	8.0	2.0	mg/L	120	100	94	80-120		
Matrix Spike Dup (BE43007-MSD1)		**Source: 1405298-01**			Prepared & Analyzed: 05/30/14 14:15					
Total Alkalinity	220	8.0	2.0	mg/L	120	100	94	80-120	0.2	26
Batch BE43013 - BOD										
Blank (BE43013-BLK1)					Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BE43013-BS1)					Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	219	2	2	mg/L	200		109	85-115		
LCS Dup (BE43013-BSD1)					Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	222	2	2	mg/L	200		111	85-115	1	200
Duplicate (BE43013-DUP1)		**Source: 1405265-08**			Prepared: 05/30/14 Analyzed: 06/04/14 09:34					
Carbonaceous BOD	16	2	2	mg/L		15			6	25
Batch BF40331 - Sulfide prep										
Blank (BF40331-BLK1)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	0.10 U	0.40	0.10	mg/L						

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40331 - Sulfide prep										
Blank (BF40331-BLK2)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	0.10 U	0.40	0.10	mg/L						
LCS (BF40331-BS1)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.95	0.40	0.10	mg/L	5.0		99	85-115		
LCS (BF40331-BS2)					Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.75	0.40	0.10	mg/L	5.0		95	85-115		
Matrix Spike (BF40331-MS1)		**Source: 1405266-15**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.75	0.40	0.10	mg/L	5.0	ND	95	85-115		
Matrix Spike (BF40331-MS2)		**Source: 1405631-05**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	5.54	0.40	0.10	mg/L	5.0	0.590	99	85-115		
Matrix Spike Dup (BF40331-MSD1)		**Source: 1405266-15**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	4.75	0.40	0.10	mg/L	5.0	ND	95	85-115	0	14
Matrix Spike Dup (BF40331-MSD2)		**Source: 1405631-05**			Prepared & Analyzed: 06/03/14 16:28					
Sulfide	5.74	0.40	0.10	mg/L	5.0	0.590	103	85-115	4	14
Batch BF40413 - TSS prep										
Blank (BF40413-BLK1)					Prepared: 06/04/14 Analyzed: 06/10/14 11:04					
Total Suspended Solids	1 U	1	1	mg/L						
Volatile Suspended Solids	1 U	1		mg/L						
LCS (BF40413-BS1)					Prepared: 06/04/14 Analyzed: 06/10/14 11:04					
Total Suspended Solids	47.0	1	1	mg/L	50		94	85-115		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40413 - TSS prep										
Duplicate (BF40413-DUP1)		**Source: 1405265-01**			Prepared: 06/04/14 Analyzed: 06/10/14 11:04					
Total Suspended Solids	15.5	1	1	mg/L		15.0			3	30
Volatile Suspended Solids	13.0	1		mg/L		14.5			11	20
Batch BF40601 - alkalinity										
Blank (BF40601-BLK1)					Prepared & Analyzed: 06/06/14 10:58					
Total Alkalinity	2.0 U	8.0	2.0	mg/L						
LCS (BF40601-BS1)					Prepared & Analyzed: 06/06/14 11:03					
Total Alkalinity	120	8.0	2.0	mg/L	120		96	90-110		
Matrix Spike (BF40601-MS1)		**Source: 1405631-05**			Prepared & Analyzed: 06/06/14 13:44					
Total Alkalinity	130	8.0	2.0	mg/L	120	8.7	95	80-120		
Matrix Spike Dup (BF40601-MSD1)		**Source: 1405631-05**			Prepared & Analyzed: 06/06/14 13:50					
Total Alkalinity	130	8.0	2.0	mg/L	120	8.7	94	80-120	1	26
Batch BF40913 - COD prep										
Blank (BF40913-BLK1)					Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BF40913-BS1)					Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	49	25	10	mg/L	50		98	90-110		
Matrix Spike (BF40913-MS1)		**Source: 1405265-01**			Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	170	25	10	mg/L	50	120	92	85-115		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF40913 - COD prep										
Matrix Spike Dup (BF40913-MSD1)		**Source: 1405265-01**			Prepared & Analyzed: 06/09/14 17:00					
Chemical Oxygen Demand	170	25	10	mg/L	50	120	92	85-115	0	32
Batch BF41109 - Digestion for TP and TKN										
Blank (BF41109-BLK1)					Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Total Kjeldahl Nitrogen	0.05 U	0.20	0.05	mg/L						
Phosphorous - Total as P	0.010 U	0.040	0.010	mg/L						
LCS (BF41109-BS1)					Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Total Kjeldahl Nitrogen	1.09	0.20	0.05	mg/L	1.0		109	90-110		
Phosphorous - Total as P	0.495	0.040	0.010	mg/L	0.50		99	90-110		
Matrix Spike (BF41109-MS1)		**Source: 1405265-01**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Total Kjeldahl Nitrogen	56.6 L2	0.20	0.05	mg/L	2.0	50.3	313	90-110		
Phosphorous - Total as P	6.66 L2	0.040	0.010	mg/L	1.0	6.81	NR	90-110		
Matrix Spike (BF41109-MS2)		**Source: 1405265-17**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	1.83	0.040	0.010	mg/L	1.0	0.908	92	90-110		
Total Kjeldahl Nitrogen	2.98	0.20	0.05	mg/L	2.0	0.888	104	90-110		
Matrix Spike Dup (BF41109-MSD1)		**Source: 1405265-01**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Total Kjeldahl Nitrogen	55.2 L2	0.20	0.05	mg/L	2.0	50.3	243	90-110	2	20
Phosphorous - Total as P	6.41 L2	0.040	0.010	mg/L	1.0	6.81	NR	90-110	4	25
Matrix Spike Dup (BF41109-MSD2)		**Source: 1405265-17**			Prepared: 06/11/14 Analyzed: 06/23/14 14:26					
Phosphorous - Total as P	1.79	0.040	0.010	mg/L	1.0	0.908	88	90-110	2	25
Total Kjeldahl Nitrogen	3.02	0.20	0.05	mg/L	2.0	0.888	107	90-110	2	20

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41141 - COD prep										
Blank (BF41141-BLK1)					Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	10 U	25	10	mg/L						
LCS (BF41141-BS1)					Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	45	25	10	mg/L	50		90	90-110		
Matrix Spike (BF41141-MS1)		**Source: 1405265-09**			Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	70	25	10	mg/L	50	16	108	85-115		
Matrix Spike Dup (BF41141-MSD1)		**Source: 1405265-09**			Prepared: 06/11/14 Analyzed: 06/23/14 17:44					
Chemical Oxygen Demand	72	25	10	mg/L	50	16	112	85-115	3	32
Batch BF41215 - Ion Chromatography 300.0 Prep										
Blank (BF41215-BLK1)					Prepared & Analyzed: 06/13/14 04:01					
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.889*			*mg/L*	*1.0*		*89*	*78-120*		
LCS (BF41215-BS1)					Prepared & Analyzed: 06/13/14 04:12					
Chloride	2.92	0.20	0.050	mg/L	3.0		97	85-115		
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*78-120*		
LCS Dup (BF41215-BSD1)					Prepared & Analyzed: 06/13/14 04:23					
Chloride	2.89	0.20	0.050	mg/L	3.0		96	85-115	0.9	200
Surrogate: Dichloroacetate	*1.06*			*mg/L*	*1.0*		*106*	*78-120*		
Matrix Spike (BF41215-MS1)		**Source: 1405683-10**			Prepared & Analyzed: 06/13/14 06:27					
Chloride	140	2.0	0.50	mg/L	30	110	100	80-120		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		

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Batch BF41215 - Ion Chromatography 300.0 Prep										
Matrix Spike (BF41215-MS2)		**Source: 1405683-12**			Prepared & Analyzed: 06/13/14 07:24					
Chloride	124	2.0	0.50	mg/L	30	93.5	101	80-120		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Batch BF41310 - Ion Chromatography 300.0 Prep										
Blank (BF41310-BLK1)					Prepared & Analyzed: 06/13/14 18:14					
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.880*			*mg/L*	*1.0*		*88*	*78-120*		
LCS (BF41310-BS1)					Prepared & Analyzed: 06/13/14 18:25					
Chloride	2.93	0.20	0.050	mg/L	3.0		98	85-115		
Surrogate: Dichloroacetate	*0.912*			*mg/L*	*1.0*		*91*	*78-120*		
LCS Dup (BF41310-BSD1)					Prepared & Analyzed: 06/13/14 18:37					
Chloride	2.97	0.20	0.050	mg/L	3.0		99	85-115	1	200
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Matrix Spike (BF41310-MS1)		**Source: 1406175-02**			Prepared & Analyzed: 06/13/14 20:41					
Chloride	276 L	0.20	0.050	mg/L	3.0	266	354	80-120		
Surrogate: Dichloroacetate	*0.863*			*mg/L*	*1.0*		*86*	*78-120*		
Matrix Spike (BF41310-MS2)		**Source: 1405265-05**			Prepared & Analyzed: 06/13/14 22:56					
Nitrate (as N)	14.9	0.40	0.10	mg/L	17	ND	88	85-115		
Nitrite (as N)	13.2	0.40	0.10	mg/L	14	ND	94	85-115		
Sulfate	85.1	6.0	2.0	mg/L	90	6.74	87	85-115		
Chloride	63.8	2.0	0.50	mg/L	30	35.8	94	80-120		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		
Surrogate: Dichloroacetate	*0.980*			*mg/L*	*1.0*		*98*	*78-120*		

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF41311 - Ion Chromatography 300.0 Prep										
Blank (BF41311-BLK1)					Prepared & Analyzed: 06/13/14 23:52					
Sulfate	0.20 U	0.60	0.20	mg/L						
Chloride	0.050 U	0.20	0.050	mg/L						
Surrogate: Dichloroacetate	*0.852*			*mg/L*	*1.0*		*85*	*78-120*		
Surrogate: Dichloroacetate	*0.852*			*mg/L*	*1.0*		*85*	*78-120*		
LCS (BF41311-BS1)					Prepared & Analyzed: 06/14/14 00:04					
Sulfate	8.74	0.60	0.20	mg/L	9.0		97	85-115		
Chloride	2.97	0.20	0.050	mg/L	3.0		99	85-115		
Surrogate: Dichloroacetate	*0.986*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.986*			*mg/L*	*1.0*		*99*	*78-120*		
LCS Dup (BF41311-BSD1)					Prepared & Analyzed: 06/14/14 00:15					
Chloride	2.97	0.20	0.050	mg/L	3.0		99	85-115	0.1	200
Sulfate	8.76	0.60	0.20	mg/L	9.0		97	85-115	0.2	200
Surrogate: Dichloroacetate	*0.988*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.988*			*mg/L*	*1.0*		*99*	*78-120*		
Matrix Spike (BF41311-MS1)		**Source: 1405267-12**			Prepared & Analyzed: 06/14/14 01:34					
Chloride	103 +U	2.0	0.50	mg/L	30	82.1	69	80-120		
Sulfate	201	6.0	2.0	mg/L	90	105	107	85-115		
Surrogate: Dichloroacetate	*0.908*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.908*			*mg/L*	*1.0*		*91*	*78-120*		
Matrix Spike (BF41311-MS2)		**Source: 1405849-05**			Prepared & Analyzed: 06/14/14 03:04					
Sulfate	1,430	60	20	mg/L	900	520	101	85-115		
Chloride	451 +U	20	5.0	mg/L	300	230	74	80-120		
Surrogate: Dichloroacetate	*0.883*			*mg/L*	*1.0*		*88*	*78-120*		
Surrogate: Dichloroacetate	*0.883*			*mg/L*	*1.0*		*88*	*78-120*		

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DRAFT REPORT

DRAFT: Inorganics - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42005 - Ammonia by SEAL										
Blank (BF42005-BLK1)					Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BF42005-BS1)					Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.51	0.040	0.009	mg/L	0.50		102	90-110		
Matrix Spike (BF42005-MS1)		**Source: 1402817-10**			Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.44	0.040	0.009	mg/L	0.50	0.064	75	90-110		
Matrix Spike (BF42005-MS2)		**Source: 1405265-21**			Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	2.8	0.040	0.009	mg/L	0.50	0.030	547	90-110		
Matrix Spike Dup (BF42005-MSD1)		**Source: 1402817-10**			Prepared: 06/20/14 Analyzed: 07/02/14 14:57					
Ammonia as N	0.45	0.040	0.009	mg/L	0.50	0.064	78	90-110	3	10
Matrix Spike Dup (BF42005-MSD2)		**Source: 1405265-21**			Prepared: 06/20/14 Analyzed: 07/02/14 17:57					
Ammonia as N	2.7	0.040	0.009	mg/L	0.50	0.030	524	90-110	4	10

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DRAFT: Inorganic, Dissolved - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42907 - BOD Dissolved										
Blank (BE42907-BLK1)					Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	2 U	2	2	mg/L						
LCS (BE42907-BS1)					Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	205	2	2	mg/L	200		103	85-115		
LCS Dup (BE42907-BSD1)					Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	210	2	2	mg/L	200		105	85-115	2	200
Duplicate (BE42907-DUP1)		**Source: 1405267-14**			Prepared: 05/29/14 Analyzed: 06/03/14 09:47					
Carbonaceous BOD	10	2	2	mg/L		10			5	25
Batch BE43003 - Ion Chromatography 300.0 Prep										
Blank (BE43003-BLK1)					Prepared & Analyzed: 05/30/14 08:39					
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	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
Surrogate: Dichloroacetate	*0.911*			*mg/L*	*1.0*		*91*	*78-120*		
LCS (BE43003-BS1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.68	0.04	0.01	mg/L	1.7		99	85-115		
Nitrite (as N)	1.46	0.04	0.01	mg/L	1.4		105	85-115		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
Surrogate: Dichloroacetate	*1.02*			*mg/L*	*1.0*		*102*	*78-120*		
LCS Dup (BE43003-BSD1)					Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	1.47	0.04	0.01	mg/L	1.4		105	85-115	0.1	200
Nitrate (as N)	1.75	0.04	0.01	mg/L	1.7		103	85-115	4	200
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		
Surrogate: Dichloroacetate	*1.12*			*mg/L*	*1.0*		*112*	*78-120*		

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DRAFT: Inorganic, Dissolved - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE43003 - Ion Chromatography 300.0 Prep										
Matrix Spike (BE43003-MS1)		**Source: 1405265-06**			Prepared & Analyzed: 05/30/14 08:39					
Nitrate (as N)	1.64	0.04	0.01	mg/L	1.7	ND	96	85-115		
Nitrite (as N)	2.02 J2,J6	0.04	0.01	mg/L	1.4	ND	144	85-115		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Surrogate: Dichloroacetate	*1.10*			*mg/L*	*1.0*		*110*	*78-120*		
Matrix Spike (BE43003-MS2)		**Source: 1405266-01**			Prepared & Analyzed: 05/30/14 08:39					
Nitrite (as N)	2.69 J2,J6	0.04	0.01	mg/L	1.4	ND	192	85-115		
Nitrate (as N)	1.61	0.04	0.01	mg/L	1.7	0.0240	93	85-115		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Surrogate: Dichloroacetate	*0.987*			*mg/L*	*1.0*		*99*	*78-120*		
Batch BF42328 - Digestion for TP and TKN										
Blank (BF42328-BLK1)					Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	0.050 U	0.20	0.050	mg/L						
LCS (BF42328-BS1)					Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	1.28	0.20	0.050	mg/L	1.3		96	90-110		
Matrix Spike (BF42328-MS1)		**Source: 1405265-10**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.51 J2	0.20	0.050	mg/L	1.3	4.75	NR	90-110		
Matrix Spike (BF42328-MS2)		**Source: 1405267-14**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.52	0.20	0.050	mg/L	1.3	1.11	106	90-110		
Matrix Spike Dup (BF42328-MSD1)		**Source: 1405265-10**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.88 J2	0.20	0.050	mg/L	1.3	4.75	NR	90-110	14	20

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Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BF42328 - Digestion for TP and TKN										
Matrix Spike Dup (BF42328-MSD2)		**Source: 1405267-14**			Prepared: 06/23/14 Analyzed: 06/25/14 12:09					
Total Kjeldahl Nitrogen	2.35	0.20	0.050	mg/L	1.3	1.11	93	90-110	7	20
Batch BF43031 - Ammonia Dissolved by Seal										
Blank (BF43031-BLK1)					Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	0.009 U	0.040	0.009	mg/L						
LCS (BF43031-BS1)					Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	0.50	0.040	0.009	mg/L	0.50		101	90-110		
Matrix Spike (BF43031-MS1)		**Source: 1405265-02**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	93	0.040	0.009	mg/L	50	49	88	90-110		
Matrix Spike (BF43031-MS2)		**Source: 1405267-14**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	1.1	0.040	0.009	mg/L	0.50	0.61	88	90-110		
Matrix Spike Dup (BF43031-MSD1)		**Source: 1405265-02**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	94	0.040	0.009	mg/L	50	49	90	90-110	0.9	10
Matrix Spike Dup (BF43031-MSD2)		**Source: 1405267-14**			Prepared & Analyzed: 06/25/14 17:46					
Ammonia as N	1.1	0.040	0.009	mg/L	0.50	0.61	95	90-110	3	10

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DRAFT: Microbiology - Quality Control

Analyte	Result	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch BE42938 - FC-MF										
Blank (BE42938-BLK1)					Prepared: 05/29/14 Analyzed: 05/30/14 14:50					
Fecal Coliforms	1 U	1	1	CFU/100 ml						
Duplicate (BE42938-DUP1)		**Source: 1405266-15**			Prepared: 05/29/14 Analyzed: 05/30/14 14:50					
Fecal Coliforms	1 U	1	1	CFU/100 ml		ND				200
Duplicate (BE42938-DUP2)		**Source: 1405265-21**			Prepared: 05/29/14 Analyzed: 05/30/14 14:50					
Fecal Coliforms	1 U	1	1	CFU/100 ml		ND				200

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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.

Q	Sample held beyond the accepted holding time.
L2	Analyte level in sample invalidated Matrix Spike.
L	Off-scale high. Result exceeded highest calibration standard.
J6	The sample matrix interfered with the ability to make any accurate determination.
J5	Matrix spike of this sample was outside typical range. All other QC criteria were acceptable.
J3	Quality control value for precision was outside control limits.
J2	Quality control value for accuracy was outside control limits.
+U	Matrix spike dilution results were under the reccommended range for the method.

Questions regarding this report should be directed to :

Client Services
Telephone (813) 855-1844 FAX (813) 855-2218
ClientServices@southernanalyticallabs.com

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

SAL Project No. 1405265

Client Name: Hazan and Sawyer

Contact / Phone: Josefin Hirst 813-630-4498

Project Name / Location: BHS3 SE#9

Samplers: (Signature)

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

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP, SO_4	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, NaOH, Zn Acetate H_2S	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx)	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool NOx, SO_4	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx, SO_4)	pH	Temperature	Conductivity	DO
01	BHS3-STE	5/29/14	9:25	WW		X	4	2	1	1					7.36	25.3	1174	0.10
02	BHS3-STE-FILTERED		9:25	WW		X					1				7.36	25.3	1174	0.10
03	BHS3-LY01		9:10	WW		X		2	1						7.13	25.4	534	7.51
04	BHS3-LY02		9:20	WW		X		2	1						6.18	25.9	753	1.48
05	BHS3-LINER		9:00	WW		X	4	2	1						6.43	25.3	925	0.42
06	BHS3-LINER-FILTERED		9:00	WW		X					1				↓	↓	↓	↓
07	BHS3-SULFUR-6		9:10	WW		X				1		1	1		6.54	25.0	991	0.25
08	BHS3-ST2		8:35	WW		X	4	2	1	1					6.77	25.3	936	0.32
09	BHS3-ST2-DUP		8:40	WW		X	4	2	1	1					↓	↓	↓	↓
10	BHS3-ST2-FILTERED		8:35	WW		X								1				
11	BHS3-LY03		9:35	WW		X		2	1	1					6.57	26.3	75.7	5.73
12	BHS3-LY04		9:30	WW		X		2	1	1					6.62	26.7	818	4.63

Relinquished	Date/Time	Received	Date/Time
Containers Prepared/ Relinquished: H Wright	Date/Time: 1500 05-22-14	Received:	Date/Time: 5/23/14 12:00
Relinquished:	Date/Time: 5/29/14	Received: L Mudmeck	Date/Time: 5/29/14 1575
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

1405265

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. 1405265

Client Name: Hazan and Sawyer

Contact / Phone: Josefin Hirst 813-630-4498

Project Name / Location: BHS3 SE#9

Samplers: (Signature)

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

PARAMETER / CONTAINER DESCRIPTION

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	125mLP, $Na_2S_2O_3$ FC-MF, FC-QT	500mLP, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP, SO_4	125mLP, H_2SO_4 COD, TKN, NH_3, TP	500mLP, NaOH, Zn Acetate H_2S	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx)	125mLP, H_2SO_4 TKN, NH_3	500mLP, Cool Total Alkalinity, NOx, Cl, SO_4	500mLP, Cool Lab Filtered (CBOD, TKN, NH_3, NOx, SO_4)	pH	Temperature	Conductivity	DO
13	BHS3-PZ07			WW		X	4	2	1	1								
14	BHS3-PZ08			WW		X	4	2	1	1								
15	BHS3-PZ09			WW		X	4	2	1	1								
16	PZ-A-6	5/28/14	9:22	WW		X						1	1		6.04	25.4	682	3.66
17	PZ-A7-8		9:40	WW		X						1	1		6.17	23.8	784	0.22
18	PZ-B8-5		9:13	WW		X						1	1		5.92	23.1	586	0.69
19	PZ-B8-7		9:27	WW		X						1	1		5.84	22.6	292	0.32
20	PZ-C10-6	5/28/14	0858	WW		X						1	1		6.30	23.8	689	0.56
21	EB			R		X	4	2	1	1								

Relinquished	Date/Time	Received	Date/Time
Containers Prepared/ Relinquished: H Wright	Date/Time: 1500 05-22-14	Received: [illegible]	Date/Time: 5/23/14 12:00
Relinquished: [illegible]	Date/Time: 1435 5/28/14	Received: K Mudsmeard	Date/Time: 5/28/14 1435
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

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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. 1405265

Client Name: Hazan and Sawyer

Contact / Phone: Josefin Hirst 813-630-4498

Project Name / Location: BHS3 SE#9

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	125mL P, $Na_2S_2O_3$ FC-MF, FC-QT	500mL P, Cool Total Alkalinity, TSS, VSS, CBOD, NOx, Cl, OP, SO_4	125mL P, H_2SO_4 COD, TKN, NH_3, TP	500mL P, NaOH, Zn Acetate H_2S	500mL P, Cool Lab Filtered (CBOD, TKN, NH_3, NOx)	125mL P, H_2SO_4 TKN, NH_3	500mL P, Cool Total Alkalinity, NOx, Cl, SO_4	500mL P, Cool Lab Filtered (CBOD, TKN, NH_3, NOx, SO_4)	pH	Temperature	Conductivity	DO
13	BHS3-PZ07			WW		X	4	2	1	1								
14	BHS3-PZ08			WW		X	4	2	1	1								
15	BHS3-PZ09			WW		X	4	2	1	1								
16	PZ-A-6			WW		X						1	1					
17	PZ-A7-8			WW		X						1	1					
18	PZ-B8-5			WW		X						1	1					
19	PZ-B8-7			WW		X						1	1					
20	PZ-C10-6			WW		X						1	1					
21	EB	5/29/14	9:55	R		X	4	2	1	1					6.94	29.8	2.	7.28

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time: 5/23/14 12:00
Relinquished:	Date/Time: 1515 5/29/14	Received: K Mohmand	Date/Time: 1515 5/29/14
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

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Chain of Custody.xls
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Chain of Custody

Appendix B: Operation & Maintenance Log

Table B.1
Operation and Maintenance Log

Date	Description
7/25/2011	C-HS2 Groundwater Sample Event 1
11/30/2011	C-HS2 Groundwater Sample Event 2
3/13/2012	C-HS2 Groundwater Sample Event 3
7/10/2012	C-HS2 Groundwater Sample Event 4
6/14/2013	PNRS Pre-construction sample event
6/17/2013	PNRS construction. Old septic tank removed, new septic tank installed
	Stage 2 biofilter installed
6/18/2013	PNRS construction - backfill to set tanks, anchor trench for liner area
6/19/2013	PNRS construction - liner installed by Comanco
	Ligno and sand 50/50 filled to toe of lined area, fill dirt to grade
6/24/2013	New piezometers PZ-07, PZ-08, and PZ-09 installed and developed
	4 Lysimeters installed
6/26/2013	Both drip systems covered
7/9/2013	Electrician installed panel for system
7/11/2013	Electrician set up panel for hydraulic unit
	Dose times and volumes set
7/12/2013	System start-up
	Installed priming tee on pump. Installed reclaimed water flowmeter
7/17/2013	Site visit. System ok.
7/22/2013	Repaired leaks in feed and return lines
	Installed new fittings for air release valves
7/29/2013	Site visit. System ok.
7/31/2013	Sod installation
8/15/2013	Preliminary SE#1
9/5/2013	Site visit. System ok.
9/8/2013	Homeowner reported alarm went off at 9 pm
9/9/2013	System check - high water level in STE dose tank
	Both filters severely clogged - not able to dose
9/10/2013	System check, still high alarm - high water level in STE dose tank

Date	Description
9/10/2013	Not able to fix system - need replacement part for hydraulic unit
	Septic tank was pumped at 4 pm
9/11/2013	Homeowner reported no alarms
9/13/2013	Site visit. System ok.
9/17/2013	Installed replacement solenoid coil on backwash filter valve #2
	System operational again, septic tank very low volume
9/27/2013	SE#1 prep
	Applied vacuum to lysimeters
	Cleaned STE outlet filter screen
9/30/2013	Sample Event No. 1
10/11/2013	Site visit. System ok. Uploaded new program
10/17/2013	System check
	Bio valve ahead of pump had sand under the diaphragm in valve
11/8/2013	Site visit. System ok.
11/15/2013	Site visit. System ok.
11/27/2013	Site visit. System ok.
12/2/2013	Sample Event No. 2 preparation
12/4/2013	Sample Event No. 2
12/23/2013	Site visit. System ok.
1/23/2014	Site visit. System ok.
1/30/2014	Sample Event No. 3 preparation
2/3/2014	Sample Event No. 3
2/4/2014	Sample Event No. 4
2/5/2014	Sample Event No. 5
2/6/2014	Sample Event No. 6
2/7/2014	Sample Event No. 7
2/12/2014	Site visit. System ok.
3/14/2014	Site visit. System ok.
4/3/2014	Sample Event No. 8 (formal No. 4)
4/25/2014	Site visit. System ok.
4/29/2014	Site visit. System ok.
5/28/2014	Sample Event No. 9 (formal No. 5)
5/29/2014	Sample Event No. 9 (formal No. 5)
	Collected additives testing samples.

Appendix C: Weather Station Data

Table C.1
Weather Station Data

2014	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Pressure (in)			Wind (mph)			Precip (in)
Apr	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	gust	sum
1	87	71	52	59	52	39	95	57	21	30.21	30.15	30.1	4	0	4	0
2	87	71	57	62	57	52	96	66	31	30.21	30.16	30.11	2	0	3	0
3	89	74	60	67	62	58	95	68	39	30.17	30.1	30.03	5	0	5	0
4	89	76	66	67	64	60	92	68	41	30.08	30.03	29.98	7	0	7	0
5	87	75	66	70	65	60	96	74	42	30.08	30.02	29.96	5	0	5	0
6	90	76	69	69	66	57	94	75	34	30.05	29.99	29.93	8	0	8	0
7	92	79	71	72	67	64	91	70	43	29.96	29.88	29.81	8	0	8	0.04
8	78	73	63	74	68	58	95	86	79	29.87	29.79	29.71	10	0	10	0.58
9	79	65	58	58	55	44	94	72	37	30.19	30.03	29.87	9	0	9	0.04
10	80	66	56	60	56	52	94	72	41	30.3	30.24	30.18	0	0	0	0
11	84	66	58	66	59	50	94	81	49	30.28	30.22	30.15	3	0	3	0
12	87	69	62	65	61	0	95	78	38	30.22	30.17	30.12	3	0	3	0
13	84	71	65	71	64	0	94	80	45	30.16	30.1	30.04	4	0	4	0
14	90	74	68	70	66	58	94	77	40	30.06	29.97	29.87	7	0	7	0
15	87	72	68	74	67	62	95	84	54	29.96	29.87	29.78	13	0	14	1.16
16	75	64	52	63	56	-44	89	76	1	30.17	30.06	29.96	11	0	11	0
17	77	68	60	67	62	51	95	84	50	30.24	30.18	30.13	3	0	5	0
18	80	72	68	73	68	0	95	87	63	30.17	30.05	29.93	8	0	9	0.31
19	80	70	65	68	65	58	96	86	55	29.99	29.93	29.87	10	0	10	0.02
20	69	65	61	62	60	48	95	85	72	30.11	30.03	29.96	10	0	10	0.01
21	75	64	61	64	60	48	93	86	63	30.1	30.04	29.98	8	0	8	0
22	83	69	58	64	60	-31	94	76	49	30	27.1	24.21	8	0	8	0
23	88	74	62	69	64	50	96	73	39	29.96	29.91	29.86	6	0	6	4.23
24	91	76	65	71	66	61	96	72	38	30.03	29.98	29.92	3	0	5	0
25	89	79	65	68	64	53	95	63	40	30.02	29.97	29.92	7	1	10	4.34
26	90	76	69	70	67	58	95	75	36	30.04	30	29.95	7	0	7	0
27	95	79	69	72	68	0	94	73	34	30.03	29.98	29.92	6	0	6	0
28	94	78	71	71	69	-22	93	76	39	29.99	29.93	29.88	6	0	6	0
29	92	80	72	75	71	66	93	75	44	30.05	29.97	29.88	9	0	11	2.02
30	87	77	71	75	72	69	96	86	61	30.09	30.02	29.95	9	0	9	0.18

Table C.1
Weather Station Data (continued)

2014	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Pressure (in)			Wind (mph)			Precip (in)
May	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	gust	sum
1	90	76	71	74	71	68	96	87	51	30.03	29.98	29.93	5	0	8	0
2	77	74	71	73	71	67	96	90	81	29.97	29.93	29.9	4	0	10	0.9
3	74	69	63	72	67	61	98	95	90	30.06	29.98	29.9	6	0	7	0.49
4	85	67	60	62	59	51	96	78	33	30.1	30.06	30.01	9	0	9	0
5	92	75	62	63	60	55	95	64	32	30.09	30.03	29.97	6	0	6	0
6	91	76	63	69	62	54	95	65	31	30.07	30.02	29.97	4	0	4	0
7	91	76	67	71	66	55	95	75	31	30.16	30.1	30.04	3	0	3	0
8	93	79	68	71	68	60	96	70	38	30.22	30.17	30.13	5	0	5	0
9	92	79	69	72	68	63	96	73	39	30.21	30.15	30.08	5	0	5	0
10	90	77	71	74	69	64	94	78	43	30.17	30.11	30.05	4	0	6	0
11	90	80	75	72	70	68	88	73	49	30.16	30.11	30.06	3	0	3	0
12	88	78	69	73	69	65	95	76	50	30.18	30.14	30.1	3	0	3	0
13	88	76	72	76	71	68	94	83	55	30.11	30.08	30.05	4	0	4	0
14	82	79	74	78	74	71	95	83	73	30.08	30.02	29.96	4	0	4	0.13
15	83	77	73	77	73	71	96	89	71	30.02	29.95	29.89	9	0	9	1.63
16	82	70	61	71	60	48	93	76	33	30.14	30.05	29.96	10	1	11	0
17	83	68	60	61	58	52	95	73	39	30.18	30.15	30.12	6	0	6	0
18	87	72	60	65	61	58	95	72	38	30.18	30.15	30.12	4	0	4	0
19	88	74	63	67	63	60	95	71	42	30.2	30.17	30.13	3	0	3	0
20	86	73	66	69	64	60	96	77	42	30.23	30.19	30.16	2	0	4	0
21	91	75	62	68	63	58	96	69	37	30.21	30.16	30.11	1	0	3	0
22	94	78	67	72	67	64	94	71	39	30.17	30.09	30.01	6	0	6	0
23	95	82	71	78	70	66	93	70	40	30.1	30.05	29.99	7	0	7	0
24	93	82	74	75	71	64	93	70	41	30.08	30.04	30	5	0	5	0
25	93	81	-54	76	72	-58	93	75	44	30.15	30.09	30.03	3	0	3	0
26	90	77	-7	75	69	-13	94	78	50	30.2	30.16	30.12	2	0	4	0
27	90	77	71	78	72	67	96	83	52	30.18	30.11	30.05	1	0	4	0.26
28	94	79	70	75	70	61	96	75	35	30.1	30.05	30	3	0	4	0
29	94	78	73	78	72	63	95	84	40	30.06	30.01	29.97	6	0	6	0.61
30	86	77	70	78	72	69	96	87	58	30.04	30.01	29.99	3	0	3	0.27
31	84	77	73	77	74	72	96	90	67	30.07	30.03	29.99	0	0	1	0.23