

Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK A.25 PROGRESS REPORT

PNRS II Test Facility Sample Event Report No. 7

Prepared for:

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

FDOH Contract CORCL

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Prepared by:



In Association With:





PNRS II Test Facility Sample Event Report No. 7

1.0 Background

Task A of the Florida Onsite Sewage Nitrogen Reduction Strategies Study includes the evaluation of passive treatment systems to remove nitrogen from septic tank effluent. The Passive Nitrogen Removal Study II (PNRS II) is a follow-up to the previous experimental evaluations of passive nitrogen removal technologies conducted in Passive Nitrogen Removal Study I. The objective of the PNRS II study is to extend the field pilot testing of the two-stage biofiltration process that was initiated in PNRS I. A unique test facility was constructed for the purpose of this evaluation. The Task A.15 PNRS II Quality Assurance Project Plan (QAPP) documents the objectives, experimental biofiltration systems, monitoring framework, sample frequency and duration, and analytical methods to be used at the PNRS II Test Facility.

2.0 Purpose

This sample event report documents data collected from the seventh PNRS II monitoring and sampling event which was conducted September 15, 2011. This monitoring event consisted of an assessment and evaluation of PNRS II operation, measurement of flowrates for all systems and flowrate adjustment if warranted, measurement of field parameters, and collection of biofilter influent, intermediate and effluent samples and their analyses in a NELAC certified laboratory.

3.0 Materials and Methods

3.1 Project Site

The PNRS II Test Facility is located at the University of Florida Gulf Coast Research and Education Center (GCREC) in southeast Hillsborough County, Florida. The specially designed facility enables the simultaneous operation and performance testing of numerous biofilter treatment trains in parallel using the same wastewater source. The source of the influent wastewater is the septic tank effluent from the existing onsite wastewater system serving the GCREC. Details of the design and construction of the PNRS II test facility were presented previously in Task A.17, A.18, A.19, and A.24 documents.

3.2 Modifications of PNRS II Systems Monitoring

The results of Sample Event No. 1 through 6 and careful observation of PNRS II systems were used to formulate recommendations for modifications to the test systems at the GCREC pilot facility. The modifications that were made following Sample Event No. 6 are presented in this section. All recommendations were based on the overall goal of PNRS II: to provide functional specifications for modular biofiltration components for passive onsite nitrogen reducing wastewater treatment systems.

3.2.1 Modify Operation

Following Sample Event No. 6, a track record of acceptable performance had been established for many PNRS II systems and increasing the flowrates was recommended. The following modifications were made:

Stage 1 Biofilters

- Expanded clay and clinoptilolite media
 - increase loading rates:
 - -Single pass: 3 gal/ft²-day to 5 gal/ft²-day STE on June 28, 2011
 - -Recycle: 3 gal/ft²-day to 6 gal/ft²-day STE on May 31, 2011

Stage 2 Biofilters

- Sulfur
 - o increase loading rates:
 - -Single pass coupled: single pass Stage 1 effluent

5.6 to 9.3 gal/ft²-day; 25.7 to 15.4 hour mean pore water residence time (MPWRT) on June 28, 2011

-Horizontal: Stage 1 w/recycle combined effluent

10 to 20 gal/ft²-day; 43 to 21.5 hour MPWRT on June 28, 2011

- Glycerol
 - increase loading rate:
 - -10 to 20 gal/ft²-day; 43 to 21.5 hour MPWRT on June 28, 2011

3.3 Monitoring and Sampling Locations and Identification

A schematic of the PNRS II test facility is shown in Figure 1. Septic tank effluent (STE) from GCREC is pumped from PNRS II-STE-T1 into the PNRS II systems through five points of entry: Hydro-1, Hydro-2, UNSAT-IS-1, UNSAT-IS2 and UNSAT-IS3. PNRS II biofilters are grouped into the four types of systems shown in Figure 1, Group I, II, III and IV systems. The nomenclature and reactor/sample identification used for the PNRS II test facility sampling events are listed in Table 1. The sample designations listed in Table 1 also largely correspond to the locations at which flow volumes are measured in each sample event.

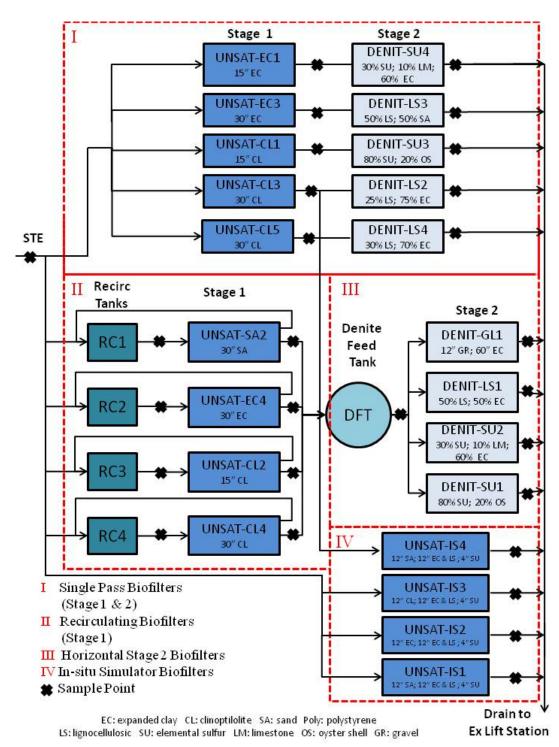


Figure 1
PNRS II Test Facility System Schematic

Table 1
PNRS II Sample Identification

Group (Figure 1)	Sample Location	Sample Identification
	STE PNRS II Storage Tank 1	PNRS II-STE-T1
		UNSAT-EC1
		UNSAT-EC3
	Stage 1 Single Pass Biofilters	UNSAT-CL1
		UNSAT-CL3
1		UNSAT-CL5
I		DENIT-SU4
		DENIT-LS3
	Stage 2 Single Pass Upflow Biofilters	DENIT-SU3
		DENIT-LS2
		DENIT-LS4
		RC1
	Recirculation Tanks	RC2
	Recirculation ranks	RC3
l II		RC4
11		UNSAT-SA2
	Stage 1 Recirculating Biofilters	UNSAT-EC4
	Stage 1 Recirculating biolitiers	UNSAT-CL2
		UNSAT-CL4
	Denite Feed Collection Tank	DFT
		UNSAT-SU1
III	Stage 2 Horizontal Biofilters	UNSAT-SU2
	Stage 2 Horizontal Biolitiers	UNSAT-LS1
		UNSAT-GL1
		UNSAT-IS1
	In-Situ In-Tank Simulator Single Pass Biofilter	UNSAT-IS2
	ini-oliu in-Tarik olinulaldi olingle Fass bidililei	UNSAT-IS3
IV		UNSAT-IS4
IV	In City In Tank Cimulator Cingle Dage Disfilter	UNSAT-IS1-SP
	In-Situ In-Tank Simulator Single Pass Biofilter	UNSAT-IS2-SP
	Sample Port (below EC & LS mixture and above SU layer)	UNSAT-IS3-SP
	(Delow EC & L3 Illixture and above 30 layer)	UNSAT-IS4-SP

3.4 Operational Monitoring

Start-up of the PNRS II test facility occurred on May 17th, 2010 and all systems have operated continually since that time. However, August 11-15, 2011 the programmable logic controller (PLC) was not operating likely because of a lightning storm. The entire facility operation is checked at least once per week and a detailed log of operational observations and activities is maintained. In addition, the programmable logic controller (PLC) which controls many of the dosing and pump controls also records pump run times and

flow data from flow meters at the facility, and these data can provide useful insight into facility operations. Appendix A provides summary tables of the PLC recorded data of daily runtimes and flows for the test facility between May 19th and September 14th (Day 367 through Day 485 since start-up) used to check general pump operation and performance.

3.5 Water Quality Sample Collection and Analyses

Influent and effluent water quality samples from the PNRS II test systems for Sample Event 7 were collected September 15, 2011. A sample of STE was collected from the feed line connecting STE Storage Tank 1 (PNRS II-STE-T1) to Hydrosplitter 1 which supplies STE to the single pass Stage 1 biofilters (Figure 1). A manual dose event was initiated on the control panel until sufficient STE sample volume was collected in a clean sample container. Stage 1, 2, and in-situ simulator biofilter and recirculation tank effluents were each sampled by directing the entire flow from the biofilter into a large, clean sample container over a period of time sufficient to obtain the desired sample volume (approximately 3.5 liters). Sample containers were immediately placed in coolers on ice prior to subdivision of the composited sample.

The composite samples in the 3.5 liter sample containers were then subdivided into analysis-specific sample containers. The analysis-specific containers were supplied by the analytical laboratory and contained appropriate preservatives. The analysis-specific containers were labeled, placed in coolers and transported on ice to the analytical laboratory. Each sample container was secured in packing material as appropriate to prevent damage and spills, and was recorded on chain-of-custody forms supplied by the laboratory. Chain of custody forms, provided in Appendix D, were used to document the transfer of samples from field personnel to the analytical laboratory. One chain of custody form was filled out for each set of samples and placed inside the cooler.

Equipment blank, field blank, and field sample duplicates were taken. The equipment blank was collected using a previously cleaned STE sample collection bottle. The bottle was filled with distilled water provided by the laboratory and allowed to sit for eight minutes. The sample containers were then analyzed for the same parameters as the samples. The field blank was collected by filling sample containers with distilled water that had been transported from the laboratory into the field along with other sample containers. The field sample duplicates were collected immediately subsequent to the regular samples from the same composite sample. The duplicate sample containers for this event were filled with PNRS II T1-STE effluent, DENIT-LS3, DENIT-SU3 effluent, and DENIT-LS4 effluent. Additionally, laboratory split samples were collected immediately subsequent to the regular samples from the same composite samples. The laboratory

split sample containers for this event were filled with PNRS II T1-STE effluent and UN-SAT-IS1 effluent.

Field parameters were measured using portable electronic probes and included temperature (Temp), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, and specific conductance. Temperature (Temp), dissolved oxygen (DO), and oxidation-reduction potential (ORP) were measured with probe tips placed in flow through samplers located directly in the outlet pipe at each sample location. Specific conductance and pH were measured using external sample collection reservoirs. Field parameter results are listed in Appendix B. The influent and effluent samples were analyzed by the laboratory for: total alkalinity, total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH₃-N), nitrate nitrogen, (NO₃-N), nitrite nitrogen (NO₂-N), carbonaceous biochemical oxygen demand (CBOD₅), total suspended solids (TSS), and fecal coliform (fecal). For some of the denitrification biofilters containing elemental sulfur media, influent and effluent sample analyses were also conducted for sulfate (SO₄) and hydrogen sulfide (H₂S). Table 2 lists the analytical parameters, analytical methods, and detection limits for these analyses.

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

Analytical Parameter	Method of Analysis	Laboratory Detection Limit (mg/L)
Total Alkalinity as CaCO ₃	SM 2320B	2 mg/L
Total Kjeldahl Nitrogen (TKN-N)	EPA351.2	0.05 mg/L
Ammonia Nitrogen (NH ₃ -N)	EPA350.1	0.01 mg/L
Nitrite (NO ₂ -N)	EPA300.0	0.01 mg/L
Nitrate (NO ₃ -N)	EPA300.0	0.01 mg/L
Carbonaceous BOD (CBOD ₅)	SM 5210B	2 mg/L
Total Dissolved Solids (TDS)	SM 2540C	10 mg/L
Total Suspended Solids (TSS)	SM 2540D	1 mg/L
Chemical Oxygen Demand (COD)	EPA 410.4	10 mg/L
Orthophosphate as P	EPA 300.0	0.01 mg/L
Total Phosphorus (TP)	SM 4500PE	0.01 mg/L
Fecal Coliform (fecal)	SM9222D	1 ct/100mL
Sulfate (SO ₄)	EPA300.0	0.2 mg/L
Hydrogen Sulfide Unionized (H ₂ S)	SM4500S F	0.01 mg/L
Sulfide	SM4500S F	0.1 mg/L

3.5 Flow Monitoring

Flow rates for all PNRS II systems were calibrated at initial start-up and when the hydraulic loading rate was increased. The flow rates are measured at each sampling event and adjusted as necessary to maintain flow rates consistent with the experimental de-

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sign. Flow measurements and adjustments are made after collection of liquid samples and field parameter analyses.

A flow test was conducted September 16, 2011. These flow measurements are considered to represent those in effect leading up to and during Sample Event 7. The measured volumes and relative errors between measured and target flow rates are presented in Appendix C, Table 1. For the Group I systems, the measured STE inputs to the five Stage 1 biofilters were within 15% of the target volume. Measured effluent volumes for Stage 1 single pass biofilters (Stage 2 influent) for the five biofilters were within 17% of the target volume for four of the five systems (Table C.1). The UNSAT-SU3 biofilter influent was 24% higher than the target volume indicating that there may be a plug in the influent line.

For the Group II systems, all measured STE volumes to the Stage 1 recirculation tanks were within 9% of target volumes. The four recycle flow volumes as recorded by the PLC were within 5% of target volumes based on the increased experimental design recycle ratio of 5.0. The calculated recycle ratios (i.e. recycle flow volume divided by the STE flow volume) for the four recirculation systems were within 15% of the target recycle ratio of 5.0.

For Group III systems, the measured influent volumes to the Stage 2 horizontal denitrification biofilters were all within 2% of target.

For Group IV biofilters, the UNSAT-IS1 measured influent volume was within 36% of the target volume. The UNSAT-IS2 measured influent volume was within 65% of the target volume. Both of these biofilters are dosed using the same pump and were not within the target volume. The UNSAT-IS3 and UNSAT-IS4 measured influent volumes were within 5% of target volumes.





Appendix A: PLC Data

Table A.1 **Summary of PLC Recorded Daily Flows** (5/19/11 - 9/14/11)

		(3/13/1	1 - 9/14	<i>,</i> , , , , , , , , , , , , , , , , , ,			
Date Range		Average Recorded Flow (gpd)	Std. Dev.	MIN (gpd)	MAX (gpd)	Target Flow (gpd)	Relative Error ¹ (%)
Before Hy	draulic Loading Rate In	crease					
5/19/11- 6/28/11	Pump 4 to Hydro 1	72	8.1	36	79	73.7	-2.7%
	Pump 14 to Hydro 2	61	0.7	60	62	58.9	3.5%
	Pump 6 to Recirc. System 1	43	0.5	43	44	44.2	-1.9%
5/19/11-	Pump 7 to Recirc. System 2	45	0.7	43	45	44.2	1.1%
5/30/11	Pump 8 to Recirc. System 3	43	0.5	43	44	44.2	-1.9%
	Pump 9 to Recirc. System 4	44	0.5	43	44	44.2	-0.9%
Following	Hydraulic Loading Rate	Increase					
6/29/11- 9/14/11	Pump 4 to Hydro 1	127	2.7	123	132	122.7	3.7%
	Pump 14 to Hydro 2	114	33.6	0	141	117.8	-3.5%
	Pump 6 to Recirc. System 1	142	1.2	137	144	147.2	-3.6
5/31/11- 9/14/11	Pump 7 to Recirc. System 2	148	1.1	142	150	147.2	0.6
	Pump 8 to Recirc. System 3	146	0.8	141	147	147.2	-0.9
	Pump 9 to Recirc. System 4	140	18.7	17	145	147.2	-4.9

Relative Error = (Recorded Flow – Target Flow)/ Target Flow *100

Appendix A September 2011

Table A.2 Summary of PLC Recorded Daily Runtimes (5/19/11 – 9/14/11)

		(0/10/1	1 - 9/1	7 / 1 1 /			
Date Range		Average Recorded Daily Runtime (min/day)	Std. Dev.	MIN (min)	MAX (min)	Target Daily Runtime (min)	Relative Error ¹ (%)
Before Hy	draulic Loading Rate In	crease					
5/19/11- 6/28/11	Pump 4 to Hydro 1	17.6	0.5	17	18	17.2	2.2
	Pump 14 to Hydro 2	12.3	0.9	12	15	11.6	5.6
	Pump 6 to Recirc. System 1	6.4	0.5	6	7	6	6.9
5/19/11- 5/30/11	Pump 7 to Recirc. System 2	6.4	0.5	6	7	6	6.9
5/30/11	Pump 8 to Recirc. System 3	6.4	0.5	6	7	6	6.9
	Pump 9 to Recirc. System 4	6.3	0.5	6	7	6	5.6
Following	Hydraulic Loading Rate	Increase					
6/29/11- 9/14/11	Pump 4 to Hydro 1	31.7	1.1	31	40	31.2	1.57
	Pump 14 to Hydro 2	27.7	1	26	36	27.2	1.7
	Pump 6 to Recirc. System 1	21.2	0.7	20	27	20.8	2.1
5/31/11- 9/14/11	Pump 7 to Recirc. System 2	21.2	0.8	20	28	20.8	2.1
	Pump 8 to Recirc. System 3	21.6	0.8	21	28	21.2	2.1
	Pump 9 to Recirc. System 4	21.2	0.7	20	27	20.8	2.1

¹Relative Error = (Recorded Runtime – Target Runtime)/ Target Runtime *100 ²Pump 4 Runtime was increased to increase UNSAT-PS1 STE influent volume to target level





Appendix B: Field Parameter Analyses

Table B.1
Field Parameter Results
(September 15, 2011)

		(September	15, 2011)		
Sample Identifica- tion	рН	Temperature (°C)	Specific Conductance (µS)	Dissolved Oxygen (mg/L)	ORP (mV)
STE					
STE-Tank 1	7.4	28.4	820	4.00	-262.2
STE-Tank 1-D	7.4	28.4	820	4.00	-262.2
Stage 1 Single Pass B	iofilter Effl	uent			
UNSAT-EC1	7.0	28.8	810	3.87	57.6
UNSAT-EC3	7.1	28.7	826	5.63	25.3
UNSAT-CL1	7.4	28.7	825	6.60	42.9
UNSAT-CL3	7.3	28.2	903	6.38	24.8
UNSAT-CL5	7.5	28.8	817	6.74	14.3
Stage 2 Single Pass U	pflow Biofi	lter Effluent			
DENIT-SU4	7.2	26.8	1,004	0.1	-355.8
DENIT-LS3	7.4	27.2	739	2.29	-159.6
DENIT-LS3-D	7.4	27.2	739	2.29	-159.6
DENIT-SU3	7.4	27.0	1,126	0.1	-354.9
DENIT-SU3-D	7.4	27.0	1,126	0.1	-354.9
DENIT-LS2	7.5	26.8	862	3.14	19.1
DENIT-LS4	7.7	26.3	809	3.31	21.5
DENIT-LS4-D	7.7	26.3	809	3.31	21.5
Recirculation Tank Eff	luent				
RC1	7.3	6.8	706	0.34	-119.8
RC2	7.2	26.3	696	0.68	-123.4
RC3	7.3	25.8	713	0.1	-128.6
RC4	7.4	26.6	750	0.1	-129.3
Stage 1 Recirculating	Biofilter Eff	fluent			
UNSAT-CL4	7.4	26.3	767	7.20	28.7
UNSAT-CL2	7.2	26.1	697	6.16	29.9
UNSAT-EC4	7.0	26.0	693	7.09	51.7
UNSAT-SA2	7.0	26.0	687	6.67	8.0
Denite Feed Tank (Tan	ık 3)				
DFT	7.4	25.8	711	6.84	6.2
DFT-D	7.4	25.8	711	6.84	6.2

Appendix B September 2011

Sample Identifica- tion	рН	Temperature (°C)	Specific Conductance (µS)	Dissolved Oxygen (mg/L)	ORP (mV)
Stage 2 Horizontal Bio	ofilters Efflu	ient			
DENIT-SU1	7.0	22.0	1,004	0.25	-365.9
DENIT-SU2	7.0	22.5	961	0.13	-343.5
DENIT-LS1	7.2	22.2	644	0.27	-284.3
DENIT-GL1	6.6	22.5	794	0.1	-283.5
In-situ Simulator Biof	ilter Effluen	t			
UNSAT-IS1 (STE)	6.8	13.4	831	9.54	-158.3
UNSAT-IS2-SP	6.3	29.3	667	1.35	-130.9
UNSAT-IS2 (STE)	7.0	10.1	865	7.71	-59.6
UNSAT-IS3-SP (STE)	NR	NR	NR	NR	NR
UNSAT-IS3 (STE)	7.5	22.9	923	8.23	-13.9
UNSAT-IS4-SP (Nitrified STE)	NR	NR	NR	NR	NR
UNSAT-IS4 (Nitrified STE)	6.8	22.4	1,136	2.11	-222.7
Blanks					
Field Blank	8.2	26.0	35.7	7.86	11.2
Equipment Blank	7.8	25.9	31.7	7.94	7.7

¹NR = No reading was taken.



Appendix C: Flow Test Results

Appendix C September 2011

Table C.1 Flow Test Results

			Target Input		Measure	ed Input		Recycle Ratio	
Group (Figure 1)	Biofilter/Flow	Target Input Volume	Dose/day	Target Input Volume	Measured Input Volume	Relative Error (%)	Target Recycle Ratio (RR)	Calculated Recycle Ratio (RR)	Relative Error (%)
, ,		(mL/day)	(Dose/day)	(mL/dose)	(mL/dose)	(Measured Input -Target Input) / Target Input * 100	Volume Recycle / Volume STE	Volume Recycle / Volume STE	Measured RR - Target RR / Measured RR * 100
	Stage 1 Single Pass Biofilters								
	(Hydrosplitter 1) Date				9/16/11 2:00 PM				
	UNSAT-CL5				4,180	8.2%			
	UNSAT-CL3				3,460	-10.5%			
	UNSAT-CL1	92,760	24	3,865	3,160	-18.2%			
	UNSAT-EC3			.,	4,350	12.5%			
	UNSAT-EC1				3,480	-10.0%			
	Mean				3,726	-3.6%			
1	Stage 2 Single Pass Upflow Biofilters								
	Date				9/16/2011 1:00 2:00 pm				
	DENIT-LS4				3,480	-10.0%			
	DENIT-LS2				4,525	17.1%			
	DENIT-SU3	92,760	24	3,865	4,800	24.2%			
	DENIT-LS3				3,580	-7.4%			
	DENIT-SU4				4,060	5.0%			
	Mean				4,089	5.8%			
	Stage 1 Recirculating Biofilters								
	(Hydrosplitter 2)								
	Date				9/16/2011 STE 9:30 am				
	RC1 : UNSAT-SA2				5,040	8.7%			
	RC2 : UNSAT-EC4	111,312	24	4,638	4,930	6.3%			
	RC3 : UNSAT-CL2				4,660	0.5%			
	RC4 : UNSAT-CL4				4,870	5.0%			
	Mean Stage 1 Recirculating Biofilters (Recycle)				4,875 Flowmeter R 9/16/2011	5.1%			
2	RC1 : UNSAT-SA2				22,237	-4.1%		4.41	-13.3%
	RC2 : UNSAT-EC4				23,183	0.0%	1	4.70	-6.3%
	RC3 : UNSAT-CL2	556,560	24	23,190	23,025	-0.7%	5:1	4.94	-1.2%
	RC4 : UNSAT-CL4				22,710	-2.1%		4.66	-7.2%
	Mean				22,789	-1.7%		4.68	-7.0%
	Stage 1 Recirculating Biofilters (Hydrosplitter + Recycle)								
	RC1 : UNSAT-SA2				27,277	-2.0%			
	RC2 : UNSAT-EC4 RC3 : UNSAT-CL2	667,872	24	27,828	28,113 27,685	1.0% -0.5%		1	
	RC4 : UNSAT-CL4				27,580	-0.5%			
	Mean				27,664	-0.6%			
	Horizontal Denitrification Biofilters								
	Date				9/16/11 3:15 PM				
2	DENIT-SU1				635	2.9%			
3	DENIT-SU2				630	2.0%			
	DENIT-GL1	14,818	24	617.4	580	-6.1%			
	DENIT-LS1				601	-2.7%			
	Mean				612	-1.0%			
	In-Situ Simulators								
	Date				9/16/11 1:00 PM				
4	UNSAT-IS1 (STE)	20,160	24	840	540	-35.7%			
	UNSAT-IS2 (Nitrified STE)	20,640	24	860	302	-64.9%			
					9/16/11 2:00 PM				
	UNSAT-IS3 (STE)	893	24	37	36	-3.2%			
	UNSAT-IS4 (Nitrified STE) haded cells are measured values; grey-sha				39	4.8%			

Notes: Yellow-shaded cells are measured values; grey-shaded cells are calculated values



Appendix D: Chain of Custody Forms

SAL Project No. 1108 117

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

Project Name Location PARS SEP Wasteward System Analyses Simple Responsibility Park Sep Wasteward System Sep Wasteward Sep	Client Name	Hazar	Hazan and Sawyer	ş.					0 3	Contact / Phone: Josephin Edeba	Contact / Phone: Josephin Edeback-Hirst		813-630-4498		1
Samples (Sample Operator)	Project Name / Location								, <u>s</u>	edeback@	hazanands	sawyer.com			ł
Substitution Committee C	Samplers (Signature)	PNRS	II SE#7 Wast	ewater Syster	m Analyses										ł
Strict S	7	9						PARA	METER / C	ONTAINE	R DESCRI	PTION			
1	Marrx CO DW-Drinking Water SW-SurfaceWater SI GW-Groundwater SA-St R-Reagent	odes: WWV-Wastewater Sludge SO-Soil Aline Water O-Other Water						SST	etsteck nZ	Na ₂ S ₂ O ₃ MF)					L
Or UNSATISS SP 9		Description	Date	əmiT	xintsM			AIK, SO4, CBOD, 500mL P, Cool			Od blei	dmeT blei⁻	bno⊃ blei⁼	Hq bləi∃	
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Oct UNSAT194 S Color			11/01/	OHEI	ww	×	-	-	-	-		_			
Containers Prepared Container	- 1		111	8:25ap	ww c	×	-	-	-	-	2.1	ત્રેસ.પ	9811	6.75	
Containers Prepared Date/Time: Q425 Received: Relinquished: Relinquished: Containers Prepared Date/Time: Q425 Received: Relinquished: Containers Prepared Date/Time: Q412/II Gard with holding time? Relinquished: Containers Prepared Date/Time: Q412/II Gard with holding time? Relinquished: Containers US Received: Date/Time: Q4/II/II Gard with holding time? Relinquished: Containers used? V Adales rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Date/Time: Volatiles rec'd w/out headspack Y N (A) Relinquished: Volatiles rec'd w/out headspack Y N (A) Relinquished: Volatiles rec'd w/out headspack Y N (A) Relinquished: Volatiles rec'd w/out hea															
Containers Prepared Date/Time: 92.5 Received: Containers Prepared														1,	<u> </u>
Containers Prepared Received: Relinquished: Relinquished: Received: Received															
Containers Prepared Date/Time: 925 Received: Reinquished: Received: A 12															
Containers Prepared Date/Time: 925 Received: Date/Time: 920 Received: Pate/Time: 13:00 Seal intact? Vision Washingtished: Date/Time: D															_ _
Containers Prepared Date/Time: 925 Received: Date/Time: 13:00 Seal intact? V N WA															1.
Received on ice? Temp Received on ice? Temp N NA	Containers Prepared/ Refinquished		٦ ٦	17 0		Pate/Time	05:51	Seal intact?	lact upon arr			Instruction	ns / Remai	ķs	Ì
Received: Date/Time: Received: Date/Time: I, LCD Received: Date/Time: LCD (LC	Kelinquished:	Date/Time: $A \mathcal{U}_{\mathcal{C}} $	3	Mreek		9-14-1	10:24		nice? Temp			11081	117		
Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Date/Time: Received: Y N N N N N N N N N N N N N N N N N N		Date/Time:	$ \mathcal{Z} _{\mathbb{R}}$	rchm	3	Date/Time:	51112		ervatives inc n holding time	dicated?		Limit	ed sa	ımple	
Date/Time: Received: Date/Time:	verinduisned:	Date/Time: 1, 602) 9/16/11	Received:			Oafte/Time:		Volatiles red	c'd w/out hea	adsbace √	(<u>\$</u>)	volun	Je.		
	Relinquished:	Date/Time:	Received:			Date/Time:					∀Z Z				

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

Chain of Custody

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

Officer Nicomo											Contact / Phone	hone:				
		Hazan	Hazan and Sawver							7	losephin E	deback-Hir	Josephin Edeback-Hirst 813-630-4498	0-4498		
Project Name / Location	ncation										edeback@	hazanands	edeback@hazanandsawyer.com			l
		PNRS	SE#7 Was	PNRS II SE#7 Wastewater System Analyses	m Analyses											
Samplers: (Signature)	1					i		u.	PARAMETER / CONTAINER DESCRIPTION	R / CONT/	AINER DES	SCRIPTION	7			
DW-Drin SW-Surfa GW-Ground	Makix Codes. DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	/ater Soil J-Other						881 (•	etsteck nZ\r						r <u>s (Total p</u> er
SAL Use Only Sample No.	Sample Description		- Site	əmiT	xintsM	Composite Grab	125mL P, H ₂ SO 125mL P, H ₂ SO	AIK' 804' CBOD 200mL P, Cool	Alk, CBOD, TSS 500mL P, Cool	500mL P, NaOH H ₂ S	125ml P, sterile; Fecal Coliforms	Lield DO	qmeT blei7	Field Cond	Field pH	Me. of Centaine Me. of Centaine Gent Tocation)
01 PNRS II STE-Tank 1	TE-Tank 1		09151	=	ww	_	-	-		-	-	4.00	78.4	220	7,4	27272
1	PNRS II STE-Tank 1-D		_	15	ww	×	-	-		-	-	4.00	h'82	820	7.4	2.272
1	5			56/1	ww	×	-	1		-	-	3.87	8.82	810	2,0	27.6
	33			0111	ww	×	1		1		-	63	28.7	326	1'/	2,3
	+-			1135	ww	×	1	1		-	1		28.7	825	7.7	47.9
06 UNSAT-CL3	-3			1130	ww	×	-		-		-	6.38		903	7.3	1.72
07 UNSAT-CL5	-5			02/1	ww	×	-		-		-	6.74	8 8	817	7.5	14,3
08 DENIT-SU4	4			1000	ww	×	-	-		-	-	0.07	26.8	1004	72	-355.8
09 DENIT-LS3-REV	3-REV			0450	ww	×	-		-		-		27.2	234	7.4	159.6
10 DENIT-LS3-REV-D	3-REV-D			0455	ww	×	1		1			2.29	21.2	734	7.7	1596
11 DENIT-SU3	9			ohbo	ww	×	-	1		-		0.04	0.12	113	7.4	3519
12 DENIT-SU3-D	3-D			5460	ww	×	-	1		-	-	0.04	0.12	1126	7	354.9
Containers Prepared Relinquished:	Dated		Recyled	/		Date/Time:	16: [220]	Seal intact?	17	2	~ V		Instruction	Instructions / Remarks	Š	
Relingerished	Date/T	4- 3- // Date/Time: 122.	Received			Date/Fim	[24] I	Continues	Samples milaci upon arrivary				1108118	18		
R	0.15	211						Received	Received on ice? Temp		S	 ≨ ~				
Relindbiehed:	Date/	Time:	Received:			Date/Time	, ,	Proper pre Rec'd with	Proper preservatives indicated? Rec'd within holding time?	ndicated? re?	X.	\$ \$ Z Z > X >	Limit	ed sa	Limited sample	
Relinquished:	Date/Time	_ime:	Received:			Date/Time:	.e.	Volatiles r	Volatiles rec'd w/out headspace?	sadspace?) [(§)	volume.	ne.	00 000	7,747
Relinquished:	Date/Time:	Time:	Receive	i i		Date/Time:	39:	Proper co	Proper containers used?	2	(٢)	¥ _N	218	•	reading	5.67
Chain of Custody.xls												7 8	Chain of Clistody	ONE part on		

Chain of Custody

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

									19						
Client	Client Name	Second Production							<u>) </u>	Contact / Phone. Josephin Edeba	one: Jeback-Hir	Contact / Pnone. Josephin Edeback-Hirst 813-630-4498	0-4498		
Project	Project Name / Location	nazan and Sawyer							iei	deback@	nazanands	jedeback@hazanandsawyer.com			
7	,	PNRS II SE#7 Wastewater		System Analyses			,								
Samp	Samplers: (Signature)														
	5				-		à	PARAMETER / CONTAINER DESCRIPTION	R / CONTA	INER DES	CRIPTION				
	Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water						SST ,C	S	etsteck nZ/H						er <i>s (Total</i> -per
SAL Use Only Sample		e)teO	9miT	xirtsM	Composite Grab	125mL P, H ₂ SC TKN, NH ₃ , NOx	AIK, SO ₄ , CBOI 500mL P, Cool	AIK, CBOD, TS 500mL P, Cool	500mL P, NaOl S _s H	125ml P, sterile Fecal Coliforms	Field DO	qməT bləi∃	bao⊃ blei∃	Field pH	ASO Ho. of Contain Cach location)
13	DENIT-LS2-RE	115/10	0935	ww	×	-		-		-	3,14	26.8	218	7	19.1
4	DENIT-LS4-REV	091511	90	ww	×	1		-		-	3.31	_ 1	809	7,7	51.5
5	DENIT-LS4-REV-D	091511 093	1 0930	ww	×	₹		-		-	3,31		809	7.7	2
16	RC1	091511	5001 1	ww	×	-		-		-	0.34	₩. %	706	7.3-1	119.0
2	RC2	091511	1010	ww	×	1		-		-		26.3	9696	7.2	13.4
8	RC3	115160	<u>ā</u>	ww	×	1		1		-	0.06	75.8	713	7.3	18.6
19	RC4	091517	02011	ww	×	1				-	0.09	26.6	200	17.7	24:3
20	UNSAT-CL4	119160	1 12855	ww	×	1		1		-	2.20	2.92	767	57	
2	UNSAT-CL2	115110		ww	×	1 1		-		-	_	26.1	100	2.7	b '32
2	UNSAT-EC4	19151	02601	ww	×	1	:	-		-	7.09	0.92	673	0.2	2/,7
23	UNSAT-SA2	15160	0060 115160	ww	×	-		-		+-		30.31	68	ġ	20
24			02801	ww	×	-	-		-	-	و. ق	15.8	717	7.4	210
Contair Relinqu	Containers Prepaged Date/Time 28-0	Societies of Received	\downarrow		Date/Time:			Seal intact? Samples intact upon arrival?	val?	~ \\	₹ 2)2 2 ₹	Instructions / Remarks	ıs / Remari	s)	
Relinguished	Date/Time:	1035 Received.	28		Date/Time:	Date/Time: (035		Received on ice? Temp_				1108118	<u>2</u>		
Relina	15/10 15/10	15-11 Received:			Date/Time	04/5 [1	Proper pre: Rec'd withi	Proper preservatives indicated? Rec'd within holding time?	licated?	الكي	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Limit	Limited sample	mple	
Relinquished	ished: Date/Time:	Received:			Date/Time	ле:	Volatiles re	Volatiles rec'd w/out headspace?	adspace?		(₹) (₹) (₹)	volume	ne.		
Relinquished	ished: Date/Time:	Received:			Date/Time	ше:			_		<u>\$</u>				

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

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

Client Name	,	S pac accel							0 -	Contact / Phone: Josephin Edebar	Contact / Phone: Josephin Edeback-Hirst	l l	813-630-4498		
Project Name / Location	ומלמו	alla Sawyei							1.9	- Achaba	phaenezed	12			
	PNRS	PNRS II SE#7 Wastewater	ewater Systen	System Analyses			!		<u> </u>	deback (d)	lazariario	awyer cor	- 1		
Samplers: (Signafure)							/d	PARAMETER /	3 / CONTA	INER DES	CONTAINER DESCRIPTION	7			
DW-DrinkingMater Ww-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	Wastewater Sludge SO-Soil ne Water O-Other Vater						SST		Pretate						s (Total per
SAL Use Onty Sample No. Sample	escription	Date	əmiT	xintsM	Composite Grab	125mL P, H ₂ SO₄,	// CBOD' 200mL P, Cool	AIK, CBOD, TSS 500mL P, Cool	600mL P, NaOH/ 9 _S 9	l S5ml P, sterile, I Fecal Coliforms (ejelq DO	dmeT blei⁼	bno⊃ blei⁻	Hq bləi	999 Vo. of Containers each location)
25 DFT-D		113	R253	ww							6.34	25.8	11/2	4.7	6.7
26 DENIT-SU1		041511	2115	ww	×	-	-		-	10.35	55/	20	1009	7.0	-365.9
27 DENIT-SU2			0750	ww	×	-	-		1	10.13	1.83	-	196	2,0	-348.5
28 DENIT-LS1-REV		091511	0755	ww	×	1		1		1.	122'5	22.2	<u></u> ተለን		-284,3
29 DENIT-GL1		091511 080	0000	ww	×	1		-		٦, ١	10.0	22.5	466	6.6	-7835
30 UNSAL-IS1-SP		117160	no Sauple	ww	×	-	-		-	-					
31 UNSAT-IS1		59[6][120	ww	×	1	-		-	-	1.54	13.4	83	6.8	-(58.8
32 UNSAT-IS2-SP		091611	1155	ww	×	1	1		1	-	1.35	29.3	667	6.3	- (30.
33 UNSAT-IS2		111160	1210	ww	×	1	-			-	12'2	10.1	865	7,0	-59.
34 Field Blank		091511	110.	R	×	1		-		-	7.86	0.72	75.7	8,2	11.2
35 Equipment Blank		091511	1100	R	×	1		-		-	1.94	25.9	31.7	7.8	7.7
:		1								71	1	ま			
Relinquished:	Pate/Time: 12-35		4		Date/Time:	022	Seal intact? Samples intact upon arrival?	ct upon arriv	rai?	>0>	Y N	nstruction	Instructions / Remarks	ks	
Relinguished	Date/Time: /320	Received	1		Date/Time: 1326	1320	Received on ice? Temp	ice? Temp_			<u> </u>	1108118	<u>7</u>		
Rein Market.	Date/Time: //.00	Received:			Date/Time:	1	Proper preservatives indicated? Rec'd within holding time?	rvatives indi holding time?	cated?	دىق	₹ ₹ 2 2 2 z	Limit	ed sa	Limited sample	
Relinquished:	Date/Time:	Received:			Date/Time:		Volatiles rec'd w/out headspace?	d w/out hea	dspace?	>	(4) 2 2	volume.	ne.		
Relinquished:	Date/Time:	Received:	į		Date/Time:		Hoper containers used of	iners used?		<i>`</i> (_) [§] z				
Chain of Custody vie										7					

SAL Project No. 1108/19

SOUTHERN ANALYTICAL LABORATORIES, INC. 110 BAYWEW BOULEVARD, OLD SMAR, FL 34677 813 4855-1844 fax 813 4855-2218

Client Name	Name	Hazan	Hazan and Sawver							<u>5 </u>	sephin Ed	Josephin Edeback-Hirst	st 813-630-4498	0-4498		
Project	Project Name / Location									ĕ	leback@	azanands	jedeback@hazanandsawyer.com			
	4	PNRS	PNRS II SE#7 Wastewater		System Analyses	ļ										
Sampl	Samplers: (Signature)							ΡA	RAMETE	PARAMETER / CONTAINER DESCRIPTION	NER DES	CRIPTION	7			
	Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Readent Water	astewater e SO-Soil ater O-Other					Þ			· · · · · · · · · · · · · · · · · · ·						rs (Total per
SAL Use Onty Sample No.	Sample Description	tion	Date	əmiT	xinteM	Composite	125mL P, H ₂ SO	125ml P, Cool 504, NUZ, N 125 ml P, C	EON, GON			Field DO	Field Temp	Field Cond	Field pH	No. of Containe each location)
2	DENIT-SU4-18		11 9760	5111	ww	×	1	1				1.73	27.5	800	6.7	254.
02	DENIT-SU4-12		091611	11 10	ww	×	-	1				1.36	77.3	268	6.4	738.
03	DENIT-SU4-7		09611	5011	ww	×	-	-				0.0	27.1	860	9.0	131
8	DENIT-SU4-3		1096011	0011	ww	×	-	-				77.7	27.0	2SH	63	5:112-
05	DENIT-LS3-18		Offett	5501	ww	×	1		_		Ú	28.0	2.2	737	6.0	211.0
90	DENIT-LS3-12		09160	1050	ww	×	-		_			0.81	77:17	777	6.8	168.5
07	DENIT-LS3-7		09160	1045	ww	×	1		_			1.63	27. [522	7.0	125.3
90	DENIT-LS3-3		1091611	oh 01	ww	×	-					1.13	3.92	804	\ 9	64.9
60	DENIT-SU3-18		Oftell	0101	ww	×	-	-				0.70	21.2	1136	40.7	28
10	DENIT-SU3-12		Offell	1005	ww	×	-	-			_	0.08	20.6	180		-274.4
11	DENIT-SU3-7		Ofter	1000	ww	×	-	-			_	98.0	20.8	12601	6.8	-277.5
12	DENIT-SU3-3	l))	5560	ww	×	-	-			₹	OCC	11.7	2201	6.7	1.002-
Contain Relinqui		01/1	Received	7		Date/Time:	아))	Seal intact?		ļ !	\$ \$	_	Instruction	Instructions / Remarks	S	
	M	11/2/11	9			9 12	11/21	Samples intact upon arrival?	act upon ar	rival?	U	<u>·</u> ≨ ~	1108110	110		•
		Date/Time: 1600	Received:			Jate/ I ime		Received on ice? Temp	ice? Tem		3 C	₹ 2 2		2		
Relinquished	shed:	Date/Time:	Received:			Date/Time		Proper preservatives indicated? Rec'd within holding time?	ervatives ir holding tim	idicated? e?	P	\$ \$ z z Z	Limit	Limited sample	mple	·
Relinquished	:peq:	Date/Time:	Received:			Date/Time		Volatiles rec'd w/out headspace? Proper containers used?	d w/out he	eadspace?	٠(volume	ne.		
Relinquished	peq:	Date/Time:	Received:		_	Date/Time	di di				ب	¥ Z ≻				
					1							1				

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

Client Name	Hazan	Hazan and Sawver								Contact / Phone: Josephin Edeback-Hirst	one:		813-630-4498		
Project Name / Location									-31	edeback@hazanandsawyer.com	azanands	awyer.corr			
	PNRS	I SE#7 Wast	PNRS II SE#7 Wastewater System Analyses	n Analyses											
Samplers: (Signatura							4	YARAME	PARAMETER / CONTAINER DESCRIPTION	AINER DESC	RIPTION	_			
Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	Vastewater ge SO-Soil /ater O-Other		j			Þ	٤,								rs (Total per
SAL. Use Only Sample No. Sample Description	ption	Date	əmiT	xintsM	Composite Grab	125ml P, H ₂ SO	125mL P, Cool SO4) NC	ISSMI PICOOL	Salta		Eleld DO	Field Temp	bno⊃ bl e i∃	Field pH	Mo. of Containe each location)
13 DENIT-LS2-18		091611	0350	ww	×	1		_			.03	76.3	559	7.1	-9.6
14 DENIT-LS2-12		19 the 11	2460	ww	×	1					1.07	26.3	892	2'L	- 10.1
15 DENIT-LS2-7		Oglen	0440	ww	×	-				7	23	2,57	860	7.5	-(7.2
16 DENIT-LS2-3		119160	9935	ww	×	-					.85	277	687	7.2	4.55-
17 DENIT-LS4-18		091611	0855	ww	×	-		-			.95	24.9	740	7.3	-119.7
18 DENIT-LS4-12		091cm	0880	ww	×	1					39	26.8	770	7,3	\$.K
19 DENIT-LS4-7		091611	10845	w	×	-		-			.82	26.7	202	7.3	-51.8
20 DENIT-LS4-3		0916110840	0840	w	×	-				7	95	20.0	822	2.2	-100.2
21 DENIT-SU1-72	·	091611	15 02160	+ ww	X	1	_				12	24.8	910	6.9	2 <i>-</i> 8 <i>h</i> 2-
22 DENIT-SU1:50 60 SH			0201	ww	X	1	1			T	.35	26.2	930	6.9	252.5
23 DENIT-SU1-48-45 SH		09 WIL	02//	ww	X	1	-			0	6.59	28.2	196	6.9	-288.1
24 DENIT-SU1-36		11700	0221	ww	×	1	1			2	0.97	29.7	1022	6.8	1.592
Containers Prepared/ Relinquished: ()/	Date/Time: 1140	New Parks			Date/Time:	e: 1140	Seal intact? Samples intact upon arrival?	? ntact upor	arrival?	×E		Instruction	Instructions / Remarks	rks	
Relinquis/faci	Date/Time: 1600	Received:			Date/Time		Received on ice? Temp	on ice? 1	dune	Á	Ž Z	1108119	119		
Relinquierecti	Date/Time:	Received:			Date/Time	·o	Proper preservatives indic Rec'd within holding time?	servative in holding	Proper preservatives indicated? Rec'd within holding time?	<i>DO</i>	▼ ₹ ž z z	Limit	Limited sample	ımple	4
Relinquished:	Date/Time:	Received:			Date/Time	 	Volatiles rec'd w/out hea Proper containers used?	sc'd w/ou itainers u	Volatiles rec'd w/out headspace? Proper containers used?	÷K	(3) (3)	volume . Sul- 60	_	0201-	
Relinquished:	Date/Time:	Received:			Date/Time	i oj				.		1.35 76.7	16.7 Gon A	ور ور د پ	-257.5
The state of the s															

SAL Project No. 1109/19

SOUTHERN ANALYTICAL LABORATORIES, INC.

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

Clien	Client Name	H	Horaco bag acred								Contact / Phone	Contact / Phone: Josephin Edeback-Hirst		813-630-4498		
Proje	Project Name / Location	1 A 1	arid Sawyer								Accholog	morphoch who are a second choice				
5		PNRS	II SE#7 Was	PNRS II SE#7 Wastewater System Analyses	n Analyses						Jedeback	Wildzanalio	sawyer cor	= 1		
Sam	Samplers: (Signature)	\ \ X										Circina				
	Matrix Codes:	2				-			A P	PARAMETER / CONTAINER DESCRIPTION	AINER U	SCRIPTIO	z[
	DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Readent Water	Wastewater tge SO-Soil Vater O-Other			-				1							(Total per
SAL Use Only					x	etieoc	L P, H ₂ SO ₄	ωο, α Δι Ω Ν , <u>Σ</u> (Μ Ω	007'd 1W	EON 1		ро	Temp	bnoƏ	Hq	Fontainers ocation)
Sample No.	Sample Description	iption	Date	əmiT	kinteM	Comp	ոշշւ	125m SO ₄		ZON		blei∃	Field	Field	Field	No. of
25	DENIT-SU1-24		091611	1320	ww	×	1	1				26.0	30.5	1012	8.9	-278.0
98	DENIT-SU1-12		11/11/0	1420	ww	×	1	1				1.31	\$\$.1	_	6.0	h:///-
27	DENIT-SU2-72		091611	\$655°	ww	×	1	1				1,32	23. 4		89	-260.1
88	DENIT-SU2-60		091611	1020	ww	×	1	1				6,43	25.9	2Eb	6	1.692-
53	DENIT-SU2-48		091611	1/20	ww	×	1	-				75.1	27.0		1	P.092-
8	DENIT-SU2-36		591611	0771	ww	×	1	1				09.0	4.62	8/18	 	-270.6
3	DENIT-SU2-24		Offell	1320	ww	×	-	-				0.60	30.6	988	e e	-248.0
32	DENIT-SU2-12		119160	0267	ww	×	-	-				182	32.7	789	ا ق	2.802-
8	DENIT-LS1-72		119160	1820 SE	ww.	×	-		-			88.0	23.2	sh9	2,0	-28.1
ध्र	DENIT-LS1-60		1 11/11/20	020	ww	×	1				75		_	432	П	1.18
35	DENIT-LS1-48		091611	1120	ww	×	1					867	27.5		107	1.721
98	DENIT-LS1-36		091611	1220	ww	×	1	•					29.5		7.0 -	158.1
Contair	Containers Prepared/ Relinquished	241	Receipt	0		Date/Time:	[840 -	Seal intact? Samples intact upon arrival?	7 fact upo	in arrival?		V _N V _N	Instruction	Instructions / Remarks	(S	
		Date/Time: 1600	Received			Date Time		Received on ice? Temp	n ice?	Temp			1108119	119		
Relinde	#arfed:	.Date/Time:	Received:			Date/Time	<u>o</u>	Proper preservatives indic Rec'd within holding time?	servativ in holdin	Proper preservatives indicated? Rec'd within holding time?		₹ ₹ 2 2 2 2 2 2	Limit	Limited sample	mple	
Relinquished	ished:	Date/Time:	Received:			Date/Time	9	Volatiles rec'd w/out hea	c'd w/o	Volatiles rec'd w/out headspace?	, , ,	(1)	volume,	je.		
Relinquished	ished:	Date/Time:	Received:			Date/Time	<u>.</u>)	∀ №	50,77		Con Pu 658 70	08P 4
Chain of Custod	Prehodo de												1	1	- 1	1

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

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

Client Name	Vame		30000							<u>0 3</u>	Contact / Phone: Josephin Edeback-Hirst 813-630-4498	ne: back-Hirst	t 813-630	14498		
Project	Project Name / Location	nazan a	nazari ariu Sawyer							jej	jedeback@hazanandsawyer.com	zanandsa	wyer.com			
		PNRS II	PNRS II SE#7 Wastewater	water Systen	System Analyses											1
Sample	Samplers: (Signature)	\						۵	ARAMETEI	PARAMETER / CONTAINER DESCRIPTION	NER DESC	RIPTION				
	Matrix Codes DW-Drinking Water—WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	er oil Xfher					7									ers (Total per
SAL Use Only	Sample Description		əteO	əmiT	xinsM	Composite Grab	125ml P, H ₂ 50 NGK, COD NAA	125mL P, Cool 501, NO ₇ NO 804				Eleld DO	Fleld Temp	Fleld Cond	Field pH	No. of Containe each location)
	DENIT-LS1-24		09/60	0281	WW	-	├	1			0	95	30.9	730	6.9	-139.7
1	DENIT-LS1-12		119130	0771	WW	×	-					.00.	32.1	223	6.0	145.7
	DENIT-GL1-72		11960	* 2220	, ww	×	-	_		_	7	3	74.7	199	5	214.8
	DENIT-GL1-60		119160	0201	WW	×	-	-			7	82'/	26.36	7	63	-7333
14	DENIT-GL1-48		091611	0211	ww	×	-	-		-	9	0.78	77.4	72	1	1
42	DENIT-GL1-36		119160	1220	ww	×	1				9	0.51	29.2	2007	6.3	2 .932.
	DENIT-GL1-24		117160	0281	ww	×	1				9	0.69 3	30.6	300	63	245.0
	DENIT-GL1-12		119160	02h]	WW	<u> </u>	-				9	25	31.7	226	7 7 7 7	235.6
											1	7	1			
	-		_ -													
												1	1			
			7											- Carolina		
Contain	Containers Prepared/ Relinquished:	971		_			011211	Seal intact?	Seal Intact? Samples intact upon arrival?	ival?	٠ (١	* * * * * * * * * * * * * * * * * * *	NA NA		ì	
Relinduis		909	Recommen	\$		Date/Time:) 2 2	Received c	Received on ice? Temp		XI)	<u>₹</u>	1108119	19		
Relinquish	shed Date/Time		Received:			Date/Time:	ne:	Proper pre Rec'd with	Proper preservatives indicated? Rec'd within holding time?	dicated? 3?		ا م ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا	imite	ed sa	Limited sample	
Relinquished	shed: Date/Time		Received:			Date/Time:	ле:	Volatiles re	Volatiles rec'd w/out headspace?	adspace? >) - (<u>\$</u>	volume	<u>;</u>		
Relinquished	shed: Date/Time:	Ē	Received:			Date/Time:	.e.:				E	 ₹ z			Î	
Chain of Custody.xds Rev.Date 11/19/01	ustody.xds 17/19/01											Chair	Chain of Custody	γρ		