
To: Nevada Division of Environmental Protection
Nevada Environmental Response Trust

Cc: Nevada Environmental Response Trust Stakeholders

From: Frank Johns/Tt

Date: August 26, 2014

Subject: NERT – GWETS Operation Monthly Report – July 2014

Tetra Tech is providing this monthly to provide a summary of GWETS operation during July 2014 and oversight tasks performed by Tetra Tech.

Summary of GWETS Operation

The groundwater extraction and treatment system (GWETS) operated normally with no major issues in July. The flow rate to the plant was approximately 850 to 900 gpm during the month. GW-11 is being used as an equalization pond and for this period the volume is being maintained at approximately 40.5 MG. This is equal to just less than 15 days of available storage in event of an emergency. The Influent perchlorate concentration from GW-11 to the FBR plant has stabilized to approximately 120 to 125 ug/L. There were zero exceedances at the GWETS Outfall for perchlorate or any other constituent in excess of the NPDES permitted numerical discharge limits (Attachment A, prepared by ENVIRON).

Operational Metrics

At the direction of the Trust, Tetra Tech is currently developing an enhanced program to track over 80 key GWETS operational metrics. Upon implementation of this program, these metrics will be inclusive to the GWETS Monthly Reports. A schedule for implementation is pending the finalization of the project work plan and budgetary approval from the Trust.

Operational Issues

In addition to plant repairs conducted by Envirogen Technologies Inc. (ETI) in accordance with the NERT Perchlorate Treatment System Operations Manual, the following is a list of operational issues and major repairs and/or equipment replaced during this reporting period.

1. There has been an issue with insects and algae from GW-11 causing plugging of the bag filters ahead of the GAC units. The ETI operators need to change out the bag filters on a more frequent basis. The plugging of the filters results in reduced flow to the FBR plant over time. The frequent change outs also require additional operator attention. ETI is considering replacing the bag filters with a self-cleaning strainer. A design will be submitted in late August. At this time, no action from the Trust is required.
2. At 2 AM on July 14, the GWETS plant control system shutdown the main plant and initiated a call out to the ETI operator. At no point during this shutdown were the wells affected and the wells continued to flow into GW-11. The shutdown was caused by faulty printed circuit boards in the

control system. They were replaced and the plant was back operating by 6 AM, with discharge to GW-11 until operation stabilized. The plant resumed discharging to the wash at 7 PM. This situation has been resolved and no additional action from the Trust is required.

3. At 1 AM on July 16, Well PC117 in the seep well field shutdown due to a broken control wire. ETI increased flow from other SWF wells to maintain a constant flow. They were able to use another control wire to return Well PC117 to operation by 2:30 PM. This incident triggered the Emergency Response Plan, and the incident was reported to NDEP in accordance with the plan. This situation has been resolved and no additional action from the Trust is required; however, all well field control systems are currently under review by Tetra Tech as part of the ongoing 2014 GWETS Enhanced Operational Metrics Project.

GWETS Upgrades and Facility Projects

The following is a summary of initiatives in-progress during the reporting period at the direction of the Trust:

1. 2013 Optimization

In the month of July, ENVIRON received final City of Henderson approval for the design modifications for connection of PC-150 and ART-7B located in the AWF; solicited bid revisions from construction contractors and selected a contractor; began procurement of materials for construction; and completed Phase II groundwater model updates. Construction for PC-150 and ART-7B is set to begin in September with startup of wells in October. Another round of flow optimization for the IWF will be initiated in September. Capture zone analyses for the IWF and AWF will be performed in November with a final report expected in January 2015.

2. AP-5 Closure

Tetra Tech has continued development of a work plan for closure of the pond. Tetra Tech has been in discussion with the Trust, NDEP, and ETI on various aspects of the project. This will be a long-term project that will directly impact GWETS operations across multiple levels once implemented. Tetra Tech anticipates final project work plan submittal and budgetary approval by the end of September.

Equipment Availability Tracking

The equipment availability and maintenance tracking program was in place beginning July 8, 2014. ETI operators update the equipment tracking form on a weekly basis at a minimum, or whenever there is a change in the status of key equipment. Tetra Tech verified data recorded in the form in regard to operating status of equipment when on-site on July 30, 2014. During regular site visits in the future, Tetra Tech field personnel will continue to verify the entries in the form, including both the operating status and the presence of the required shelf spares. The equipment tracking form submitted to Tetra Tech on July 31, 2014, is attached (Attachment B).

GWETS Security

ETI continues to staff the GWETS using a single shift and follows the security procedure in the SOP dated April 30, 2014. During weekly calls, ETI notifies Tetra Tech of any issues with GWETS security. On July 21, ETI notified Tetra Tech that a homeless person was staying in Lift Station 1 enclosure. The police were called to

remove the belongings and ETI had a fencing contractor fix the gate to eliminate a gap. At this time, no additional action from the Trust is required.

Tetra Tech Activities

Tetra Tech conducted weekly calls with ETI to review operation of the GWETS on July 10, 17, 24, and 31. A call was not held on July 3 due to schedules and the fact that Tetra Tech had been at the site on June 30 and July 1. Becki Dano, CEM, of Tetra Tech, performed visits to the GWETS on July 1, 11, 14, 24, 25, 28, and 30. The visit on July 25 was primarily for sampling of GW-11. The visit on July 28 was primarily for sampling AP-5.

Summary

Upon review of available and relevant information, Tt concurs with the management of the GWETS at this time. No additional involvement from either the Trust or Tetra Tech is recommended at this time.

Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Continuous		Daily samples, composited weekly	
Flow Rate		Perchlorate	
30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (ug/L)	30-Day Avg. (lbs/day)
1.45	1.75	18	0.22

Weekly samples								
pH	Hexavalent Chromium	Total Chromium	Total Suspended Solids (TSS)		Total Iron		Total Ammonia as N	Total Phosphorus as P
30-Day Avg. (S.U.)	Daily Max. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)
6.5 to 9.0	0.01	0.1	135	1,634	10	121.03	40	20

Weekly samples, collected separately			Quarterly sample	
BOD ₅ (inhibited)			Manganese	
30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)
25	40	254	5	60.52

December 2013	1.30	1.34	1.3	0.014	6.98	0.00013	0.014	20	220	3.6	39	1.8	1.7	2.5	3.8	27
January 2014	1.34	1.37	1.3	0.014	6.91	0.0013	0.036	28	320	4.2	47	5.3	3.3	4.2	5.2	47
February 2014	1.37	1.44	1.3	0.014	7.08	0.00013	0.020	19	220	2.9	33	10	3.2	5.2	9.9	58
March 2014	1.38	1.48	1.3	0.014	6.98	0.00048	0.012	25	260	5.2	55	6	2.3	2.6	3.7	30
April 2014	1.07	1.46	1.3	0.012	6.63	0.00029	0.028	17	170	3.8	37	2.2	1.9	4.3	6.3	44
May 2014	1.37	1.48	1.3	0.014	6.81	0.0013	0.012	19	220	3.3	38	8	3.1	3.1	3.4	35
June 2014	1.31	1.37	1.3	0.014	6.69	0.00013	0.017	17	170	3.3	35	5	2.0	2.4	5.4	26
July 2014 (month-to-date)	1.11	1.40	1.3	0.012	6.81	0.00013	0.020	27	250	5.8	51	2.2	2.6	4.1	4.5	38

Daily Grab Sample Dates	Composite Sample Date	ug/L	lbs/day	Sample Date	S.U.	mg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	Sample Date	mg/L	lbs/day	mg/L	lbs/day
12/1 - 12/7	12/7/2013	ND (<2.5)	1.3	0.014	12/2/2013	7.11	ND (<0.00025)	0.0031	39	430	4.2	46	ND (<0.10)	0.05	0.5	0.053	0.58	12/5/2013	1.4	15
12/8 - 12/14	12/14/2013	ND (<2.5)	1.3	0.013	12/9/2013	6.65	ND (<0.00025)	0.014	15	160	3.7	40	ND (<0.10)	0.05	0.5	0.089	0.95	12/11/2013	2.1	22
12/15 - 12/21	12/21/2013	ND (<2.5)	1.3	0.014	12/16/2013	7.08	ND (<0.00025)	0.014	12	130	3.2	35	ND (<0.10)	0.05	0.5	0.15	1.6	12/18/2013	3.1	34
12/22 - 12/28	12/28/2013	ND (<2.5)	1.3	0.014	12/23/2013	7.22	ND (<0.00025)	0.010	19	210	3.7	40	--	0.46	5.0	0.28	3.1	12/23/2013	3.8	41
12/29 - 1/4	1/4/2014	ND (<2.5)	1.3	0.014	12/30/2013	6.85	ND (<0.00025)	0.0075	14	150	3.3	36	--	0.23	2.5	0.21	2.3	12/30/2013	1.9	21
1/5 - 1/11	1/11/2014	ND (<2.5)	1.3	0.014	1/6/2014	6.91	ND (<0.00025)	0.015	21	230	3.7	41	--	0.17	1.9	0.26	2.9	1/8/2014	2.3	26
1/12 - 1/18	1/18/2014	ND (<2.5)	1.3	0.014	1/13/2014	7.31	ND (<0.00025)	0.0082	16	180	3.5	40	--	0.25	2.8	0.21	2.4	1/15/2014	4.5	51
1/19 - 1/25	1/25/2014	ND (<2.5)	1.3	0.014	1/20/2014	6.72	0.0013	0.036	60	680	5.8	65	--	0.97	11	0.42	4.7	1/22/2014	4.6	52
1/26 - 2/1	2/1/2014	ND (<2.5)	1.3	0.014	1/27/2014	6.69	ND (<0.00025)	0.0098	15	170	3.8	43	--	0.48	5.4	0.28	3.1	1/29/2014	5.2	58
2/2 - 2/8	2/8/2014	ND (<2.5)	1.3	0.014	2/3/2014	6.91	ND (<0.00025)	0.020	23	260	4.0	45	--	0.33	3.7	0.13	1.5	2/5/2014	4.6	52
2/9 - 2/15	2/15/2014	ND (<2.5)	1.3	0.014	2/10/2014	6.98	ND (<0.00025)	0.0047	22	250	3.0	34	--	0.94	11	0.33	3.7	2/12/2014	2.6	29
2/16 - 2/22	2/22/2014	ND (<2.5)	1.3	0.015	2/17/2014	7.25	ND (<0.00025)	0.0052	22	260	4.2	49	--	1.5	17	0.27	3.1	2/19/2014	9.9	110
2/23 - 3/1	3/1/2014	ND (<2.5)	1.3	0.015	2/24/2014	7.18	ND (<0.00025)	0.0043	10	120	0.30	3.5	--	0.58	6.8	0.39	4.6	2/26/2014	3.7	43
3/2 - 3/8	3/8/2014	ND (<2.5)	1.3	0.013	3/3/2014	6.91	ND (<0.00025)	0.0064	16	170	3.8	41	--	0.43	4.6	0.20	2.1	3/5/2014	2.4	26
3/9 - 3/15	3/15/2014	ND (<2.5)	1.3	0.015	3/10/2014	7.36	ND (<0.00025)	0.0051	54	630	9.8	114	--	1.6	19	0.28	3.3	3/12/2014	3.4	40
3/16 - 3/22	3/22/2014	ND (<2.5)	1.3	0.015	3/17/2014	6.87	ND (<0.00025)	0.0023	13	150	3.0	36	--	0.19	2.3	0.18	2.1	3/19/2014	1.0	12
3/23 - 3/29	3/29/2014	ND (<2.5)	1.3	0.015	3/24/2014	6.72	0.00048	0.0059	12	140	3.6	42	--	0.33	3.9	0.18	2.1	3/26/2014	3.7	44
3/30 - 4/5	4/5/2014	ND (<2.5)	1.3	0.0090	3/31/2014	7.04	ND (<0.00025)	0.012	30	220	5.9	42	ND (<0.10)	0.05	0.36	0.26	1.9	4/4/2014 ¹	NS	NS
4/6 - 4/12	4/12/2014	ND (<2.5)	1.3	0.0056	4/11/2014	6.61	0.00029	0.0096	15	70	3.4	15	ND (<0.10)	0.05	0.23	0.16	0.7	4/11/2014	3.4	15
4/13 - 4/19	4/19/2014	ND (<2.5)	1.3	0.015	4/14/2014	6.66	ND (<0.00025)	0.028	20	230	4.4	52	ND (<0.10)	0.05	0.59	0.22	2.6	4/16/2014	6.3	74
4/20 - 4/26	4/26/2014	ND (<2.5)	1.3	0.014	4/21/2014	6.62	ND (<0.00025)	0.012	15	170	3.5	40	--	0.51	5.9	0.20	2.3	4/23/2014	2.5	29
4/27 - 5/3	5/3/2014	ND (<2.5)	1.3	0.014	4/28/2014	6.62	ND (<0.00025)	0.012	17	200	3.7	43	--	0.18	2.1	0.16	1.9	4/30/2014	4.9	57
5/4 - 5/10	5/10/2014	ND (<2.5)	1.3	0.014	5/5/2014	6.77	ND (<0.00025)	0.0074	13	150	2.7	31	--	0.49	5.6	0.14	1.6	5/7/2014	2.8	32
5/11 - 5/17	5/17/2014	ND (<2.5)	1.3	0.014	5/12/2014	6.62	0.0013	0.0083	26	290	3.9	44	--	1.1	12	0.39	4.4	5/14/2014	3.0	34
5/18 - 5/24	5/24/2014	ND (<2.5)	1.3	0.014	5/19/2014	7.06	ND (<0.00025)	0.012	15	170	3.3	37	--	0.99	11	0.31	3.5	5/21/2014	3.4	38
5/25 - 5/31	5/31/2014	ND (<2.5)	1.3	0.014	5/27/2014	6.77	ND (<0.00025)	0.012	23	270	3.4	39	--	0.12	1.4	0.25	2.9	5/28/2014 ²	NS	NS
6/1 - 6/7	6/7/2014	ND (<2.5)	1.3	0.014	6/2/2014	6.85	ND (<0.00025)	0.010	18	200	3.1	34	--	1.3	14	0.52	5.6	6/4/2014	2.3	25
6/8 - 6/14	6/14/2014	ND (<2.5)	1.3	0.014	6/9/2014	6.69	ND (<0.00025)	0.0091	13	140	3.0	33	--	0.11	1.2	0.040	0.43	6/11/2014	1.2	13
6/15 - 6/21	6/21/2014	ND (<2.5)	1.3	0.014	6/16/2014	6.69	ND (<0.00025)	0.016	13	140	3.7	41	--	0.57	6.3	0.16	1.8	6/18/2014	0.86	10
6/22 - 6/28	6/28/2014	ND (<2.5)	1.3	0.013	6/23/2014	6.71	ND (<0.00025)	0.0062	10	110	2.0	21	--	0.11	1.2	0.070	0.75	6/25/2014	5.4	58
6/29 - 7/5 ³	7/5/2014	ND (<2.5)	1.3	0.012	6/30/2014 ³	6.50	ND (<0.00025)	0.017	29	280	4.8	47	ND (<0.10)	0.05	0.49	0.16	1.6	7/2/2014 ³	4.5	44
7/6 - 7/12 ³	7/12/2014	ND (<2.5)	1.3	0.012	7/8/2014 ³	6.77	ND (<0.00025)	0.0089	20	200	3.2	31	--	0.41	4.0	0.23	2.3	7/9/2014 ³	3.4	33
7/13 - 7/19	7/19/2014	ND (<2.5)	1.3	0.011	7/15/2014	6.85	ND (<0.00025)	0.020	34	290	8.3	70	ND (<0.10)	0.05	0.42	0.35	3.0	7/16/2014	4.5	38
7/20 - 7/26	7/26/2014	NA	NA	NA	7/21/2014	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7/23/2014	NA	NA
					7/28/2014	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7/30/2014	NA	NA

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in Irvine, California, unless otherwise indicated.

¹ During this time period, treated effluent was diverted to GW-11 rather than discharged to the Las Vegas Wash. As a result, the weekly BOD₅ (inhibited) sample for the week of March 31, 2014 was not collected.

² The effluent BOD₅ (inhibited) sample for the week of May 26, 2014 was invalidated due to a power outage at the laboratory

³ On several days during this period, the effluent flow meter was not working properly. Mass loading values (lbs/day) were calculated using influent flow values in place of effluent flow values.

NA = Not Available To Date

NS = No Sample

ND = Not Detected above laboratory reporting limit; concentration in adjacent cell to right is one-half the reporting limit (per Permit condition)

-- = Analyte detected; see column adjacent to right

Last Updated: August 1, 2014

Attachment B

Equipment Tracking Form

Sub-System	P&ID	Description	Status ¹	Checked	Notes
Main Plant Equipment					
1		Seep Wells and Lift Station 1			
1.01		Seep Well Field, 9 wells	Running	X	All 9 wells in operation
1.02		Lift Station 1 Lift Pump A	Running	X	
1.03		Lift Station 1 Lift Pump B	Standby	X	
2		Athens Road Wells and Lift Station 3			
2.01		Athens Road Well Field, 9 wells	Running	X	All 9 wells in operation
2.02		Lift Station 3 Lift Pump A	Running	X	
2.03		Lift Station 3 Lift Pump B	Standby	X	Replaced with new submersible pump on 7-29-14
3		Lift Station 2 and Transmission Pipelines			
3.01		Influent Pipeline	In operation	X	
3.02		Effluent Pipeline	Running	X	
3.03		Lift Station 2 Lift Pump A	Running	X	
3.04		Lift Station 2 Lift Pump B	Standby	X	
4		Interceptor Wells and Cr Treatment Plant			
4.01		IWF Well Field, 30 wells	Running	X	All 30 wells in operation
4.02		Ferrous Sulfate Feed System	Running	X	
4.03		Polymer Feed System	Running	X	
4.04		Clarifier	In operation	X	
4.05		Filter Press	Running	X	
4.06		GWTP Effluent Tank	In operation	X	
4.07		Interceptor Booster Pump A	Standby	X	
4.08		Interceptor Booster Pump B	Running	X	
5		Equalization Area and GW-11 Pond			
5.01	PID10A	Pond GW-11	In operation	X	
5.02	PID10A	Pond Water Pump - P101A	Running	X	
5.03	PID10A	Pond Water Pump - P101B	Standby	X	
5.04	PID10A	Equalization Tanks	In operation	X	
5.05	PID10A	Raw Water Feed Pump - P102A	Running	X	
5.06	PID10A	Raw Water Feed Pump - P102B	Standby	X	Bearings need to be replaced in the motor
5.07	PID10B	Carbon Absorber - LGAC 201A	Running	X	
5.08	PID10B	Carbon Absorber - LGAC 201B	Running	X	New valves ordered. Shipping on 8-22-14
5.09	PID10B	Carbon Absorber - LGAC 201C	Standby	X	

¹Status Codes

Running - Unit is in operation

Standby - Spare or duplicate, not currently in operation

Maintenance - Out of service for maintenance

Off - Not currently needed for use, but can be placed in service

Sub-System	P&ID	Description	Status ¹	Checked	Notes
6		First Stage FBRs A, 1 & 2			
6.01	PID14	FBR A	Running	X	
6.02	PID14	Separator Tank - 1401	Running	X	
6.03	PID14	Media Return Pump - P 1401	Running	X	
6.04	PID14	P1401A	Running	X	
6.05	PID01A	P1401B	Maintenance	X	Pump mechanical seal needs to be replaced. 6 weeks out
6.06	PID01A	FBR 1	Running	X	
6.07	PID02A	FBR 2	Running	X	
6.08	PID01A	First Stage Separator Tank - T2011	Running	X	
6.09	PID01A	Media Return Pump - P2011	Running	X	
6.10	PID01A	First Stage FBR Pump - P1011	Running	X	
6.11	PID01A	First Stage FBR Pump - P1012	Running	X	
6.12	PID01A	First Stage FRB Pump - P101A	Standby	X	
6.13	PID07A	FBR A pH Feed Pump - P71A	Running	X	
6.14	PID07A	FBR 1 pH Feed Pump - P711	Running	X	
6.15	PID07A	FBR 2 pH Feed Pump - P712	Running	X	
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off	X	
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off	X	
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off	X	
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running	X	
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running	X	
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running	X	
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running	X	
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running	X	
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running	X	
7		First Stage FBRs 3 & 4			
7.01	PID01B	FBR 3	Off	X	
7.02	PID01B	FBR 4	Off	X	
7.03	PID02B	First Stage Separator Tank - T2012	Off	X	
7.04	PID01B	Media Return Pump - P2012	Off	X	
7.05	PID01B	First Stage FBR Pump - P1013	Off	X	
7.06	PID01B	First Stage FRB Pump - P1014	Off	X	
7.07	PID01B	First Stage FBR Pump - P102A	Off	X	
7.08	PID07A	FBR 3 pH Feed Pump - P713	Off	X	
7.09	PID07A	FBR 4 pH Feed Pump - P714	Off	X	
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723	Off	X	

¹Status Codes

Running - Unit is in operation

Standby - Spare or duplicate, not currently in operation

Maintenance - Out of service for maintenance

Off - Not currently needed for use, but can be placed in service

Sub-System	P&ID	Description	Status ¹	Checked	Notes
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P 724	Off	X	
7.12	PID15	FBR 3 Nutrient (Phos Acid) Feed Pump - P1523	Off	X	
7.13	PID15	FBR 4 Nutrient (Phos Acid) Feed Pump - P1524	Off	X	
7.14	PID07B	FBR 3 Electron Donor Assembly Pump - P733	Off	X	
7.15	PID07B	FBR 4 Electron Donor Assembly Pump - P734	Off	X	
7		Second Stage FBRs 5 & 6			
8.01	PID03A	FBR 5	Off	X	
8.02	PID03A	FBR 6	Off	X	
8.03	PID03C	Second Stage Separator Tank - T3011	Off	X	
8.04	PID03A	Media Return Pump - P3011	Off	X	
8.05	PID03A	Second Stage FBR Pump - P3015	Off	X	
8.06	PID03A	Second Stage FBR Pump - P3016	Off	X	
8.07	PID03A	Second Stage FBR Pump - P301A	Off	X	
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off	X	
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off	X	
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off	X	
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off	X	
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Off	X	
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Off	X	
9		Second Stage FBRs 7 & 8			
9.01	PID03B	FBR 7	Running	X	
9.02	PID03B	FBR 8	Running	X	
9.03	PID03D	Second Stage Separator Tank - T3012	Running	X	
9.04	PID03B	Media Return Pump - P3012	Running	X	
9.05	PID03B	Second Stage FBR Pump - P3017	Running	X	
9.06	PID03B	Second Stage FBR Pump - P3018	Running	X	
9.07	PID03B	Second Stage FBR Pump - P302A	Standby	X	
9.08	PID07A	FBR 7 pH Feed Pump - P717	Standby	X	
9.09	PID07A	FBR 8 pH Feed Pump - P718	Standby	X	
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off	X	
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off	X	
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running	X	
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running	X	

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Sub-System	P&ID	Description	Status ¹	Checked	Notes
10		Aeration and DAF System			
10.01	PID04	Aeration Tank	In operation	X	
10.02	PID04	Aeration Blower - B401	Running	X	
10.03	PID04	Biofilter	In operation	X	
10.04	PID04	Nutrient Solution	Running	X	
10.05	PID04	Biofilter Sump	Running	X	
10.06	PID04	Nutrient Pump - P401	Running	X	
10.07	PID04	Biofilter Sump Pump - P402A	Standby	X	
10.08	PID04	Biofilter Sump Pump - P402B	Off	X	Only one pump in place
10.09	PID04	Biofilter Blower	Maintenance	X	
10.10	PID05	DAF Pressure Tanks	In operation	X	
10.11	PID05	DAF Vessel - D501	Running	X	
10.12	PID05	DAF Pressure Pump - P501	Running	X	
10.13	PID05	DAF Float Pump - P502	Running	X	
10.14	PID05	DAF Vessel - D551	Running	X	
10.15	PID05	DAF Pressure Pump - P551	Running	X	
10.16	PID05	DAF Float Pump - P552	Running	X	
10.17	PID05	Screw Conveyer Drive	Standby	X	
10.18	PID05	Skimmer Drive	Running	X	
11		Pumping System (Old Effluent)			
11.01	PID06	Effluent Tank 601	In operation	X	
11.02	PID06	Effluent Pump - P601	Maintenance	X	Mechanical seal being rebuilt
11.03	PID06	Effluent Pump - P602	Running	X	
12		Sand Filter System			
12.01	PID17	Sand Filter	Running	X	
12.02	PID17	Filter Reject Tank	In operation	X	
12.03	PID17	Filter Reject Pump - P1701A	Running	X	New pump and impellers ordered
12.04	PID17	Filter Reject Pump - P1701B	Running	X	
13		Effluent Tank and Pumping			
13.01	PID10C	UV Effluent Tank	Running	X	
13.02	PID10C	Effluent Booster Pump - P1302A	Running	X	
13.03	PID10C	Effluent Booster Pump - P1302B	Standby	X	

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Sub-System	P&ID	Description	Status ¹	Checked	Notes
14		Solids Collection and Pressing System			
14.01	PID16	Sludge Storage Tank	In operation	X	
14.02	PID16	Solids Storage Effluent Pump - P1601	Running	X	
14.03	PID16	Solids Cond. Tank	In operation	X	
14.04	PID09	Sludge Mixer	Running	X	
14.05	PID09	Filter Press Pump - P901	Running	X	
14.06	PID09	Filter Press Pump - P902	Standby	X	
14.07	PID09	West Press	Off	X	
14.08	PID09	East Press	Running	X	
14.09	PID09	Filtrate Tank	In operation	X	
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running	X	
		Chemical Systems			
15		Electron Donor System			
15.01	PID07B	Electron Donor Tank	In operation	X	
15.02	PID07B	Booster Pump P739A	Running	X	
15.03	PID07B	Booster Pump P739B	Standby	X	
17	PID07C	Micro Nutrient System	In operation	X	
18	PID07C	Hydrogen Peroxide System	In operation	X	
19	PID07C	De-Foam System	In operation	X	
20	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	In operation	X	
21	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation	X	
22	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation	X	
23	PID07C	Ferric Chloride System	In operation	X	
24	PID07B	Polymer Systems - DAF	In operation	X	
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation	X	

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Sub-System	P&ID	Description	Status ¹	Checked	Notes
Utility Systems					
26		Compressed Air System			
26.01	PID08	West Compressor	Running	X	
26.02	PID08	East Compressor	Running	X	
26.03	PID08	O2 Compressor	Running	X	
26.04	PID08	Compressed Air Receiver Tank	In operation	X	
26.05	PID08	Air Dryer	Running	X	
26.06	PID08	Oil Removal Filter	In operation	X	
26.07	PID08	Particulate Filter	In operation	X	
27	PID16	Oxygen System	In operation	X	
28		GWETS Plant Controls/ Siemens Controls	In operation	X	
29		Well Control System/ Allen Bradley Controls	In operation	X	
30		MCC FBR Pad	In operation	X	
31		MCC in D-1	In operation	X	
32		MCC in EQ area	In operation	X	
Miscellaneous Systems					
33		Operations Office/Network	In operation	X	
34		Laboratory Analyzers	In operation	X	
35		Security Systems	In operation	X	
Shelf Spares					
		Media Return Pump Rebuild Kit	In stock	X	
		pH Feed Pump	In stock	X	
		Nutrient Feed Pump	In stock	X	
		Electron Donor Feed Pump	In stock	X	
		Phosphoric Acid Feed Pump	In stock	X	
		Interceptor Well Pumps (4 each)	In stock	X	
		Seep Well Pump (1 each, same as Athens so total of 2)	In stock	X	
		Athens Road Well Pump (1 each, same as Seep so total of 2)	In stock	X	

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