
To: Nevada Division of Environmental Protection
Nevada Environmental Response Trust

Cc: Nevada Environmental Response Trust Stakeholders

From: Ryan Sullivan, Vice President Service and O&M

Date: April 20, 2019

Subject: NERT – GWETS Operation Monthly Report – March 2019

At the request of the Nevada Environmental Response Trust (Trust), Envirogen Technologies, Inc. (ETI) is providing this summary of the groundwater extraction and treatment system (GWETS) operation and performance during March 2019.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in March 2019. Flow from PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing all flow meters associated with the FBR plant. The flow rate to the IX system averaged approximately 183 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,035 gpm during March 2019. At the end of the month, the GW-11 Pond volume was at 40.6 million gallons (MG), which would allow 15.2 days of available additional storage in the event of an emergency FBR plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond increased by 2.1 MG from the end of February 2019. Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the IX system averaged 0.38 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 233 mg/L for the month, with a maximum concentration of 290 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of February 2019 averaged 264 mg/l, with a maximum concentration of 280 mg/l. Fluctuations in the influent perchlorate concentrations are due to the changes in the AP-5 treatment feed rate and not a result of groundwater changes.

Enhanced Operational Metrics

Tables 1 and 2 provide a summary of the current GWETS operational metrics data for flow rates, perchlorate and chromium concentrations, and mass removal. These tables also include data associated with the AP-5 decant liquids. Figure 2 graphically presents historical perchlorate and chromium mass flux information. Attachment A provides a summary of the NPDES permit analytes with numerical discharge limits.

Operational Issues

All routine plant repairs conducted by ETI were performed 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. GW-11

There were no operational issues with GW-11 in the month of March.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of March beginning with a flow rate of 10.0 gpm with decreases in flow to 2.0 gpm on the 20th of March and 0.5 gpm on the 29th of March maintaining this flow rate through the end of the month. Changes in flow were made to balance the load from processing AP-5 material with seasonal restrictions in NERT's NPDES permit during the summer months.

There were influent / effluent diversions and well shutdowns during the reporting period generally associated with maintenance activities. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- Extraction well ART-9 went offline on March 2, 2019 from 2:54pm to March 15, 2019 at 2:37pm due to damage of the electrical lines between the breaker box and the pump. The lines were replaced, a new pull box was installed in the asphalt, and the pump was brought back online.
- Extraction well ART-2a went offline on March 4, 2019 from 4:22pm to 7:54am March 5th due to a fault in the motor. The motor was replaced and the pump was brought back online.
- Effluent diversion to GW-11 occurred on March 4, 2019 from 4:22pm to 4:55pm as a precautionary measure due to concerns about the effluent quality. Adjustments were made to the process and the effluent was returned to the wash following confirmation in the lab. Approximately 31,000 gallons of effluent were diverted to GW-11.
- Effluent diversion to GW-11 occurred on March 13, 2019 from 12:43pm to 1:25pm for maintenance at the outfall. Approximately 40,000 gallons of effluent were diverted to GW-11.
- Effluent diversion to GW-11 occurred on March 14, 2019 from 9:57am to 10:58am due to maintenance on the effluent pipeline. New combo/air release valves were installed. Approximately 42,000 gallons of effluent were diverted to GW-11.
- Effluent diversion to GW-11 occurred on March 16, 2019 from 2:44pm to 3:12pm as a precautionary measure due to concerns about the effluent quality. Adjustments were made to the process and the effluent was returned to the wash following confirmation in the lab. Approximately 30,000 gallons of effluent were diverted to GW-11.
- Effluent diversion to GW-11 occurred on March 17, 2019 from 8:55am to 9:52am due to maintenance at the outfall. Approximately 62,000 gallons of effluent were diverted to GW-11.
- Effluent diversion to GW-11 occurred on March 18 2019 from 12:45am to 3:15am as a precautionary measure due to concerns about the effluent quality. Adjustments were made to the process and the effluent was returned to the wash following confirmation in the lab. Approximately 160,000 gallons of effluent were diverted to GW-11.

3. Spills

There were no reportable spills for the month of March.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. Replaced the pump and motor for extraction well ART-9 and replaced wiring.
 - II. Replaced the trunnions on media return A.
 - III. Rebuilt the bed height pump on FBR 1.
 - IV. Installed new combo valves on the pipeline.
 - V. Installed the rebuilt P-1012 recycle pump for FBR 2.
 - VI. Replaced the 1.5 hp motor on ART-2 well.
 - VII. Took the East GAC offline, drained the vessel, replaced the hardware and all nozzles, refilled and put the vessel back into service.
 - VIII. Installed the re-built hydraulic cylinder on the east filter press.
 - IX. Installed a new turbidity meter on the effluent line.

- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. Coating the interior North DAF sludge box, installation of new flight rollers and pins and a new front bearing on the auger.
 - II. Semi-annual maintenance on the South DAF including installation of a new auger drive pin in the South DAF, new auger front bearing, new flight rollers and pins, and completion of a pressure pump coupling inspection.
 - III. Pressure washed the cloths and plates on the east filter press.
 - IV. Calibrated the pH probes.
 - V. Calibrated the ORP probes.
 - VI. Removed solids from the sump pits and inspect the pumps.
 - VII. Inspected the vaults for the new AP-5 wells.

GWETS Upgrades and Facility Projects

Treatment System Extension – ETI and the Trust are awaiting further guidance from NDEP on permit requirements. This will allow the design and contracts to be finalized and the project to move forward.

Equipment Availability Tracking

ETI operators continue to update the equipment tracking form on a weekly basis or whenever there is a change in the status of key equipment. During regular site visits, Tetra Tech field personnel verify the entries on the form, including both the operating status and confirmation of the inventory of required shelf spares. The equipment tracking form is included as Attachment B.

GWETS Staffing

ETI continues with 24-hour staffing of the GWETS at the direction of the Trust and continues to follow the security procedures in the Standard Operating Procedures (SOP).

Tables

Operational Metrics

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) ^{6 7}	Chromium (TR) (mg/L) ^{6 7}	Chromium(VI) (mg/L) ^{6 7}
SWF Total Extraction ¹	745 ⁵	7.2	0.0014	0.0015
AWF Total Extraction ¹	443 ⁵	69	0.14	0.13
IWF Total Extraction ¹	59 ⁵	525	7.7	7.0
AP Area Total Extraction ¹	9.9 ⁵	814	0.080	0.065
GWTP Effluent ²	77	567	0.27	ND
GW-11 Influent ¹	0.20	56	0.07	0.03
FBR Influent ^{2 3}	1,035	233	0.037	0.025
T-205 Effluent (AP-5 Wash Water) ^{3 4}	7	19,463	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed; ND = Not detectable above laboratory method detection limit (Chromium (VI) = 0.25 ug/L).

- 1: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.
- 2: Perchlorate, chromium TR, and chromium (VI) sampled weekly, values reported from TestAmerica.
- 3: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.
- 4: Flow weighted average concentration based on mass flow meter readings.
- 5: Sum of daily average flow for individual wells.
- 6: All concentrations reported are monthly flow weighted averages.
- 7: ND analytical values are treated as zero values in the flow weighted average calculations.

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics			
Location ID	Perchlorate (lbs/month) ³	Chromium (TR) (lbs/month) ³	Chromium (VI) (lbs/month) ³
SWF Total Extraction	2,002	0.39	0.42
AWF Total Extraction	11,454	23	21
IWF Total Extraction	11,487	170	154
AP Area Total Extraction	2,993	0.29	0.24
GWTP Effluent	16,249	7.8	ND
GW-11 Influent	4.1	0.01	0.00
FBR Influent ¹	89,813	14	10
T-205 Effluent (AP-5 Wash Water) ^{1 2}	48,134	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed.

1: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

3: Total mass extracted is calculated from flow weighted average concentration and average flow (see Table 1).

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 3/31/2019

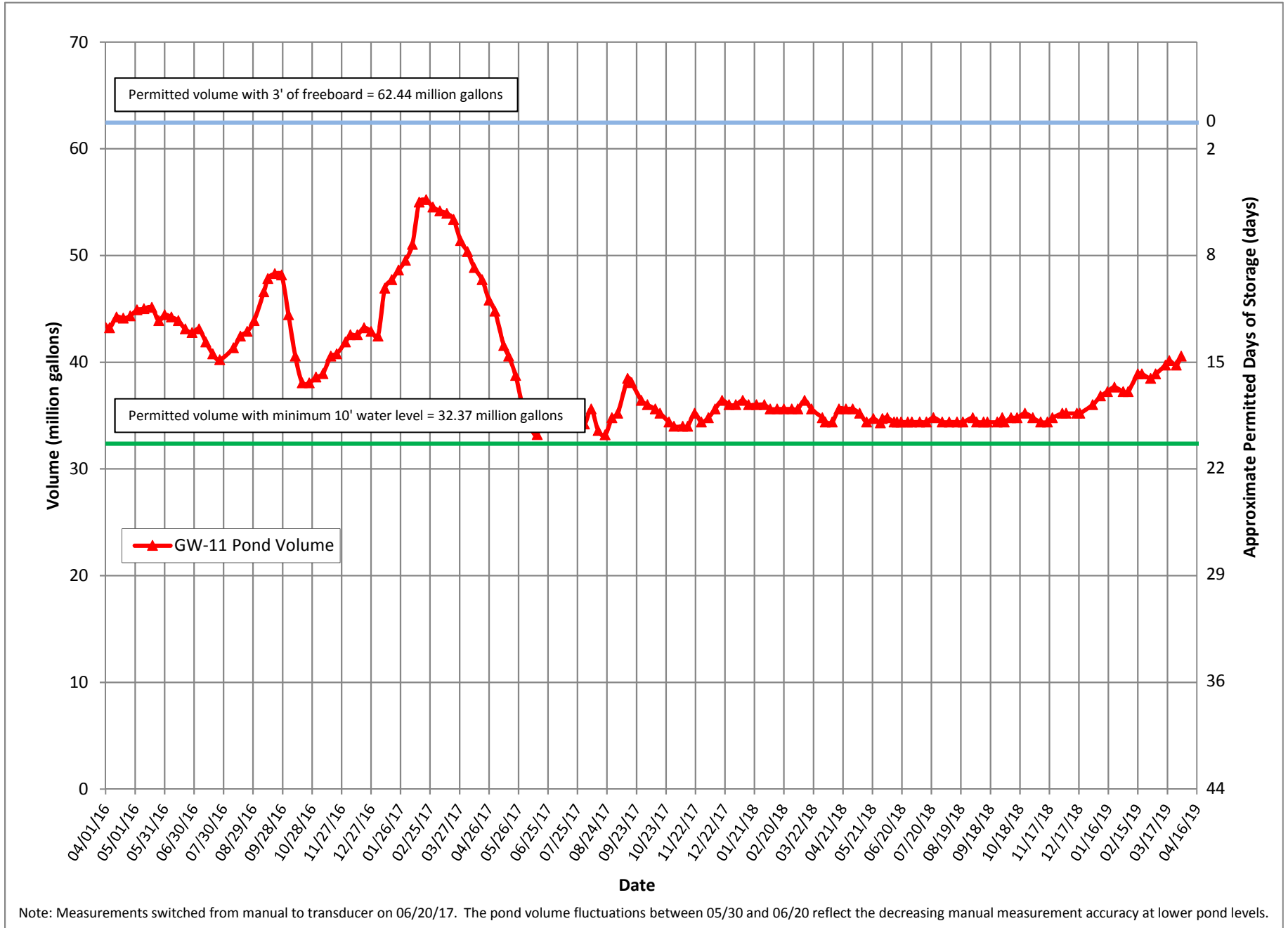
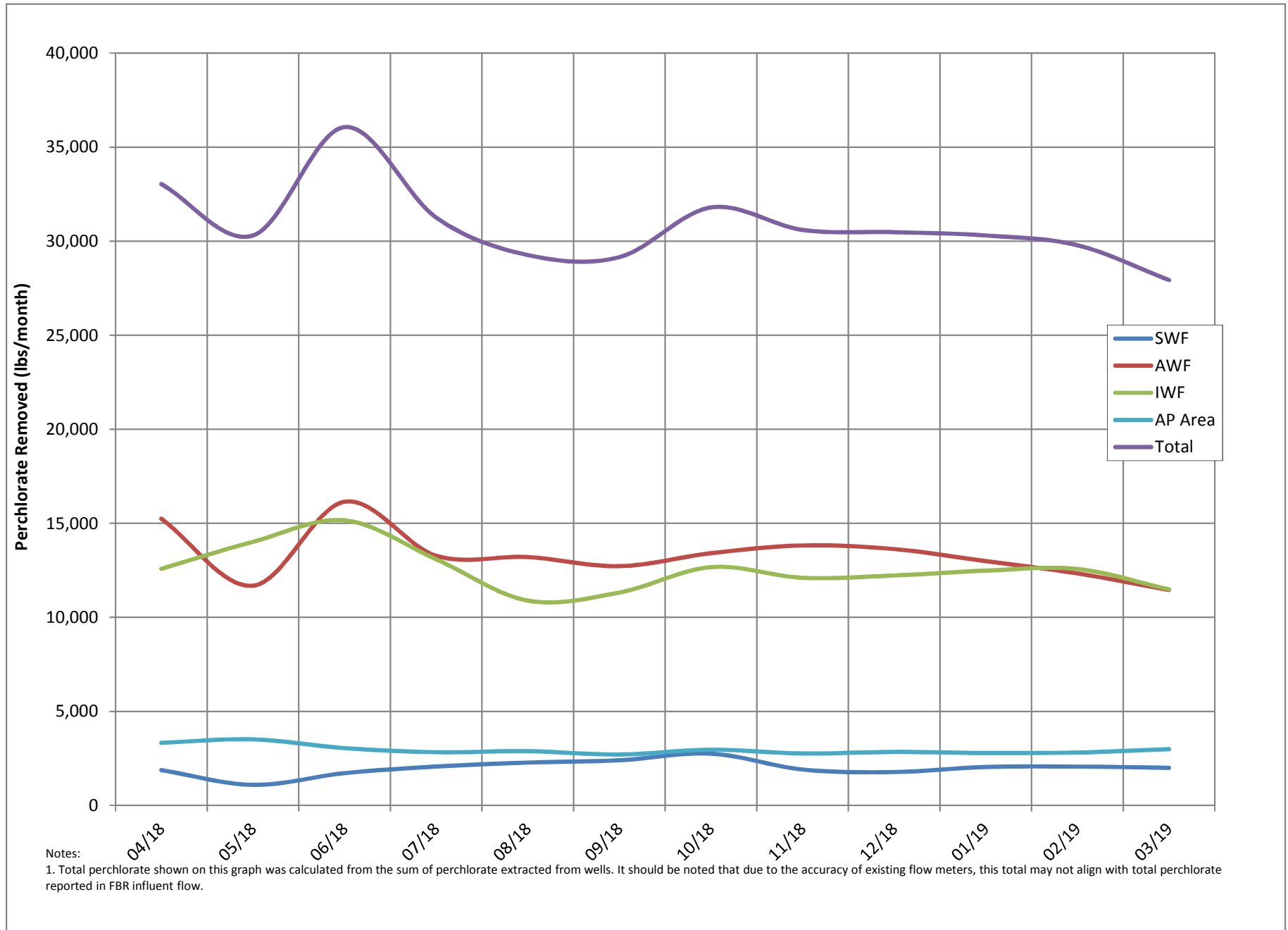


Figure 2 - Historical Perchlorate Mass Removed From Environment



Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Treated Effluent at Outfall 001																						
Continuous		Daily Samples, composited weekly		Weekly Grab Samples										Weekly, collected separately			Quarterly					
Flow Rate		Perchlorate		pH		Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Suspended Solids (TSS)		Total Ammonia as N		Total Phosphorus as P		BOD ₅ (inhibited)			Total Dissolved Solids (TDS)		
30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (µg/L)	30-Day Avg. (lbs/day)	Daily Min. (S.U.)	Daily Max. (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	Daily Max. (mg/L)		
2.52	2.88	18	0.38	6.5	9.0	10	100	5,000	10,000	20	135	2,839	20*	10*	25	40	525	1.8	2.7	27	4,500	
January 2019	1.80	1.87	0.5	0.0075	6.77	7.33	ND (<0.25)	31	250	330	15	7	110	170	1.5	1.8	2.7	27				
February 2019	1.79	1.87	4.7	0.070	6.58	6.91	ND (<0.25)	16	220	390	14	10	150	190	1.6	0.9	1.2	13				
March 2019 (month to date)	1.67	1.86	0.5	0.0070	6.57	6.82	ND (<0.25)	14	290	160	19	7	100	130	2.1	0.7	2.2	13				

Daily Grab Sample Dates	Composite Sample Date	µg/L	lbs/day	Sample Date	S.U.	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	Sample Date	mg/L	lbs/day	Sample Date	mg/L	
12/30 - 1/5	1/5/2019	ND (<1.0)	0.5	0.0074	1/2/2019	7.33	ND (<0.25)	31	200	170	11	15	231	--	11	185**	--	0.20	3.1	1/2/2019	2.7	42
1/6 - 1/12	1/12/2019	ND (<1.0)	0.5	0.0074	1/7/2019	7.21	ND (<0.25)	7.2	250	99	15	4.4	63	--	15	117**	--	0.13	1.9	1/9/2019	1.5	22
1/13 - 1/19	1/19/2019	ND (<1.0)	0.5	0.0075	1/14/2019	6.77	ND (<0.25)	3.7	150	330	14	4.4	67	--	13	117	--	0.061	0.93	1/16/2019	2.6	40
1/20 - 1/26	1/26/2019	ND (<1.0)	0.5	0.0077	1/21/2019	7.26	ND (<0.25)	7.6	190	170	12	5.4	84	--	11	172	ND (<0.025)	0.013	0.20	1/23/2019	1.5	23
1/27 - 2/2	2/2/2019	ND (<1.0)	0.5	0.0074	1/28/2019	6.98	ND (<0.25)	4.0	200	170	9.5	6.1	95	--	9.5	148	--	0.10	1.6	1/30/2019	0.78	11
2/3 - 2/9	2/9/2019	ND (<1.0)	0.5	0.0071	2/4/2019	6.58	ND (<0.25)	8.6	200	390	14	12	176	--	14	205	--	0.12	1.8	2/6/2019	1.2	16
2/10 - 2/16	2/16/2019	9.1	9.1	0.14	2/11/2019	6.88	ND (<0.25)	6.3	180	100	13	4.8	72	--	13	194	--	0.11	1.6	2/13/2019	1.1	16
2/17 - 2/23	2/23/2019	8.6	8.6	0.13	2/18/2019	6.91	ND (<0.25)	5.3	210	82	13	9.3	139	--	12	179	--	0.094	1.4	2/20/2019	0.75	11
2/24 - 3/2	3/2/2019	ND (<1.0)	0.5	0.0075	2/25/2019	6.74	ND (<0.25)	16	220	170	11	13	202	--	11	171	--	0.11	1.7	2/27/2019	0.55	8.3
3/3 - 3/9	3/9/2019	ND (<1.0)	0.5	0.0068	3/4/2019	6.64	ND (<0.25)	14	220	160	15	15	199	--	15	199	--	0.11	1.5	3/6/2019	ND (<0.50)	0.25
3/10 - 3/16	3/16/2019	ND (<1.0)	0.5	0.0068	3/11/2019	6.57	ND (<0.25)	3.5	250	72	19	4.8	65	--	19	257	--	0.16	2.2	3/13/2019	ND (<0.50)	0.25
3/17 - 3/23	3/23/2019	ND (<1.0)	0.5	0.0073	3/18/2019	6.82	ND (<0.25)	3.4	290	81	13	4.9	67	--	13	178**	--	0.24	3.3	3/20/2019	2.2	33
3/24 - 3/20	3/30/2019	NA	NA	NA	3/25/2019	6.69	ND (<0.25)	5.0	280	78	0.97	5.1	71	--	0.97	14**	--	0.12	1.7	3/27/2019	ND (<0.50)	0.25
					4/1/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4/3/2019	NA	NA

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

** Additional samples were collected and analyzed for ammonia during this week and results were included in the 30-day average loading calculation.

NA = Not Available To Date

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

J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

-- = Analyte detected; see column adjacent to right

* Total phosphorus discharge limitation of 10 lbs/day applies between March 1 and October 31; Ammonia discharge limitation of 20 lbs/day applies between April 1 and September 30; no limits apply the rest of the year.

Last Updated: April 5, 2019

Attachment B

Equipment Tracking Form

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
Main Plant Equipment						
1 Seep Wells and Lift Station 1						
1.01		Seep Well Field, 9 wells	Running			
1.02		Lift Station 1 Lift Pump A	Running			
1.03		Lift Station 1 Lift Pump B	Standby			
1.04		Area in and around Lift Station 1	Running			
2 Athens Road Wells and Lift Station 3						
2.01		Athens Road Well Field, 9 wells	Running		1	ART-9 down due to a power failure between the LS and the well. Outside contractor pulled new wire to the well and put it back into service.
2.02		Lift Station 3 Lift Pump A	Standby			
2.03		Lift Station 3 Lift Pump B	Running			
2.04		Area in and around Lift Station 3	Running			
3 Lift Station 2 and Transmission Pipelines						
3.01		Influent Pipeline	In operation			
3.02		Effluent Pipeline	Running		2	New combo valves was installed on the pipeline.
3.03		Lift Station 2 Lift Pump A	Running			
3.04		Lift Station 2 Lift Pump B	Standby			
3.05		Area in and around Lift Station 2	Running			
4 Interceptor Wells and Cr Treatment Plant						
4.01		IWF Well Field, 30 wells	Running		2	A new 1/2 hp motor was installed on I-G, New piping, pump, and motor installed on E1-3 and E2-1
4.02		Ferrous Sulfate Feed System	Running		3	New piping and drawdown column was installed on the feed system.
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running		4	Installed new o-ring gasket around the plates
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B	Standby			
4.09		Area In And Around GWTP	Running			
5 Equalization Area and GW-11 Pond						
5.01	PID10A	Pond GW-11	In operation			
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			
5.04	PID10A	Equalization Tanks	In operation			

Status 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

Criticality Codes

1 = Critical - Cannot continue with operation until repairs made
 2 = Important - Can still operate safely and in compliance with permits, but risks are increased
 3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place
 4 = Low - Minor repairs that in no way alter the performance of the plant

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
5.05	PID10A	Area in and Around EQ	In operation			
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B				
5.08	PID10A	F-101 Filters	Running			
5.09	PID10B	Carbon Absorber - LGAC 201A	Running			
5.10	PID10B	Carbon Absorber - LGAC 201B	Running		2	Took the unit offline to replace the carbon, hardware, and nozzles.
5.11	PID10B	Carbon Absorber - LGAC 201C	Running			
6		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR A				
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401			3	The pump was replaced with a rebuilt one. The trunnions failed on the pump.
6.04	PID14	P1401A				
6.05	PID01A	P1401B				
6.06	PID01A	FBR 1	Running			
6.07	PID02A	FBR 2	Running			
6.08	PID01A	First Stage Separator Tank - T2011	Running			
6.09	PID01A	Media Return Pump - P2011	Running			
6.10	PID01A	First Stage FBR Pump - P1011	Standby			
6.11	PID01A	First Stage FBR Pump - P1012			2	The rebuilt pump was installed and put back into service.
6.12	PID01A	First Stage FRB Pump - P101A	Running			
6.13	PID07A	FBR A pH Feed Pump - P71A	Off			
6.14	PID07A	FBR 1 pH Feed Pump - P711	Off			
6.15	PID07A	FBR 2 pH Feed Pump - P712	Off			
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off			
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off			
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off			
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running			
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running			
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running			
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running			
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running			
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running			
7		First Stage FBRs 3 & 4				
7.01	PID01B	FBR 3	Running			
7.02	PID01B	FBR 4	Running			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
7.03	PID02B	First Stage Separator Tank - T2012	Running			
7.04	PID01B	Media Return Pump - P2012	Running			
7.05	PID01B	First Stage FBR Pump - P1013	Running			
7.06	PID01B	First Stage FRB Pump - P1014	Running			
7.07	PID01B	First Stage FBR Pump - P102A	Running			
7.08	PID07A	FBR 3 pH Feed Pump - P713	Running			
7.09	PID07A	FBR 4 pH Feed Pump - P714	Running			
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723				
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P 724	Off			
7.12	PID15	FBR 3 Nutrient (Phos Acid) Feed Pump - P1523	Running			
7.13	PID15	FBR 4 Nutrient (Phos Acid) Feed Pump - P1524	Running			
7.14	PID07B	FBR 3 Electron Donor Assembly Pump - P733	Running			
7.15	PID07B	FBR 4 Electron Donor Assembly Pump - P734	Running			
8		Second Stage FBRs 5 & 6				
8.01	PID03A	FBR 5	Running			
8.02	PID03A	FBR 6	Running			
8.03	PID03C	Second Stage Separator Tank - T3011	Running			
8.04	PID03A	Media Return Pump - P3011	Running		3	The shaft was replaced and the pump was put back into service.
8.05	PID03A	Second Stage FBR Pump - P3015	Running			
8.06	PID03A	Second Stage FBR Pump - P3016	Standby			
8.07	PID03A	Second Stage FBR Pump - P301A	Running			
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off			
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off			
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Running			
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Running			
9		Second Stage FBRs 7 & 8				
9.01	PID03B	FBR 7	Running			
9.02	PID03B	FBR 8	Running			
9.03	PID03D	Second Stage Separator Tank - T3012	Running			
9.04	PID03B	Media Return Pump - P3012	Running			
9.05	PID03B	Second Stage FBR Pump - P3017	Running			
9.06	PID03B	Second Stage FBR Pump - P3018	Running			
9.07	PID03B	Second Stage FBR Pump - P302A	Running			
9.08	PID07A	FBR 7 pH Feed Pump - P717	Off			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
9.09	PID07A	FBR 8 pH Feed Pump - P718	Off			
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off			
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off			
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running			
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running			
10		Aeration and DAF System				
10.01	PID04	Aeration Tank	In operation			
10.02	PID04	Aeration Blower - B401	Running			
10.03	PID04	Bio filter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump				
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby			
10.09	PID04	Bio filter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation		1	All the air lines and fittings were inspected on the tank.
10.11	PID05	DAF Vessel - D501	Running		1	The vessel was taken offline for semi-annual maintenance. The vessel was pressure washed and inspected.
10.12	PID05	DAF Pressure Pump - P501	Running		1	The pump and motor were inspected for proper alignment
10.13	PID05	DAF Float Pump - P502	Running		1	The pump was swapped out for a rebuilt pump
10.14	PID05	DAF Vessel - D551	Running			
10.15	PID05	DAF Pressure Pump - P551	Running		3	A new flex coupling was installed on the pump
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby		1	The bearings and drive shafts were replaced on the auger.
10.18	PID05	Skimmer Drive	Running		1	The rollers and pins were replaced on the flights.
11		Pumping System (Old Effluent)				
11.01	PID06	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Running			
11.03	PID06	Effluent Pump - P602	Standby			
12		Sand Filter System				
12.01	PID17	Sand Filter				
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running			
13		Effluent Tank and Pumping				
13.01	PID10C	UV Effluent Tank	Running		4	A new turbidity meter was installed on the EFF line
13.02	PID10C	Effluent Booster Pump - P1302A	Running			
13.03	PID10C	Effluent Booster Pump - P1302B	Standby			

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Criticality Codes

1 = Critical - Cannot continue with operation until repairs made
 2 = Important - Can still operate safely and in compliance with permits, but risks are increased
 3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place
 4 = Low - Minor repairs that in no way alter the performance of the plant

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
13.04	PID10C	Area Around Effluent and North D-1	Running			
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	In operation			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	In operation			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902				
14.07	PID09	West Press	Standby			
14.08	PID09	East Press	Running		1	The re-built cylinder was re-installed and the press was brought back into service.
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			
		Chemical Systems				
15		Electron Donor System				
15.01	PID07B	Electron Donor Tank	In operation			
15.02	PID07B	Booster Pump P739A	Running			
15.03	PID07B	Booster Pump P739B	Standby			
17	PID07C	Micro Nutrient System	In operation			
18	PID07C	Hydrogen Peroxide System	In operation			
19	PID07C	De-Foam System	In operation			
20	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	In operation			
21	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation			
22	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
23	PID07C	Aluminum Chlorohydrate	In operation			
24	PID07B	Polymer Systems - DAF	In operation			
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			
		Utility Systems				
26		Compressed Air System				
26.01	PID08	West Compressor	Running			
26.02	PID08	East Compressor	Running		1	The compressor was taken offline to repair the damaged oil cooling line.
26.03	PID08	O2 Compressor	Running			

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

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