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:	July 20, 2020
Subject:	NERT – GWETS Operation Monthly Report – June 2020

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 June 2020.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in June 2020. 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 181 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,019 gpm during June 2020. At the end of the month, the GW-11 Pond volume was at 34.0 million gallons (MG), which would allow 19.8 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 decreased by 2.0 MG from the end of May 2020. 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 0.29 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 98 mg/L for the month, with a maximum concentration of 100 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of May 2020 averaged 86 mg/L, with a maximum concentration of 89 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 June.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant resumed in the month of May. Treatment began the month with a flow rate of 6.0 gpm and maintained that flow rate through the end of the month.

There were influent / effluent diversions during the reporting period generally associated with maintenance activities as well as extraction well short-term shutdown events. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- Effluent diversion to GW-11 occurred on June 8, 2020 from 10:48am to 5:23pm as a precautionary measure due to concerns of effluent quality. Adjustments were made to the process and flow returned to the outfall. Approximately 425,000 gallons of effluent were diverted to GW-11.
- Well Field Shutdown of the Seep Well Field (SWF) occurred on June 10, 2020 from 11:44am to 12:17pm due to maintenance efforts on the wet well turbine pump. Maintenance was completed and the wells were brought back online.
- Effluent diversion to GW-11 occurred on June 23, 2020 from 11:36pm to 6:00am due to low GW-11 pond level. Approximately 393,000 gallons of water were diverted to GW-11.
- Effluent diversion to GW-11 occurred on June 26, 2020 from 11:00pm to 6:46am due to low GW-11 pond level. Approximately 477,000 gallons of water were diverted to GW-11.
- Effluent diversion to GW-11 occurred on June 29, 2020 from 12:28pm to 1:47pm due to maintenance efforts associated with repairs to the effluent GW-11 diversion valve. Approximately 88,000 gallons of effluent were diverted to GW-11.
- Effluent diversion to GW-11 occurred on June 30, 2020 from 9:05am to 1:39pm due to maintenance efforts associated with repairs to the effluent GW-11 diversion valve. Approximately 301,000 gallons of effluent were diverted to GW-11.

3. Spills

There were no reportable spills in the month of June.

4. Maintenance

- Major maintenance performed by ETI in the month included:

  I. Replaced the trunnions on Media Return pump #1.
  II. Installed the new turbine and motor at Lift Station 1 to replace the south turbine.
  III. Rebuilt the media return pump #3 due to a damaged shaft and bearings.
  IV. Installed a new contactor on the east press as well as a pressure switch and the temp/level switch.
  V. Installed the rebuilt Fybroc pump on P-602.
  VI. Replace the differential pressure transmitter on FBR 4 feed valve.
  VII. Installed a new actuator on the effluent diversion valve at the EQ.
  VIII. Replaced the Ferric Chloride feed pump after a motherboard error occurred.
  IX. Patched the concrete containment at Lift Station 1.
  X. Installed a new drawdown column on the DAF polymer feed line.

- Preventative Maintenance completed or being performed by ETI in the month included:

  I. Completed the semi-annual maintenance on the North DAF. This included pressure washing the vessel, patching worn spots on the vessel, replacing the sludge pump, changing the sprockets on the skimmers, replacing links on the skimmer chain assembly, inspecting the screw, tightening the connections on the pressure pump, and replacing the air filter on the pressure tank.
  II. Changed the oil on the turbine pump at Lift Station 2.
  III. Cleaned the sight glasses on the media return pumps.
  IV. Flushed the D-1 building west sump pit.
  V. Cleaned the filters on the Air Conditioning units at Lift Station 3.
  VI. Verified the floats function correctly on the Lift Station 3 wet well.
  VII. Added oil to the east and west air compressors.
  VIII. Flushed solids from the reject weirs on the sand filter.
  IX. Flushed and calibrated the ORP/pH sensors.

GWETS Upgrades and Facility Projects

Unit 4 Chromium Water Treatment Plant – Envirogen received comments regarding the deliverable documents that were submitted to the Trust in July 2019 for this project. The revised documents dealing with the Controls Specification, Process Drawings, and Mechanical Details were re-submitted to the Trust in September. Envirogen is awaiting further direction from the Trust regarding this matter. The Trust has advised Envirogen that this project is on hold pending finalization and approval of the forthcoming Unit 4 Source Area In-Situ Bioremediation Work Plan.

GWETS Extension –The signed Work Authorization for engineering and fabrication of the GWETS Extension was returned to the Trust on January 28, 2020. Orders have been placed for the major equipment for the GWETS Extension. Envirogen is currently awaiting Trust comment on the O&M Work Authorization proposal for the GWETS Extension.

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 I Groundwater Extraction and Treatment System I 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]	746 [5]	7.1	0.0024	0.0026
AWF Total Extraction[1]	466 [5]	68	0.15	0.16
IWF Total Extraction[1]	60 [5]	450	6.5	6.1
AP Area Total Extraction[1]	11.0 [5]	627	0.113	0.119
GWTP Effluent[2]	62	440	0.21	ND
GW-11 Influent[1]	0.16	62	0.11	0.031
FBR Influent[2 3]	1,019	98	0.037	0.035
T-205 Effluent (AP-5 Wash Water)[3 4 8]	6.0	1,555	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.

8: AP-5 sediment mixing and solids washing activities were completed on January 4, 2020. Wash water is still being transferred to T-205 to be processed

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics			
Location ID	**Perchlorate (lbs/month)[3]**	**Chromium (TR) (lbs/month)[3]**	**Chromium (VI) (lbs/month)[3]**
SWF Total Extraction	1,902	0.65	0.69
AWF Total Extraction	11,359	25	27
IWF Total Extraction	9,742	141	132
AP Area Total Extraction	2,487	0.45	0.47
GWTP Effluent	9,910	4.7	ND
GW-11 Influent	3.6	0.006	0.0018
FBR Influent[1]	35,936	14	12.9
T-205 Effluent (AP-5 Wash Water)[1 2 4]	3,349	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.

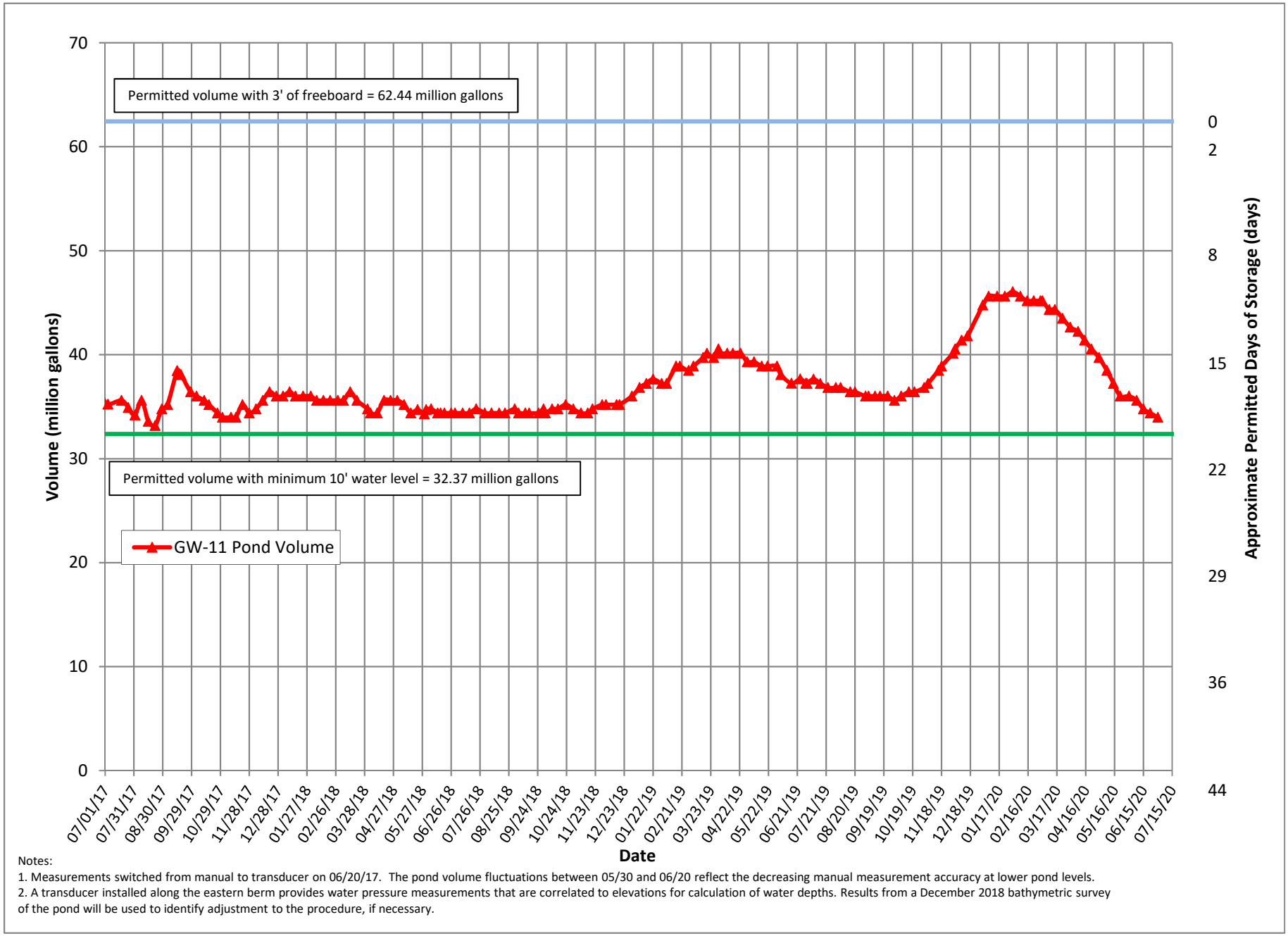
3: Total mass extracted is calculated from flow weighted average concentration and average flow (see Table 1).

4: AP-5 sediment mixing and solids washing activities were completed on January 4, 2020. Wash water is still being transferred to T-205 to be processed.

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 6/30/2020

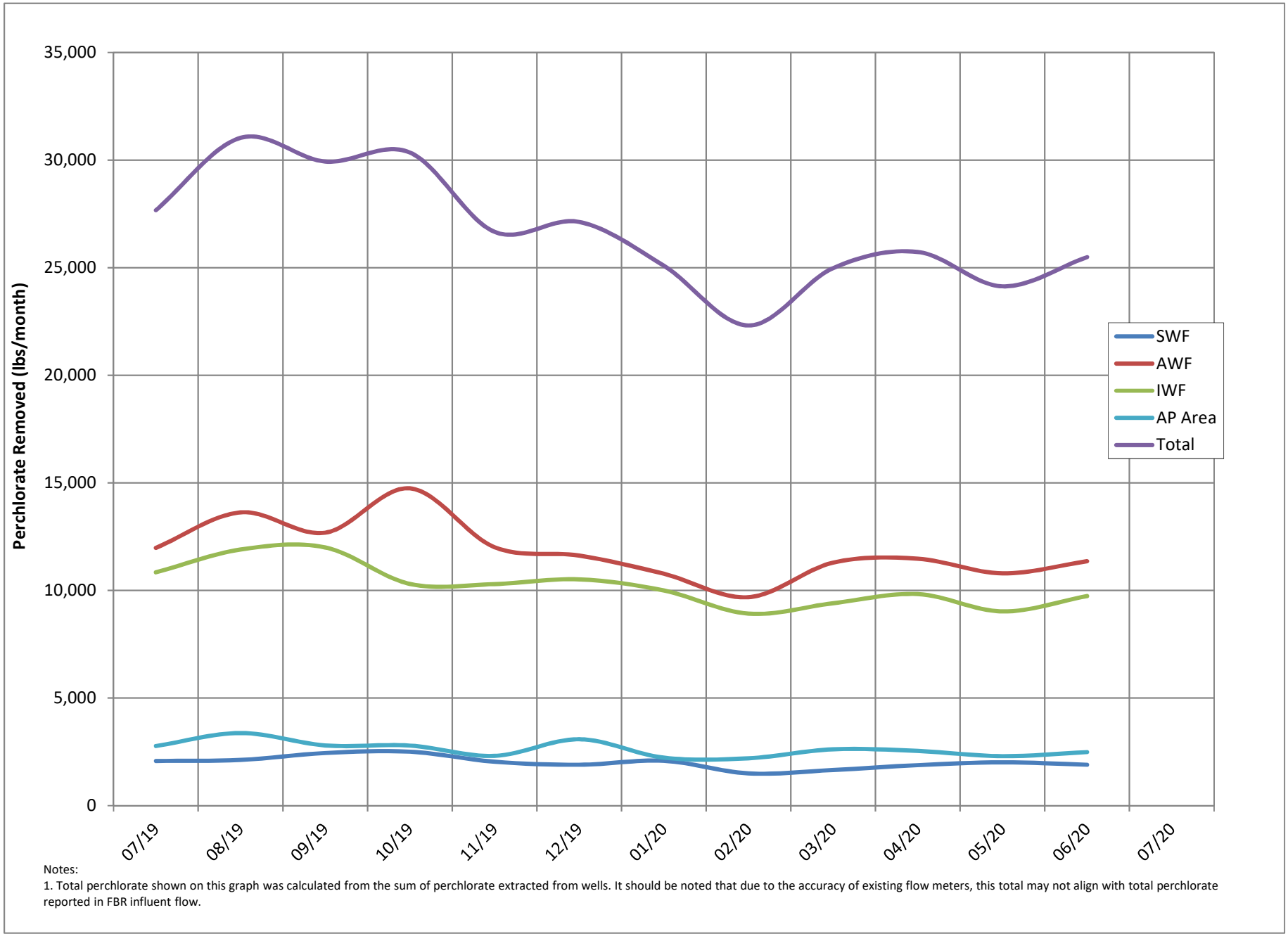


Notes:

1. Measurements switched from manual to transducer on 06/20/17. The pond volume fluctuations between 05/30 and 06/20 reflect the decreasing manual measurement accuracy at lower pond levels.
2. A transducer installed along the eastern berm provides water pressure measurements that are correlated to elevations for calculation of water depths. Results from a December 2018 bathymetric survey of the pond will be used to identify adjustment to the procedure, if necessary.

Figure Updated: 7/6/2020

Figure 2 - Historical Perchlorate Mass Removed From Environment



Notes:
1. Total perchlorate shown on this graph was calculated from the sum of perchlorate extracted from wells. It should be noted that due to the accuracy of existing flow meters, this total may not align with total perchlorate reported in FBR influent flow.

Figure Updated: 7/15/2020

Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

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. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	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**	**8,000**
January 2020	1.82	1.89	3	0.04	6.61	6.87	1.1	19	290	540	0.85	5.0	80	6	3.3	1.3	2.1	20	
February 2020	1.85	1.91	1.3	0.019	6.68	6.91	ND (<0.25)	7.6	170	980	1.1	4.9	70	2.3	1.6	ND (<2.0)	ND (<2.0)	16	4,100
March 2020	1.86	1.91	1.3	0.019	6.55	7.11	0.36	5.4	220	1,100	ND (<0.50)	7	110	1.3	1.7	ND (<2.0)	ND (<2.0)	15	
April 2020	1.85	1.88	1.3	0.019	6.59	7.12	ND (<0.25)	6.4	160	1,300	ND (<0.50)	12	180	1.0	1.3	1.2	2.2	19	
May 2020	1.81	1.91	1.3	0.019	6.51	6.98	ND (<0.25)	6.8	150	830	11	9	130	8	2.4	ND (<2.0)	3.3	24	4,500
June 2020	1.80	1.90	1.3	0.018	6.66	7.01	ND (<0.25)	7.5	150	820	1.1	8	120	4.5	1.3	2.0	4.0	27	
July 2020 (month to date)	NA	NA	NA	NA	6.98	6.98	ND (<0.25)	5.8	87	930	1.6	12	NA	NA	NA	NA	NA	NA	NA

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
12/29 - 1/4	1/4/2020	4.4	4.4	0.063	12/30/2019	6.63	ND (<0.25)	4.6	300	63	4.5	14	196	--	4.5	63	--	0.27	3.8	12/30/2019	ND (<2.0)	1.0	14		
1/5 - 1/11	1/11/2020	12, <0.079	6	0.09	1/6/2020	6.61	ND (<0.25)	2.7	290	58	0.85	4.9	70	--	0.85	12	--	0.22	3.1	1/8/2020	ND (<2.0)	1.0	15		
1/12 - 1/18	1/18/2020	ND (<2.5)	1.3	0.019	1/13/2020	6.63	ND (<0.25)	19	210	66	ND (<0.50)	3.2	49	--	0.25	3.8	ND (<0.025)	0.013	0.19	1/15/2020	ND (<2.0)	1.0	16		
1/19 - 1/25	1/25/2020	ND (<2.5)	1.3	0.019	1/20/2020	6.87	ND (<0.25)	5.8	210	140	ND (<0.50)	9.2	142	--	0.16	2.5	--	0.12	1.9	1/22/2020	2.1		32		
1/26 - 2/1	2/1/2020	ND (<2.5)	1.3	0.019	1/27/2020	6.76	1.1	ND (<2.5)	200	540	ND (<0.50)	2.7	41	--	0.35	5.4	--	0.51	7.8	1/29/2020	ND (<2.0)	1.0	15		
2/2 - 2/8	2/8/2020	ND (<2.5)	1.3	0.019	2/3/2020	6.91	ND (<0.25)	3.0	150	980	1.1	6.7	103	--	0.11	1.7	--	0.093	1.4	2/6/2020	ND (<2.0)	1.0	16	2/4/2020	4,100
2/9 - 2/15	2/15/2020	ND (<2.5)	1.3	0.019	2/10/2020	6.68	ND (<0.25)	7.6	170	820	ND (<0.50)	6.4	97	--	0.18	2.7	--	0.095	1.4	2/12/2020	ND (<2.0)	1.0	15		
2/16 - 2/22	2/22/2020	ND (<2.5)	1.3	0.019	2/17/2020	6.87	ND (<0.25)	4.5	160	510	ND (<0.50)	3.0	46	--	0.15	2.3	--	0.12	1.8	2/19/2020	ND (<2.0)	1.0	15		
2/23 - 2/29	2/29/2020	ND (<2.5)	1.3	0.020	2/24/2020	6.81	ND (<0.25)	3.6	140	770	ND (<0.50)	3.5	54	--	0.17	2.6	--	0.11	1.7	2/26/2020	ND (<2.0)	1.0	16		
3/1 - 3/7	3/7/2020	ND (<2.5)	1.3	0.020	3/2/2020	7.01	ND (<0.25)	4.8	190	920	ND (<0.50)	5.8	91	--	0.17^{++}	2.7	--	0.13	2.0	3/4/2020	ND (<2.0)	1.0	15		
3/8 - 3/14	3/14/2020	ND (<2.5)	1.3	0.019	3/9/2020	6.55	ND (<0.25)	4.7	220	890	ND (<0.50)	6.1	96	--	0.12^{++}	1.9	--	0.11	1.7	3/12/2020	ND (<2.0)	1.0	15		
3/15 - 3/21	3/21/2020	ND (<2.5)	1.3	0.019	3/16/2020	7.11	ND (<0.25)	5.4	190	1,100	ND (<0.50)	11	173	ND (<0.10)	0.05^{++}	0.79	--	0.077	1.2	3/18/2020	ND (<2.0)	1.0	16		
3/22 - 3/28	3/28/2020	ND (<2.5)	1.3	0.019	3/23/2020	6.74	ND (<0.25)	3.6	220	1,000	ND (<0.50)	6.2	97	--	0.14^{++}	1.5	--	0.13	2.0	3/25/2020	ND (<2.0)	1.0	15		
3/29 - 4/4	4/4/2020	ND (<2.5)	1.3	0.019	3/30/2020	6.61	0.36	3.5	140	740	ND (<0.50)	5.5	86	ND (<0.10)	0.05^{++}	0.76	--	0.082	1.3	4/1/2020	ND (<2.0)	1.0	15		
4/5 - 4/11	4/11/2020	ND (<2.5)	1.3	0.019	4/6/2020	7.12	ND (<0.25)	6.2	160	1,200	ND (<0.50)	12	187	--	0.19^{++}	1.9		0.12	1.9	4/8/2020	ND (<2.0)	1.0	16		
4/12 - 4/18	4/18/2020	ND (<2.5)	1.3	0.019	4/13/2020	7.08	ND (<0.25)	6.4	110	1,300	ND (<0.50)	14	217	ND (<0.10)	0.05^{++}	0.77	--	0.063	1.0	4/15/2020	2.2		34		
4/19 - 4/25	4/25/2020	ND (<2.5)	1.3	0.020	4/20/2020	6.93	ND (<0.25)	5.6	150	1,200	ND (<0.50)	13	203	ND (<0.10)	0.05^{++}	0.78	--	0.084	1.3	4/22/2020	ND (<2.0)	1.0	16		
4/26 - 5/2	5/2/2020	ND (<2.5)	1.3	0.019	4/27/2020	6.59	ND (<0.25)	3.3	130	860	ND (<0.50)	8.4	129	ND (<0.10)	0.05^{++}	0.77	--	0.074	1.1	4/29/2020	ND (<2.0)	1.0	15		
5/3 - 5/9	5/9/2020	ND (<2.5)	1.3	0.019	5/4/2020	6.98	ND (<0.25)	4.0	130	440	ND (<0.50)	5.1	81	--	0.15^{++}	8.5	--	0.083	1.3	5/6/2020	ND (<2.0)	1.0	16	5/7/2020	4,500
5/10 - 5/16	5/16/2020	ND (<2.5)	1.3	0.020	5/11/2020	6.51	ND (<0.25)	6.8	150	690	ND (<0.50)	9.4	146	--	0.14	2.2	--	0.12	1.9	5/13/2020	ND (<2.0)	1.0	16		
5/17 - 5/23	5/23/2020	ND (<2.5)	1.3	0.019	5/18/2020	6.98	ND (<0.25)	4.6	140	600	1.9	6.1	94	--	1.9	29	--	0.20	3.1	5/20/2020	ND (<2.0)	1.0	15		
5/24 - 5/30	5/30/2020	ND (<2.5)	1.3	0.017	5/26/2020	6.98	ND (<0.25)	6.6	120	830	11	14	208	--	0.51	7.8	--	0.22	3.3	5/27/2020	3.3		50		
5/31 - 6/6	6/6/2020	ND (<2.5)	1.3	0.018	6/1/2020	6.80	ND (<0.25)	7.5	110	740	0.58	11	162	--	0.58	8.5	--	0.12	1.8	6/3/2020	2.1		32		
6/7 - 6/13	6/13/2020	ND (<2.5)	1.3	0.018	6/9/2020	6.66	ND (<0.25)	3.8	110	410	ND (<0.50)	4.6	69	--	0.18	2.7	--	0.073	1.1	6/10/2020	ND (<2.0)	1.0	15		
6/14 - 6/20	6/20/2020	ND (<2.5)	1.3	0.019	6/15/2020	6.87	ND (<0.25)	5.3	150	820	1.1	7.8	117	--	0.16	2.4	--	0.013	0.19	6/17/2020	ND (<2.0)	1.0	15		
6/21 - 6/27	6/27/2020	ND (<2.5)	1.3	0.017	6/22/2020	6.92	ND (<0.25)	5.9	99	710	ND (<0.50)	8.4	125	--	0.26	3.9	--	0.12	1.8	6/24/2020	4.0		44		
6/28 - 7/4	7/4/2020	NA	NA	NA	6/29/2020	7.01	ND (<0.25)	5.9	99	710	ND (<0.50)	9.9	145	--	0.33	4.8	--	0.12	1.8	7/1/2020	ND (<2.0)	1.0	NA		
					7/6/2020	6.98	ND (<0.25)	5.8	87	930	1.6	12	NA	--	1.6	NA	--	0.25	NA	7/8/2020	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: July 10, 2020

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		2	Installed a new turbine and motor to replace the south turbine. It is all the same configuration with updated parts. Patched the damaged concrete containment.
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			
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			
3.03		*Lift Station 2 Lift Pump A*	Running		3	Oil change on the turbine
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			
4.02		*Ferrous Sulfate Feed System*	Running			
4.03		*Polymer Feed System*	Running			
4.04		*Clarifier*	In operation			
4.05		*Filter Press*	Running		2	The hydraulic system has issues closing the press. A temporary manual hydraulic ram is in place until repairs can be made.
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		2	Replaced the actuator for the seep diversion valve.
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			
5.11	PID10B	*Carbon Absorber - LGAC 201C*	Running		4	The gearbox actuator for the SLW flush valve was damaged. A different handle was installed until the new valve is installed.
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*				
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		3	Replaced the pump for blown trunnions. The 1hp motor was replaced.
6.10	PID01A	*First Stage FBR Pump - P1011*	Standby			
6.11	PID01A	*First Stage FBR Pump - P1012*			3	A new pressure sensor tube was replaced.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
7.02	PID01B	*FBR 4*	Running			
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		2	The suction spool pipe was replaced on the recycle pump.
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		4	Replaced the belt.
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		4	Replaced the belt.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
9.08	PID07A	*FBR 7 pH Feed Pump - P717*	Off			
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		2	The air filter was changed on the N. tank during the Preventative Maintenance.
10.11	PID05	*DAF Vessel - D501*	Running			
10.12	PID05	*DAF Pressure Pump - P501*	Running			
10.13	PID05	*DAF Float Pump - P502*	Running			
10.14	PID05	*DAF Vessel - D551*	Running		2	The vessel was taken offline for semi-annul maintenance. The sprockets were replaced, new coating was applied in worn spots of the vessel, pressure washed.
10.15	PID05	*DAF Pressure Pump - P551*	Running			
10.16	PID05	*DAF Float Pump - P552*	Running		2	The pump was replaced during the PM.
10.17	PID05	*Screw Conveyer Drive*	Standby			
10.18	PID05	*Skimmer Drive*	Running		2	Two repairs were made to the skimmers.
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		2	Replaced the pump with the old Fybroc pump.
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			

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13		**Effluent Tank and Pumping**				
13.01	PID10C	*UV Effluent Tank*	Running			
13.02	PID10C	*Effluent Booster Pump - P1302A*	Running			
13.03	PID10C	*Effluent Booster Pump - P1302B*	Standby			
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		3	The suction pipe was removed and cleared of debris.
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		2	The pressure switch was adjusted along with the temp/level switch in the tank.
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		2	The dampening of the flow meter was reset after a fault appeared on the transmitter.
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	*Ferric Chloride*	In operation			
24	PID07B	*Polymer Systems - DAF*	In operation		3	The pump was cleared of debris from the piping and a new fitting was installed on the suction from the tote.

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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			
26.03	PID08	*O2 Compressor*	Running			
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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