
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: Jan 20, 2019

Subject: NERT – GWETS Operation Monthly Report – Dec 2018

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 December 2018.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in December 2018. 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 182 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,046 gpm during December 2018. At the end of the month, the GW-11 Pond volume was at 36.0 million gallons (MG), which would allow 18.4 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 0.8 MG from the end of November 2018. 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 0.54 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 262 mg/L for the month, with a maximum concentration of 280 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of November 2018 averaged 262 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 December.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of December beginning with a flow rate of 10.0 gpm and maintaining a consistent flow rate throughout the end of the month.

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

- Influent Diversion to GW-11 occurred on December 4, 2018 from 9:30am to 11:15am due to maintenance on the air pressure equipment. Approximately 110,000 gallons of Influent were diverted to GW-11.
- Influent diversion to GW-11 occurred on December 6, 2018 from 2:32am to 5:35am due to low temperature freezing at the Separator valve. Excess water was removed from the valve casing and the plant was put back online. Approximately 189,000 gallons of Influent were diverted to GW-11.
- Extraction well PC-119 shutdown on December 16, 2018 at 5:42pm until 10:56am the 17th due to damaged electrical breaker. The breaker was replaced and the well was brought back online.
- Effluent Diversion to GW-11 occurred on December 26, 2018 from 7:19am to 7:51am due to increased effluent turbidity. Adjustments were made to the process and the effluent was returned to the outfall. Approximately 40,000 gallons of effluent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on December 26, 2018 from 8:38pm to 9:14pm due to a high level alarm on the T-1701 (Sand Filter reject tank). Adjustments were made to the process and the plant was brought back online. Approximately 31,000 gallons of Influent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on December 29, 2018 from 3:52am to 8:39am due to malfunctioning VFD controls on the 1302 Effluent discharge pump. Maintenance was conducted on the VFD connections and the plant was put back online. Approximately 300,000 gallons of Influent were diverted to GW-11.

3. Spills

There were no reportable spills for the month of December.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. Replaced the ½ hp motor in extraction well I-D.
 - II. Replaced the oil level switch on the east filter press.
 - III. Replaced the shaft bearings on the DAF recycle pump.
 - IV. Installed a new static mixer on the DAF polymer system.
 - V. Installed a new actuator for the slam valve on FBR 4.
 - VI. Installed pump P-1302A after Henderson Electric made repairs to the front bearing of the motor.
 - VII. A heat trace was installed on the DAF polymer system.
 - VIII. Completed the installation of the new bed height pump on FBR 2.
 - IX. Installed a common drawdown column on the phosphoric acid pump skid.
 - X. Removed the P-1012 recycle pump to have the bearings repaired and a new seal and impeller installed.
 - XI. Repaired and installed the mixer for the polymer tote.

- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. Flushed and cleaned the Ferric tank.
 - II. Cleaned the ORP and pH lines.
 - III. Flushed bed height pumps.
 - IV. Checked the oil on the recycle pumps.
 - V. Cleared and flushed the DAF polymer system.
 - VI. Inspected the level sensors on the dry polymer system.
 - VII. Air Center performed the annual preventative maintenance on the air compressors.
 - VIII. Changed the packing on the north turbine at LS1.
 - IX. Flushed the IX holding tank.
 - X. Cleaned solids from the LS1 wet well.

GWETS Upgrades and Facility Projects

Treatment System Extension – ETI continued on production of the process engineering including Process Flow, Mass Balance and P&IDs for initial submission to NDEP. ETI anticipates the design package will be ready for submission early 2019. Along with the process engineering, ETI is moving forward with mechanical designs for all the vessels and prefabricated containers along with the overall layout. These also should be finalized by end of 2018. ETI continues to coordinate with Tetra Tech, who will install the system including the interconnection between TIMET and the Trust. Preliminary layouts and other installation information was given to Tetra Tech. ETI also supplied Tetra Tech with the required information for the air permit analysis required for this addition.

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	744 ⁵	6.4	0.0015	0.0013
AWF Total Extraction ¹	468 ⁵	78	0.17	0.08
IWF Total Extraction ¹	55 ⁵	595	7.1	7.4
AP Area Total Extraction ¹	8.2 ⁵	930	0.079	0.078
GWTP Effluent ²	55	684	0.66	0.167163
GW-11 Influent ¹	0.13	54	0.067	0.050
FBR Influent ^{2 3}	1,046	262	0.071	0.064
T-205 Effluent (AP-5 Wash Water) ^{3 4}	9.9	19,890	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	1,776	0.41	0.35
AWF Total Extraction	13,632	29	14
IWF Total Extraction	12,228	146	153
AP Area Total Extraction	2,845	0.24	0.24
GWTP Effluent	14,136	14	3.5
GW-11 Influent	2.7	0.00	0.00
FBR Influent ¹	102,081	28	25
T-205 Effluent (AP-5 Wash Water) ^{1 2}	73,483	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.

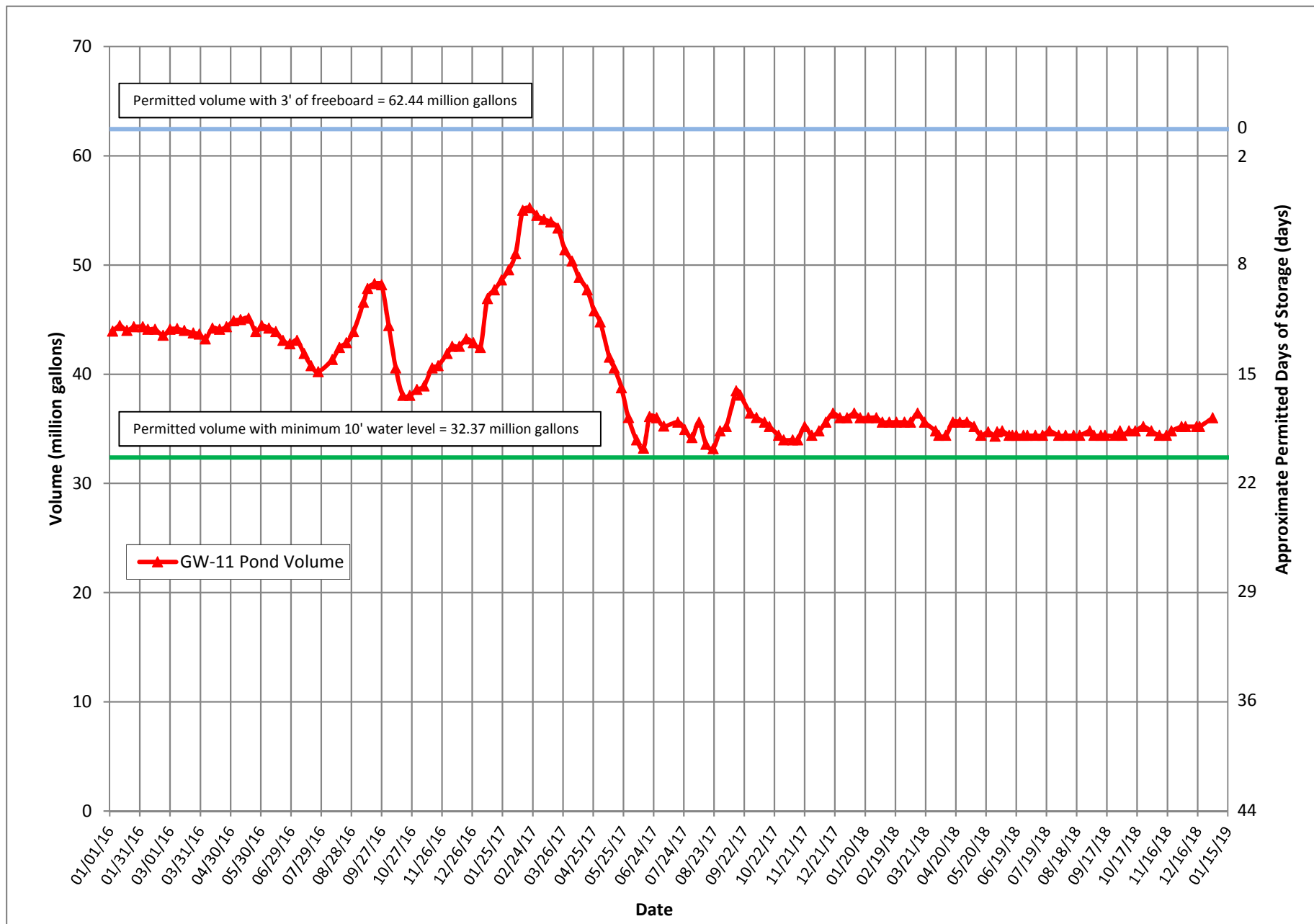
2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

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

Figures

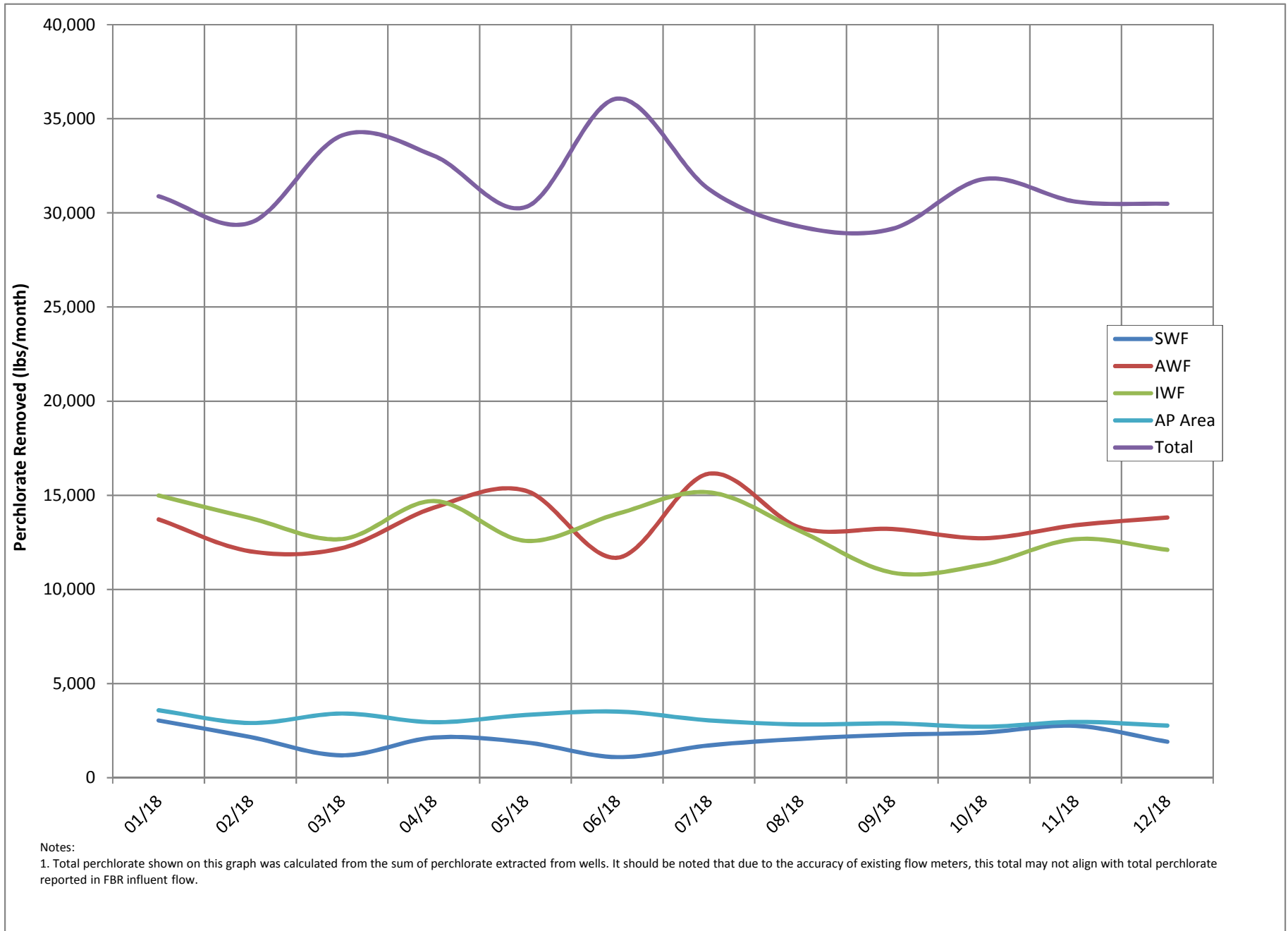
Operational Metrics

Figure 1 - GW-11 Pond Volume Through 12/31/2018



Note: 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.

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. (mg/L)	Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	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	8,000	
January 2018	1.80	1.88	0.5	0.0075	6.70	7.02	0.49	18	600	3,900	14	17	260	170	1.9	2.9	3.9	45	
February 2018	1.83	1.88	1.5	0.022	6.81	6.87	ND (<0.25)	8.2	590	2,300	12	16	230	150	1.5	2.9	4.0	43	4,600
March 2018	1.79	1.89	0.5	0.0075	6.76	7.19	ND (<0.25)	15	430	2,600	10	13	200	50	2.6	2.8	4.1	43	
April 2018	1.68	1.81	0.5	0.0070	6.60	7.30	ND (<0.25)	8.7	380	1,100	0.89	9	130	3	2.3	1.9	2.7	27	
May 2018	1.69	1.85	0.8	0.012	6.89	7.00	ND (<0.25)	9.4	370	2,400	1.6	10	140	3.2	2.2	1.4	2.2	19	4,000
June 2018	1.69	1.94	4	0.058	6.61	6.98	ND (<0.25)	9.0	370	230	1.4	8	110	8	2.1	1.7	3.0	24	
July 2018	1.65	1.86	0.5	0.0069	6.70	7.0	1.6	4.0	420	1,300	0.83	6.9	100	3.5	1.3	1.6	2.1	19	
August 2018	1.67	1.85	0.5	0.0069	6.60	6.76	ND (<0.25)	2.8	370	1,300	1.6	9	120	2.3	2.5	1.7	2.1	22	4,500
September 2018	1.70	1.86	0.5	0.0071	6.68	6.85	ND (<0.25)	3.2	390	1,000	1.8	5.0	70	2.8	0.9	1.5	2.0	19	
October 2018	1.78	1.90	0.6	0.0090	6.63	7.50	3.0	24	290	7,500	8.4	16.7	260	55	1.6	1.8	2.3	26	
November 2018	1.82	1.92	0.5	0.0076	6.50	6.70	0.00043	8.3	290	1,900	12	9	140	160	1.4	1.6	2.1	25	4,400
December 2018 (month to date)	1.80	1.85	0.5	0.0075	6.78	7.01	ND (<0.25)	15	310	2,400	18	21	310	224	2.5	1.8	2.9	26	

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
12/31 - 1/6	1/6/2018	ND (<1.0)	0.5	0.0077	1/2/2018	7.02	ND (<0.25)	6.6	600	1,600	14	12	185	--	12	183**	1/3/2018	2.2	33		
1/7 - 1/13	1/13/2018	ND (<1.0)	0.5	0.0072	1/8/2018	6.86	ND (<0.25)	4.8	600	2,800	11	18	263	--	11	160	1/10/2018	3.2	48		
1/14 - 1/20	1/20/2018	ND (<1.0)	0.5	0.0076	1/15/2018	6.70	0.25	5.7	550	1,100	11	7.9	122	--	10	142**	1/17/2018	3.9	58		
1/21 - 1/27	1/27/2018	ND (<1.0)	0.5	0.0076	1/22/2018	6.83	0.49	18	530	3,900	12	26	401	--	11	170**	1/24/2018	2.3	36		
1/29 - 2/3	2/3/2018	ND (<1.0)	0.5	0.0077	1/29/2018	6.72	ND (<0.25)	11	580	3,800	9.8	21	316	--	8.9	134	1/31/2018	3.1	47		
2/4 - 2/10	2/10/2018	ND (<1.0)	0.5	0.0076	2/5/2018	6.87	ND (<0.25)	5.4	580	960	12	6.9	104	--	9.9	150**	2/7/2018	2.6	40	2/5/2018	4,600
2/11 - 2/17	2/17/2018	3.1	3.1	0.048	2/12/2018	6.81	ND (<0.25)	6.8	590	1,300	12	7.0	106	--	10	151	2/14/2018	2.3	35		
2/18 - 2/24	2/24/2018	ND (<1.0)	0.5	0.0077	2/19/2018	6.86	ND (<0.25)	7.0	550	2,300	12	16	240	--	10	150	2/21/2018	2.8	43		
2/25 - 3/3	3/3/2018	1.7	1.7	0.024	2/26/2018	6.84	ND (<0.25)	8.2	550	1,700	12	33	481	--	6.9	101	2/28/2018	4.0	55		
3/4 - 3/10	3/10/2018	ND (<1.0)	0.5	0.0073	3/5/2018	6.96	ND (<0.25)	11	430	2,600	9.8	18	269	--	8.3	124	3/7/2018	4.1	60		
3/11 - 3/17	3/17/2018	ND (<1.0)	0.5	0.0076	3/12/2018	6.76	ND (<0.25)	7.1	360	2,100	10	17	258	--	8.6	130**	3/14/2018	3.7	58		
3/18 - 3/24	3/24/2018	ND (<1.0)	0.5	0.0075	3/19/2018	7.14	ND (<0.25)	15	290	2,300	ND (<0.50)	12	175	--	0.39	5.7	3/21/2018	2.5	38		
3/25 - 3/31	3/31/2018	ND (<1.0)	0.5	0.0076	3/26/2018	7.19	ND (<0.25)	3.6	340	890	ND (<0.50)	5.9	90	--	0.45	6.0	3/28/2018	0.95	14		
4/1 - 4/7	4/7/2018	ND (<1.0)	0.5	0.0073	4/2/2018	7.30	ND (<0.25)	5.2	150	1,100	0.75	21	313	--	0.75	11	4/4/2018	1.7	25		
4/8 - 4/14	4/14/2018	ND (<1.0)	0.5	0.0066	4/9/2018	6.74	ND (<0.25)	4.1	300	1,100	0.89	7.4	100	--	0.14	1.9**	4/11/2018	2.2	31		
4/15 - 4/21	4/21/2018	ND (<1.0)	0.5	0.0070	4/16/2018	6.60	ND (<0.25)	8.7	380	560	ND (<0.50)	3.3	44	--	0.18	2.4	4/18/2018	2.7	37		
4/22 - 4/28	4/28/2018	ND (<1.0)	0.5	0.0070	4/23/2018	6.91	ND (<0.25)	5.3	290	480	ND (<0.50)	6.1	89	ND (<0.10)	0.050	0.73**	4/25/2018	0.90	13		
4/29 - 5/5	5/5/2018	2.0	2.0	0.030	4/30/2018	6.97	ND (<0.25)	5.1	300	1,000	ND (<0.50)	5.6	80	--	0.19	2.7	5/2/2018	2.0	30	5/1/2018	4,000
5/6 - 5/12	5/12/2018	ND (<1.0)	0.5	0.0072	5/7/2018	7.00	ND (<0.25)	8.0	360	2,300	1.6	13	157	--	0.53	8.1**	5/9/2018	2.2	34		
5/13 - 5/19	5/19/2018	ND (<1.0)	0.5	0.0069	5/14/2018	6.89	ND (<0.25)	7.6	280	2,400	ND (<0.50)	13	192	--	0.11	1.6**	5/16/2018	1.1	13		
5/20 - 5/26	5/26/2018	ND (<1.0)	0.5	0.0069	5/21/2018	6.94	ND (<0.25)	9.4	350	1,700	ND (<0.50)	12	177	ND (<0.10)	0.050	0.74**	5/23/2018	1.2	15		
5/27 - 6/2	6/2/2018	ND (<1.0)	0.5	0.0071	5/29/2018	6.98	ND (<0.25)	ND (<2.5)	370	100	1.1	2.3	28	--	0.33	4.0**	5/30/2018	ND (<0.50)	0.25	3.8	
6/3 - 6/9	6/9/2018	14**	14	0.21	6/4/2018	6.98	ND (<0.25)	4.6	320	81	ND (<0.50)	6.5	104	ND (<0.10)	0.050	0.80**	6/6/2018	3.0	48		
6/10 - 6/16	6/16/2018	ND (<1.0)	0.5	0.0069	6/11/2018	6.89	ND (<0.25)	5.4	370	96	0.85	7.2	105	--	0.11	1.6**	6/13/2018	1.9	22		
6/17 - 6/23	6/23/2018	ND (<1.0)	0.5	0.0068	6/18/2018	6.61	ND (<0.25)	9.0	360	230	1.4	14	162	--	1.4	16**	6/20/2018	0.83	11		
6/24 - 6/30	6/30/2018	ND (<1.0)	0.5	0.0067	6/25/2018	6.76	ND (<0.25)	4.4	310	95	ND (<0.50)	4.0	58	ND (<0.10)	0.050	0.73**	6/27/2018	1.1	16		
7/1 - 7/7	7/7/2018	ND (<1.0)	0.5	0.0070	7/2/2018	6.89	ND (<0.25)	4.0	340	91	ND (<0.50)	5.2	76	--	0.11	1.6	7/5/2018	1.6	19		
7/8 - 7/14	7/14/2018	ND (<1.0)	0.5	0.0069	7/9/2018	6.81	ND (<0.25)	2.8	380	520	ND (<0.50)	4.1	61	--	0.27	4.0**	7/11/2018	2.1	26		
7/15 - 7/21	7/21/2018	ND (<1.0)	0.5	0.0066	7/16/2018	7.0	ND (<0.25)	3.6	320	850	ND (<0.50)	6.6	75	--	0.22	2.5**	7/18/2018	1.1	17		
7/22 - 7/28	7/28/2018	ND (<1.0)	0.5	0.0071	7/23/2018	6.83	ND (<0.25)	3.9	340	940	0.83	9.0	133	--	0.19	2.8**	7/25/2018	1.5	13		
7/29 - 8/4	8/4/2018	ND (<1.0)	0.5	0.0071	7/30/2018	6.70	1.6	3.5	420	1,300	ND (<0.50)	9.4	146	--	0.12	1.9	8/1/2018	2.1	31	8/6/2018	4,500
8/5 - 8/11	8/11/2018	ND (<1.0)	0.5	0.0066	8/6/2018	6.64	ND (<0.25)	ND (<2.5)	330	1,100	ND (<0.50)	9.0	108	--	0.30	3.6**	8/8/2018	1.8	22		
8/12 - 8/18	8/18/2018	ND (<1.0)	0.5	0.0070	8/13/2018	6.63	ND (<0.25)	ND (<2.5)	350	1,200	1.0	7.1	104	--	0.21	3.1**	8/15/2018	1.8	23		
8/19 - 8/25	8/25/2018	ND (<1.0)	0.5	0.0069	8/20/2018	6.60	ND (<0.25)	2.8	370	1,300	1.2	8.4	124	--	0.17	2.5**	8/22/2018	1.9	21		
8/26 - 9/1	9/1/2018	ND (<1.0)	0.5	0.0071	8/27/2018	6.76	ND (<0.25)	2.5	370	1,100	1.6	11	130	--	0.55	6.5**	8/29/2018	0.95	14		
9/2 - 9/8	9/8/2018	ND (<1.0)	0.5	0.0068	9/4/2018	6.72	ND (<0.25)	ND (<2.5)	390	880	1.8	5.7	84	--	0.41	6.0**	9/5/2018	2.0	23		
9/9 - 9/15	9/15/2018	ND (<1.0)	0.5	0.0073	9/10/2018	6.71	ND (<0.25)	3.2	340	1,000	ND (<0.50)	7.0	103	--	0.25	3.7**	9/12/2018	1.3	17		
9/16 - 9/22	9/22/2018	ND (<1.0)	0.5	0.0070	9/17/2018	6.68	ND (<0.25)	2.5	350	540	ND (<0.50)	3.7	55	--	0.18	2.7**	9/19/2018	1.5	17		
9/23 - 9/29	9/29/2018	ND (<1.0)	0.5	0.0074	9/24/2018	6.85	ND (<0.25)	ND (<2.5)	300	510	ND (<0.50)	3.7	45	--	0.17	2.1**	9/26/2018	1.2	18		
9/30 - 10/6	10/6/2018	ND (<1.0)	0.5	0.0071	10/1/2018	6.90	3.0	ND (<2.5)	290	770	ND (<0.50)	4.8	73	--	0.25	3.8**	10/3/2018	2.2	33		
10/7 - 10/13	10/13/2018	ND (<1.0)	0.5	0.0075	10/8/2018	6.63	ND (<0.25)	3.8	280	860	4.1	6.5	100	--	1.10	17**	10/10/2018	2.1	32		
10/14 - 10/20	10/20/2018	ND (<1.0)	0.5	0.0071	10/15/2018	6.67	ND (<0.25)	4.1	270	890	4.0	6.4	95	--	1.1	16**	10/17/2018	1.2	16		
10/21 - 10/27	10/27/2018	1.0	1.0	0.0154	10/22/2018	6.91	ND (<0.25)	3.1	270	670	7.8	5.9	88	--	5.0	74**	10/24/2018	2.3	36		
10/28 - 11/3	11/3/2018	ND (<1.0)	0.5	0.0077	10/29/2018	7.50	ND (<0.25)	24</													

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		2	Replaced the motor on PC-119
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		1	Removed solids from the wet well and IX holding tank
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			
3.04		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	Replaced the motor on I-D
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running		3	Replaced a regulator controlling the hydraulic ram
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			
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			

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
5.09	PID10B	Carbon Absorber - LGAC 201A	Running			
5.10	PID10B	Carbon Absorber - LGAC 201B	Running			
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 trunnions were replaced 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			1	The pump was pulled and sent to Cortech for repairs to the shaft and housing
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			
7.03	PID02B	First Stage Separator Tank - T2012	Running			
7.04	PID01B	Media Return Pump - P2012	Running		3	New air supply fittings were installed on the air end of the pump
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			

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
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	Tightened the fittings on the belt guard as well as the lifters guard.
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			
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			

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
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		4	New mufflers were installed on the air purge system
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running		2	The bearing housing was replaced on the pump end
10.13	PID05	DAF Float Pump - P502	Running			
10.14	PID05	DAF Vessel - D551	Running			
10.15	PID05	DAF Pressure Pump - P551	Running			
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			
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			3	New airlift was assembled for #5
12.02	PID17	Filter Reject Tank	In operation		3	Removed the solids from the tank
12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running		2	The pump end was removed and the sands were cleared from the suction side of the pump
13		Effluent Tank and Pumping				
13.01	PID10C	UV Effluent Tank	Running			
13.02	PID10C	Effluent Booster Pump - P1302A	Running		2	The motor was pulled and sent to Henderson Electric to have the front bearings replaced. The pump was reinstalled and is back in service.
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		3	The air system was hooked up to the sludge tank

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
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		3	The hydraulic switch was replaced on the tank for the ram head
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		4	A new drawdown column was installed on the main feed line
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 System	In operation		2	Switched the system to ACH
24	PID07B	Polymer Systems - DAF	In operation		2	A new pump, heat trace, tote mixer, and static mixer was installed on the system.
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		3	A new auto drain valve was installed on the bottom of the tank.
26.05	PID08	Air Dryer	Running			
26.06	PID08	Oil Removal Filter	In operation			
26.07	PID08	Particulate Filter	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
27	PID16	Oxygen System	In operation		3	New filters were ordered and new solenoids to switch tanks. The system is ready for use.
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			Spares are on the shelf
		Interceptor Well Pumps (4 each)	In stock			Pumps and motors are stocked.
		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			Spares are on the shelf.

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