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:	December 20, 2019
Subject:	NERT – GWETS Operation Monthly Report – November 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 November 2019.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in November 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 176 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,019 gpm during November 2019. At the end of the month, the GW-11 Pond volume was at 40.1 million gallons (MG), which would allow 15.5 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 3.3 MG from the end of October 2019 as a result of diversions (described later is this report), backwashing of the granulated activated carbon vessels, overflow from the EQ Area, and precipitation events in November 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 0.39 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 258 mg/L for the month, with a maximum concentration of 270 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of October 2019 averaged 217 mg/l, with a maximum concentration of 310 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 November.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of November beginning with a flow rate of 9.0 gpm and increasing in flow to 10.0 gpm on November 11, 2019 with a subsequent decrease in flow to 9.0 on November 20, 2019. Changes in flow were made to balance the load from processing AP-5 material with seasonal restrictions in NERT's NPDES permit during the winter months.

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

- Well field shutdown of the Interceptor Well Field occurred on November 4, 2019 from 1:30pm to 1:50pm due to a malfunctioning electrical switch at the Groundwater Treatment Plant. The damaged switch was replaced and the well field was brought back online.
- Well Shutdown of I-W occurred on November 7, 2019 from 10:35pm to 10:51pm due to an electrical malfunction. The well pump was reset and the connections tightened.
- Well Shutdown of I-P and I-Q occurred on November 8, 2019 from 2:00am to 6:00am due to an electrical malfunction. The well pumps were reset, the connections tightened, and the motor savor evaluated for proper function.
- Well Shutdown of I-P occurred on November 12, 2019 from 9:30pm to 7:27am due to a motor malfunction. The well pump was pulled and the motor replaced.
- Influent diversion to GW-11 on November 13, 2019 from 6:35am to 12:00pm due to a planned maintenance event for multiple pieces of equipment throughout the plant. The plant was brought back online at 12:00pm and the effluent was returned to the outfall at 4:45pm. A total of approximately 641,000 gallons of water were diverted to GW-11.
- Influent diversion to GW-11 on November 19, 2019 from 7:02am to 9:10am due to maintenance at the aeration tank. The plant was brought back online at 9:10am and the effluent was returned to the outfall at 10:14am. A total of approximately 202,000 gallons of water were diverted to GW-11.
- Well field shutdown of the Seep Well Field occurred on November 19, 2019 from 8:00am to 9:27am due to electrical maintenance by NV Energy.

3. Spills

There were no reportable spills in the month of November.

4. Maintenance

- Major maintenance performed by ETI in the month included:

  I. Rebuilt media returns A, 3, and 4.
  II. Repaired the diffusers on the aeration tank.
  III. Installed a new flowmeter on the extraction well, E2-5.
  IV. Replaced the polymer mixer on the GWTP polymer make-up tank.
  V. Changed the carbon in the South GAC.
  VI. Rebuilt the east press pump.
  VII. Replaced the 0.5 hp motor, pump, fittings and pigtail in extraction well I-P.
  VIII. Installed a new swing check valve on the P-1201 sump pump.
  IX. Assembled and installed a tap to flush the line between the de-gassifier to the clarifier.
  X. Installed a new fuse and lugs on the west compressor power for the motor.

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

  I. Conducted the semi-annual PM on the North DAF including, but not limited to pressure washing the vessel, replacing the packing on the screw, coating the walls of the sludge box, re-alignment of the recycle pump, and inspecting the sludge pump.
  II. Changed the oil on the LS1 turbine.
  III. Inspected the A/C units at LS3.
  IV. Changed the oil on the LS@ turbine.
  V. Drain, flush, and inspect the diffusers in the aeration tank.
  VI. Flushed and inspected the DAF polymer injection system.
  VII. Inspected the fans in the upper level of the D-1 building.
  VIII. Flushed the sump pump pits.
  IX. Added oil to the compressors air ends.

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.

GWETS Extension – A revised equipment proposal was submitted to the Trust for the TIMET system in October, along with draft work authorizations for the GWETS Extension and O&M services. Envirogen is awaiting further direction from the Trust regarding this matter.

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 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]	749 [5]	7.6	0.0023	0.0017
AWF Total Extraction[1]	458 [5]	73	0.14	0.14
IWF Total Extraction[1]	59 [5]	482	6.4	6.5
AP Area Total Extraction[1]	10.2 [5]	628	0.096	0.089
GWTP Effluent[2]	62	537	0.15	ND
GW-11 Influent[1]	2.10	53	0.07	0.002
FBR Influent[2 3]	1,019	258	0.002	0.002
T-205 Effluent (AP-5 Wash Water)[3 4]	9.4	18,974	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 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	2,041	0.63	0.45
AWF Total Extraction	12,012	23	23
IWF Total Extraction	10,298	136	140
AP Area Total Extraction	2,314	0.35	0.33
GWTP Effluent	12,079	3.5	ND
GW-11 Influent	40.2	0.053	0.0017
FBR Influent[1]	94,749	0.74	0.69
T-205 Effluent (AP-5 Wash Water)[1 2]	64,378	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.

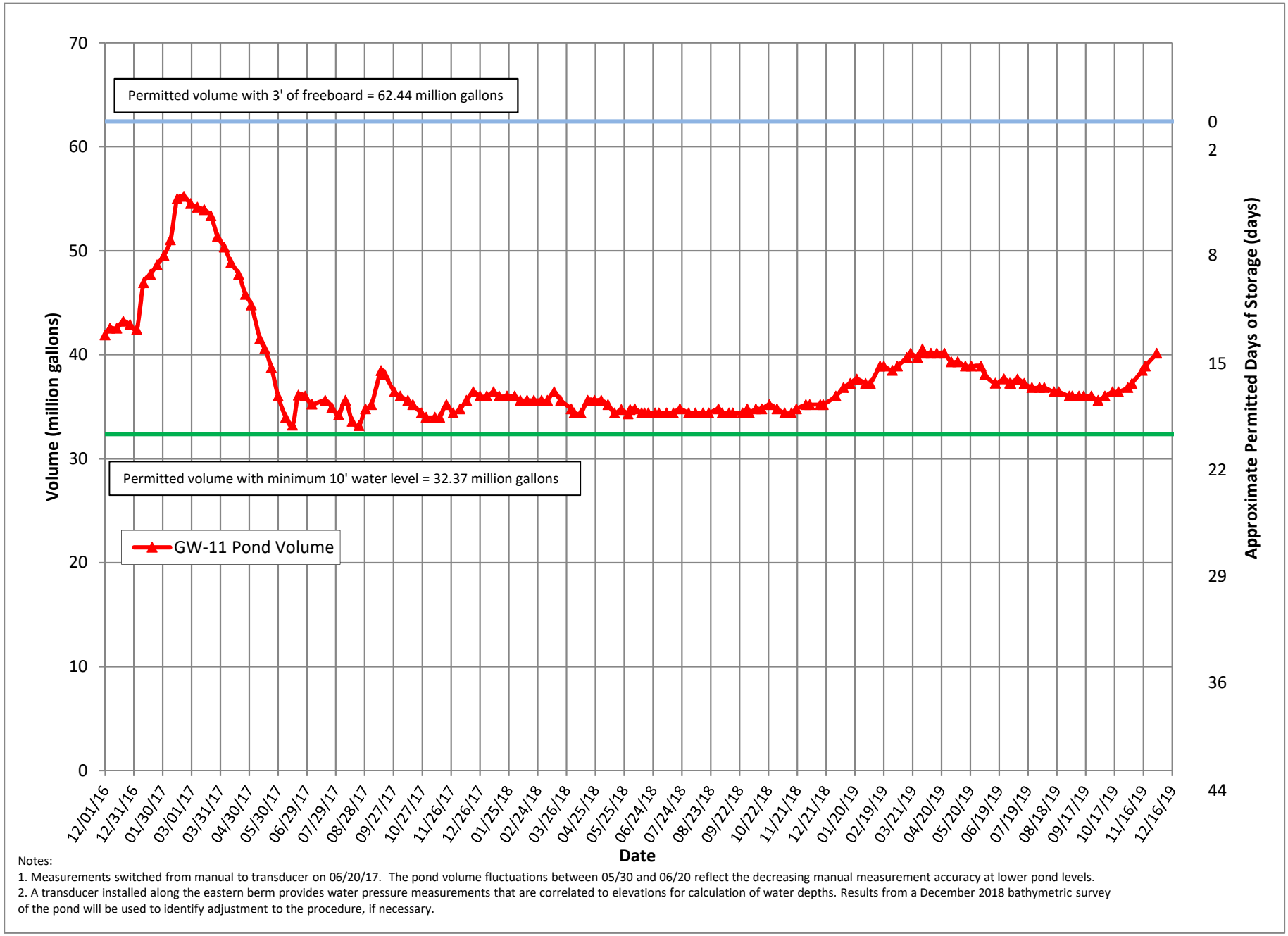
2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

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 11/30/2019

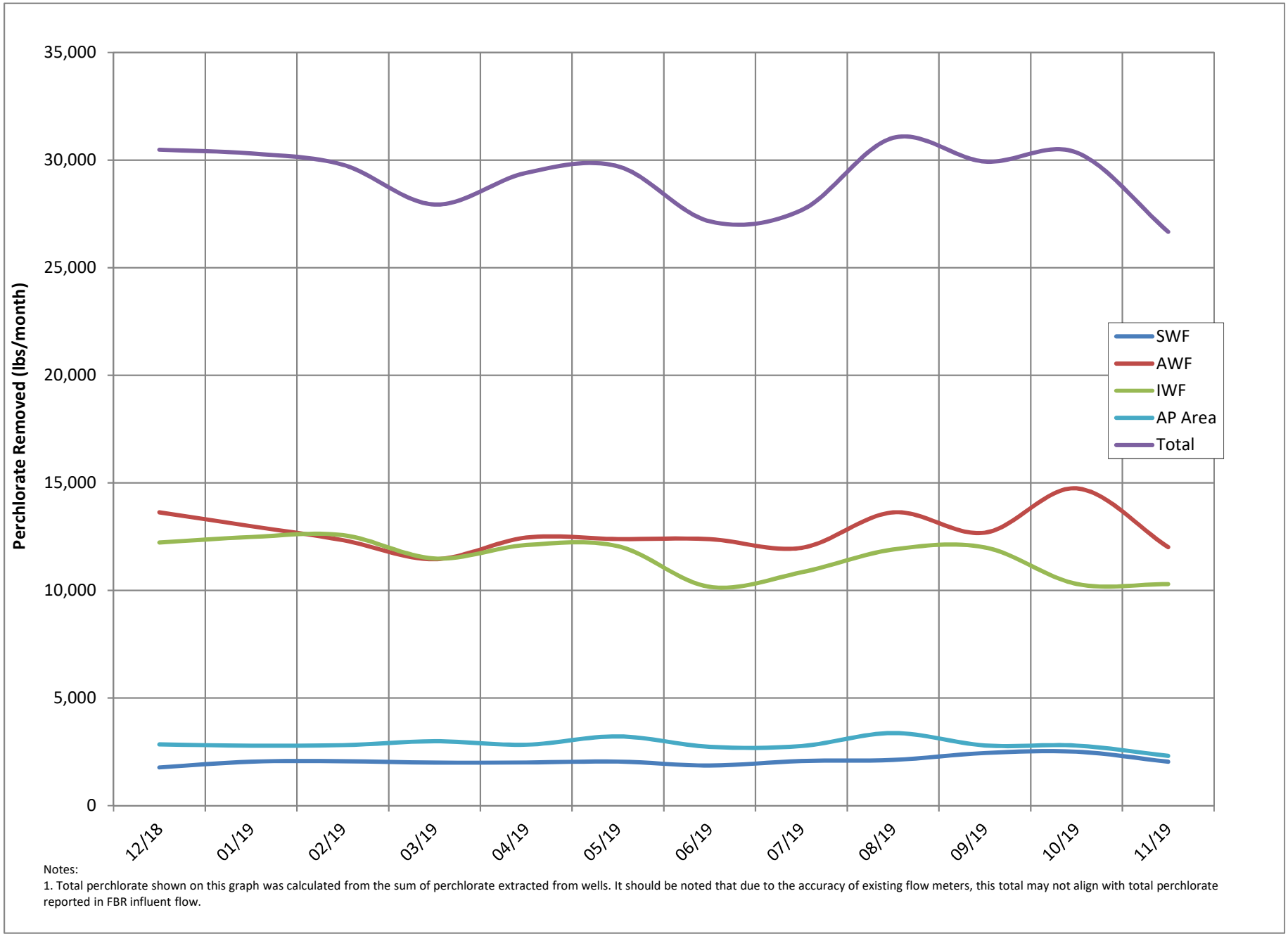


Notes:

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: 12/5/2019

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: 12/18/2019

Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

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 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	0.07	6.58	6.91	ND (<0.25)	16	220	390	14	10	150	190	1.6	0.9	1.2	13	4,500
March 2019	1.67	1.86	0.5	0.0069	6.57	6.82	ND (<0.25)	14	290	160	19	7	100	120	2.1	0.7	2.2	11	
April 2019	1.73	1.85	0.5	0.0072	6.50	6.88	ND (<0.25)	11	310	410	1.2	9	130	5	1.6	0.5	1.4	8	
May 2019	1.78	1.83	0.5	0.0074	6.50	7.05	ND (<0.25)	5.9	340	130	1.5	6	90	10	2.0	0.7	1.4	10	4,300
June 2019	1.73	1.83	0.5	0.0072	6.63	6.65	3.5	2.8	360	150	2.5	4.9	70	18	2.2	0.7	1.9	9	
July 2019	1.72	1.81	5	0.07	6.59	7.00	ND (<0.25)	4.0	360	77	2.9	3.8	54	8	2.4	0.37	0.83	5	
August 2019	1.72	1.82	5	0.07	6.55	6.6	ND (<0.25)	3.8	330	150	1.1	4.1	60	12	1.8	0.6	1.5	8	4,200
September 2019	1.75	1.79	2.3	0.03	6.51	7.11	ND (<0.25)	3.9	290	95	1.1	4.8	69	12	3.1	0.6	1.0	8	
October 2019	1.70	1.80	0.5	0.0071	6.50	6.70	ND (<0.25)	ND (<2.5)	280	72	12	5.2	76	130	3.4	0.6	1.4	9	
November 2019	1.76	2.28	1.0	0.014	6.51	6.98	ND (<0.25)	4.0	330	73	17	2.7	38	210	4.0	0.7	2.2	11	4,400
December 2019 (month to date)	1.72	1.84	1.3	0.018	6.51	6.78	ND (<0.25)	16	320	200	17	20	280	200	2.4	0.3	0.3	3.6	

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	197	--	0.061	0.9	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	0.2	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	2/11/2019	4,500
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	3.4		
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	3.3		
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 - 3/30	3/30/2019	ND (<1.0)	0.5	0.0068	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	3.2		
3/30 - 4/6	4/6/2019	ND (<1.0)	0.5	0.0070	4/1/2019	6.64	ND (<0.25)	ND (<2.5)	250	ND (<50)	ND (<0.50)	3.3	46	--	0.13	1.8[++]	--	0.081	1.1	4/3/2019	ND (<0.50)	0.25	3.6		
4/7 - 4/13	4/13/2019	ND (<1.0)	0.5	0.0075	4/8/2019	6.50	ND (<0.25)	3.8	300	92	ND (<0.50)	9.6	136	ND (<0.10)	0.05	1.2[++]	--	0.13	1.8	4/10/2019	ND (<0.50)	0.25	3.8		
4/14 - 4/20	4/20/2019	ND (<1.0)	0.5	0.0071	4/15/2019	6.60	ND (<0.25)	3.2	300	72	ND (<0.50)	4.3	65	--	0.21	2.9[++]	--	0.075	1.1	4/17/2019	ND (<0.50)	0.25	3.3		
4/21 - 4/27	4/27/2019	ND (<1.0)	0.5	0.0074	4/22/2019	6.88	ND (<0.25)	11	310	410	0.60	23	335	--	0.60	8.7[++]	--	0.13	1.9	4/24/2019		1.4	21		
4/28 - 5/4	5/4/2019	ND (<1.0)	0.5	0.0073	4/29/2019	6.50	ND (<0.25)	ND (<2.5)	310	130	1.2	5.1	76	--	0.63	9.4	--	0.14	2.1	5/1/2019	ND (<0.50)	0.25	3.7	5/1/2019	4,300
5/5 - 5/11	5/11/2019	ND (<1.0)	0.5	0.0074	5/6/2019	6.50	ND (<0.25)	2.5	310	58	1.2	3.5	51	--	0.64	9.4[++]	--	0.14	2.1	5/8/2019		0.63	9.0		
5/12 - 5/18	5/18/2019	ND (<1.0)	0.5	0.0074	5/13/2019	6.78	ND (<0.25)	5.9	340	130	0.57	13	193	--	0.57	8.4[++]	--	0.22	3.3	5/15/2019	ND (<0.50)	0.25	3.7		
5/19 - 5/25	5/25/2019	ND (<1.0)	0.5	0.0074	5/20/2019	6.57	ND (<0.25)	2.7	290	70	ND (<0.50)	3.4	51	--	0.47	7.1[++]	--	0.10	1.5	5/22/2019		1.4	21		
5/26 - 6/1	6/1/2019	ND (<1.0)	0.5	0.0073	5/28/2019	7.05	ND (<0.25)	4.4	250	99	1.5	4.6	67	--	0.79	11[++]	--	0.078	1.1	5/29/2019		0.88	13		
6/2 - 6/8	6/8/2019	ND (<1.0)	0.5	0.0076	6/3/2019	6.63	ND (<0.25)	ND (<2.5)	340	58	0.82	3.5	53	--	0.82	12	--	0.14	2.1	6/5/2019	ND (<0.50)	0.25	3.8		
6/9 - 6/15	6/15/2019	ND (<1.0)	0.5	0.0072	6/10/2019	6.63	3.5	2.8	360	73	1.6	7.5	105	--	1.0	14[++]	--	0.16	2.2	6/12/2019	ND (<0.50)	0.25	3.5		
6/16 - 6/22	6/22/2019	ND (<1.0)	0.5	0.0070	6/17/2019	6.65	ND (<0.25)	ND (<2.5)	310	150	2.5	5.7	81	--	2.5	35[++]	--	0.18	2.5	6/19/2019		1.9	27		
6/23 - 6/29	6/29/2019	ND (<1.0)	0.5	0.0071	6/24/2019	6.65	ND (<0.25)	ND (<2.5)	330	59	1.8	2.9	38	--	1.8	24[++]	--	0.15	2.0	6/26/2019	ND (<0.50)	0.25	3.7		
6/30 - 7/6	7/6/2019	5.7	5.7	0.080	7/1/2019	7.00	ND (<0.25)	ND (<2.5)	340	ND (<50)	ND (<0.50)	3.6	51	ND (<0.10)	0.05	0.7	--	0.13	1.8	7/3/2019	ND (<0.50)	0.25	3.6		
7/7 - 7/13	7/13/2019	11	11	0.16	7/8/2019	6.59	ND (<0.25)	ND (<2.5)	310	ND (<50)	2.9	1.7	25	--	1.4	21	--	0.13	1.9	7/10/2019		0.83	12		
7/14/ - 7/20	7/20/2019	3.5	3.5	0.051	7/15/2019	6.77	ND (<0.25)	2.6	280	77	0.83	6.7	97	--	0.26	3.8	--	0.25	3.6	7/17/2019	ND (<0.50)	0.25	3.6		
7/21 - 7/27	7/27/2019	ND (<1.0)	0.5	0.0070	7/22/2019	6.62	ND (<0.25)	4.0	330	ND (<50)	ND (<0.50)	4.4	63	--	0.11	1.6	--	0.19	2.7	7/24/2019	ND (<0.50)	0.25	3.6		
7/28 - 8/3	8/3/2019	4.4	4.4	0.063	7/29/2019	6.77	ND (<0.25)	ND (<2.5)	360	72	ND (<0.50)	2.4	35	--	0.16	2.3	--	0.12	1.8	7/31/2019	ND (<0.50)	0.25	3.7		
8/4 - 8/10	8/10/2019	4.1	4.1	0.060	8/5/2019	6.6	ND (<0.25)	ND (<2.5)	330	60	ND (<0.50)	4.7	70	--	0.22	3.3	--	0.10	1.5	8/7/2019		1.5	22	8/1/2019	4,200
8/11 - 8/17	8/17/2019	ND (<1.0)	0.5	0.0070	8/12/2019	6.59	ND (<0.25)	3.1	260	120	1.0	2.1	30	--	1.0	14	--	0.046	0.7	8/14/2019	ND (<0.50)	0.25	3.5		
8/18 - 8/24	8/24/2019	ND (<1.0)	0.5	0.0070	8/19/2019	6.59	ND (<0.25)	3.8	260	150	0.97	6.3	90	--	0.97	14[++]	--	0.21	3.0	8/21/2019	ND (<0.50)	0.25	3.4		
8/25 - 8/31	8/31/2019	13	13	0.19	8/26/2019	6.55	ND (<0.25)	2.7	330	85	1.1	3.4	50	--	1.1	16	--	0.14	2.1	8/28/2019	ND (<0.50)	0.25	3.6		
9/1 - 9/7	9/7/2019	7.0	7.0	0.10	9/3/2019	6.66	ND (<0.25)	2.7	290	95	0.53	5.6	82	--	0.53	7.8	--	0.36	5.3	9/4/2019	ND (<0.50)	0.25	3.7		
9/8 - 9/14	9/14/2019	ND (<2.5)	1.3	0.018	9/9/2019	6.51	ND (<0.25)	3.9	270	52	0.87	6.2	90	--	0.87	13	--	0.24	3.5	9/11/2019		0.76	11		
9/15 - 9/21	9/21/2019	ND (<1.0)	0.5	0.0073	9/16/2019	6.52	ND (<0.25)	3.4	220	84	0.76	5.0	73	--	0.76	11	--	0.17	2.5	9/18/2019		1.0	15		
9/22 - 9/28	9/28/2019	ND (<1.0)	0.5	0.0073	9/23/2019	6.70	ND (<0.25)	2.8	250	54	0.85	5.0	73	--	0.85	12	--	0.17	2.5	9/25/2019	ND (<0.50)	0.25	3.7		
9/29 - 10/5	10/5/2019	ND (<1.0)	0.5	0.0072	9/30/2019	7.11	ND (<0.25)	ND (<2.5)	210	ND (<50)	1.1	2.0	29	--	1.1	16	--	0.13	1.9	10/2/2019	ND (<0.50)	0.25	3.7		
10/6 - 10/12	10/12/2019	ND (<1.0)	0.5	0.0073	10/7/2019	6.63	ND (<0.25)	ND (<2.5)	280	72	7.3	2.2	32	--	6.6	96	--	0.15	2.2	10/9/2019	ND (<0.50)	0.25	3.5		
10/13 - 10/19	10/19/2019	ND (<1.0)	0.5	0.0073	10/14/2019	6.70	ND (<0.25)	ND (<2.5)	190	ND (<50)	11	3.7	54	--	8.6	125	--	0.24	3.5	10/16/2019	ND (<0.50)	0.25	3.7		
10/20 - 10/26	10/26/2019	ND (<1.0)	0.5	0.0066	10/21/2019	6.67	ND (<0.25)	ND (<2.5)	220	58	12	6.5	95	--	11	161	--	0.22	3.2	10/25/2019		0.98	14		
10/27 - 11/2	11/2/2019	ND (<1.0)	0.5	0.0072	10/28/2019	6.50	ND (<0.25)	ND (<2.5)	270	67	12	8.5	123	--	11	159	--	0.32	4.6	10/30/2019		1.4	19		
11/3 - 11/9	11/9/2019	ND (<2.5)	1.3	0.018	11/4/2019	6.98	ND (<0.25)	ND (<2.5)	260	60	13	4.4	64	--	12	175	--	0.33	4.8	11/6/2019	ND (<0.50)	0.25	3.7	11/6/2019	4,400
11/10 - 11/16	11/16/2019	ND (<2.5)	1.3	0.019	11/11/2019	6.78	ND (<0.25)	ND (<2.5)	290	ND (<50)	17	2.0	28	--	16	226	--	0.28	3.9	11/14/2019	ND (<0.50)	0.25	3.8		
11/17 - 11/23	11/23/2019	ND (<1.0)	0.5	0.0072	11/18/2019	6.51	ND (<0.25)	ND (<2.5)	270	70	16	3.0	45	--	16	238	--	0.25	3.7	11/20/2019		2.2	32		
11/24 - 11/30	11/30/2019	ND (<2.5)	1.3	0.018	11/25/2019	6.88	ND (<0.25)	4.0	330	73	15	1.2	17	--	15	211	--	0.24	3.4	11/25/2019	ND (<0.50)	0.25	3.5		
12/1 - 12/7	12/7/2019	ND (<2.5)	1.3	0.017	12/2/2019	6.55	ND (<0.25)	ND (<2.5)	250	58	11	5.4	80	--	11	162	--	0.14	2.1	12/4/2019	ND (<0.50)	0.25	3.6		
12/8 - 12/14	12/14/2019	ND (<2.5)	1.3	0.018	12/9/2019	6.78	ND (<0.25)	ND (<2.5)	300	75	14	1.2	18	--	14	206	--	0.13	1.9	12/11/2019	ND (<0.50)	0.25	3.7		
12/15 - 12/21	12/21/2019	ND (<2.5)	1.3	0.018	12/16/2019	6.51	ND (<0.25)	16	320	200	17	52	750	--	17	245	--	0.23	3.3	12/18/2019	ND (<0.50)	0.25	3.5		
					12/23/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12/23/2019		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: December 27, 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		1	The power was taken down for NV Energy so they could repair the meter. The down took 2 hours. The lift station came back online with no issues.
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		2	Changing the oil on the motor on a regular basis to clear small particles from the upper bearing.
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 .5 hp motor, pump, discharge fittings, and electrical pigtail. Installed a new flowmeter on E2-5.
4.02		*Ferrous Sulfate Feed System*	Running			
4.03		*Polymer Feed System*	Running			
4.04		*Clarifier*	In operation		3	Installed a saddle tap on the discharge line from the degassifier to the clarifier
4.05		*Filter Press*	Running		3	The oil was changed out on the unit and the clothes were cleaned.
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		3	Changed out the polymer system, installed a new mixer, and a new injection line.
5		**Equalization Area and GW-11 Pond**				
5.01	PID10A	*Pond GW-11*	In operation		4	Installed new flowmeters on the south pond corner pumps.

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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*			2	The pump and motor were taken to DXP for repairs. It is due to be completed in Dec.
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		2	The carbon was changed out in the vessel.
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	Replaced and rebuilt 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*				
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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			
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		2	Replaced the actuator on the level control valve.
8.04	PID03A	*Media Return Pump - P3011*	Running		3	Replaced the trunnion on the pump.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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			
10		**Aeration and DAF System**				
10.01	PID04	*Aeration Tank*	In operation		1	The diffuser header has been replaced.
10.02	PID04	*Aeration Blower - B401*	Running		1	The discharge piping was rebuilt and re-installed on the unit.
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		3	The new wave radar was installed on the north pressure vessel to better control the level in the tank.
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		1	The vessel was taken offline for the semi-annual maintenance. The vessel was pressure washed and inspected. The packing was replaced on the auger and coating was applied in the sludge box.
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		3	New support beams were installed 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*				

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12.02	PID17	*Filter Reject Tank*	In operation			
12.03	PID17	*Filter Reject Pump - P1701A*	Standby			
12.04	PID17	*Filter Reject Pump - P1701B*	Running		3	The pump was pulled and the debris was removed from the suction of the pump.
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			
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			
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			

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24	PID07B	*Polymer Systems - DAF*	In operation		2	The pump head was cleared of debris so the pump could run smoothly.
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		2	A new fuse and connection was installed on the second leg of the motor.
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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