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

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in October 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 180 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,012 gpm during October 2019. At the end of the month, the GW-11 Pond volume was at 36.8 million gallons (MG), which would allow 17.8 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 increased by 1.2 MG from the end of September 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 0.33 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 217 mg/L for the month, with a maximum concentration of 310 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of September 2019 averaged 123 mg/l, with a maximum concentration of 130 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 October.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of October beginning with a flow rate of 4.0 gpm and increasing in flow to 9.0 gpm on October 30, 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

- Influent diversion to GW-11 on October 3, 2019 from 3:00am to 6:30am and 9:45am to 12:57pm due to a malfunctioning level control valve at Separator 3. The actuator for the level control valve was replaced and flow returned to the outfall. Approximately 422,000 gallons of water were diverted to GW-11.
- Influent diversion to GW-11 on October 4, 2019 from 5:03am to 5:53am due to a malfunctioning influent feed pump (P-102a). The backup pump was brought online. The malfunctioning pump was removed from service and sent off for repairs. Approximately 52,500 gallons of water were diverted to GW-11.
- Influent diversion to GW-11 on October 8, 2019 from 9:09am to 9:33am and October 9, 2019 from 12:01pm to 1:26pm due to a malfunctioning universal power switch. The universal power switch was replaced and approximately 115,000 gallons of water were diverted to GW-11.
- Well field shutdown of the Interceptor Well Field occurred on October 10, 2019 from 2:29pm to 2:42pm due to a piping blockage at the GWTP. The blockage was cleared and the IWF was brought back online.
- Well Shutdown of I-C occurred on October 19, 2019 from 2:05am to 7:32am due to a motor malfunction. The well pump was pulled for inspection and the motor was replaced.
- Influent diversion to GW-11 on October 22, 2019 from 5:31am to 2:30pm due to a planned maintenance event for multiple pieces of equipment throughout the plant. The plant was brought back online at 2:30pm and the effluent was returned to the outfall at 11:13pm. A total of approximately 577,000 gallons of water were diverted to GW-11.
- Well field shutdown of the Interceptor Well Field occurred on October 22, 2019 from 8:00am to 1:30pm as part of the planned maintenance event.
- Effluent diversion to GW-11 on October 23, 2019 from 9:33am to 11:49am as a precautionary measure due to concerns over the effluent quality. Adjustments were made to the process and the flow was returned to the outfall. Approximately 143,000 gallons of water were diverted to GW-11.

- Well field shutdown of the Interceptor Well Field occurred on October 28, 2019 from 12:27pm to 12:43pm due to a faulty switch that tripped an electrical circuit breaker. The switch was repaired and the IWF brought back online.
- Well field shutdown of the Seep Well Field, Lift Station 1, and the IX treatment unit occurred on October 29, 2019 from 9:09pm to October 30, 2019 at 4:45am due to a loss of power from NV Energy. Power was restored and the SWF, Lift Station 1, and the IX treatment unit were brought back online.
- Well Shutdown of extraction well E2-5 occurred on October 30, 2019. The well pump was pulled for inspection and the motor was replaced.
- Well Shutdown of ART 8a occurred on October 31, 2019 at 7:45pm. The backup well pump was brought online while the pump and motor were replaced. The primary well as brought back online at 1:45pm.

3. Spills

There were no reportable spills in the month of October.

4. Maintenance

- Major maintenance performed by ETI in the month included:

I. Installed a drawdown column for the GWTP polymer system.
II. Assembled and installed a new flowmeter for the North East GW-11 pond corner.
III. Replaced the I/O card for FBR A.
IV. Installed a new pressure and level switch for the East Filter Press.
V. Replaced the actuators on the level control valves for Separator 1 and Separator 3.
VI. Rebuilt the media return pump for FBR A.
VII. Replaced the media return pump for FBR 3.
VIII. Assembled and installed the SLMW adapter for the D-1 water supply to serve as a source of plant water during anticipated future maintenance events on the SLMW main line.
IX. Replaced the 1/2hp motor on extraction well I-H.
X. Replaced the 1/2hp motor on extraction well I-C.
XI. Replaced the bed height control pumps for FBR 4.
XII. Installed the conduit for the backflow preventer on the South DAF.
XIII. Installed the seal water booster pump and piping. Ran new electrical and changed out the breaker and overload switch in the electrical bucket.
XIV. Replaced the 7.5 hp motor and 150 gpm pump on extraction well ART-8.
XV. Replaced the pump and motor for extraction well E2-5.

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

I. Set up a temporary pump for the P-102 influent pumps to serve as a backup pump while the main influent pump is being repaired.
II. Rebuild spare level control actuators.
III. Changed the oil on the turbine pumps.
IV. Replaced the pump on the Phosphoric acid feed for FBR 4.
V. Flushed the ORP probes.
VI. Drained and flushed the T-601 tank and the South DAF.
VII. Winterized the swamp cooler in the e-hut.

VIII. Pulled the drain plug and changed the filters at the Lift Station 3 air conditioners.

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.

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.

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]	740 [5]	9.1	0.0021	0.0014
AWF Total Extraction[1]	457 [5]	86	0.14	0.15
IWF Total Extraction[1]	58 [5]	478	6.7	6.4
AP Area Total Extraction[1]	10.6 [5]	703	0.088	0.084
GWTP Effluent[2]	59	577	0.15	ND
GW-11 Influent[1]	11.70	71	0.06	0.000
FBR Influent[2 3]	1,012	217	0.013	0.011
T-205 Effluent (AP-5 Wash Water)[3 4]	6.2	19,280	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	2,509	0.59	0.37
AWF Total Extraction	14,746	24	25
IWF Total Extraction	10,306	144	138
AP Area Total Extraction	2,791	0.35	0.33
GWTP Effluent	12,672	3.4	ND
GW-11 Influent	310.0	0.271	0.0000
FBR Influent[1]	81,781	4.9	4.0
T-205 Effluent (AP-5 Wash Water)[1 2]	44,872	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.

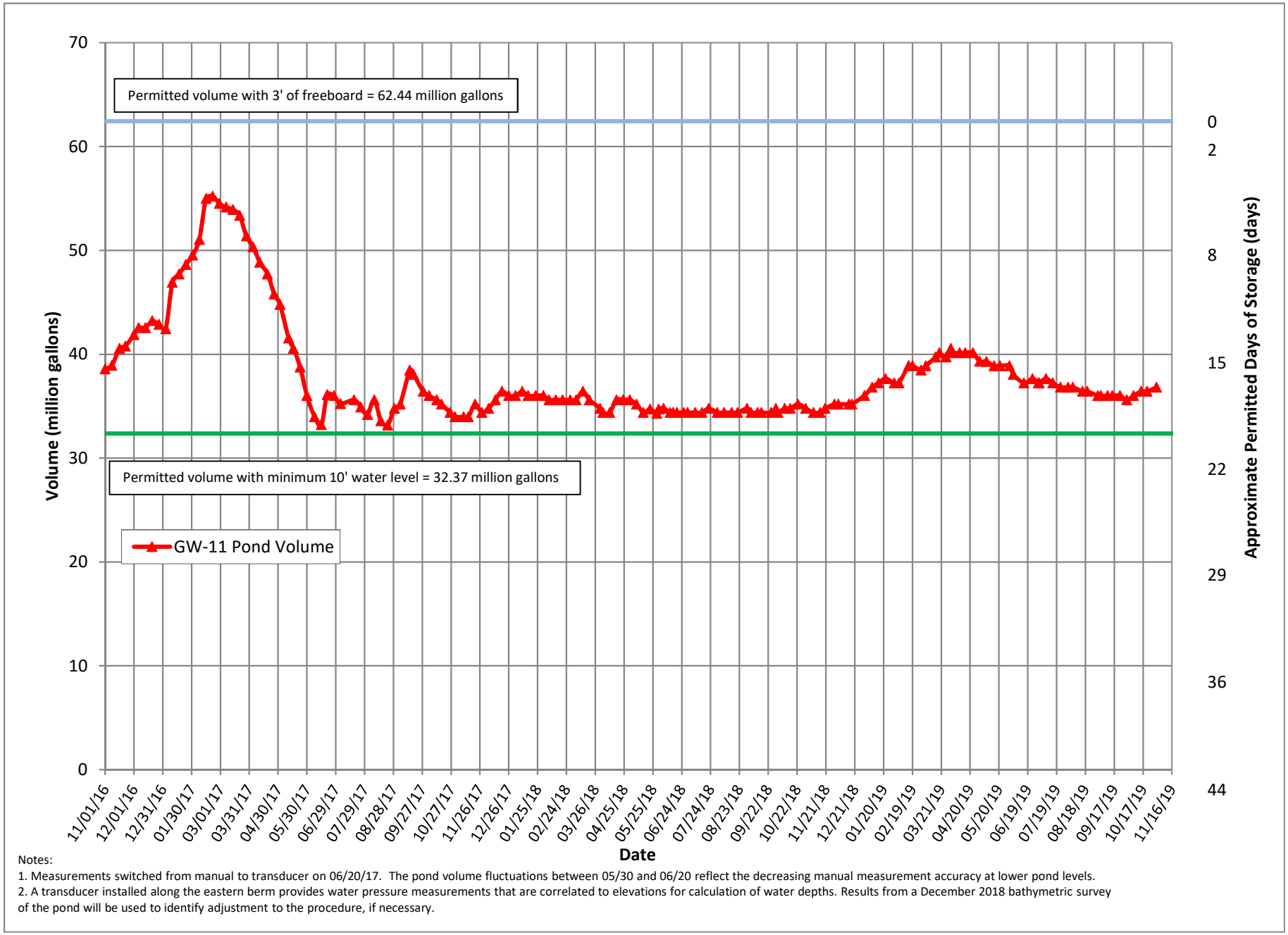
2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

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 10/31/2019

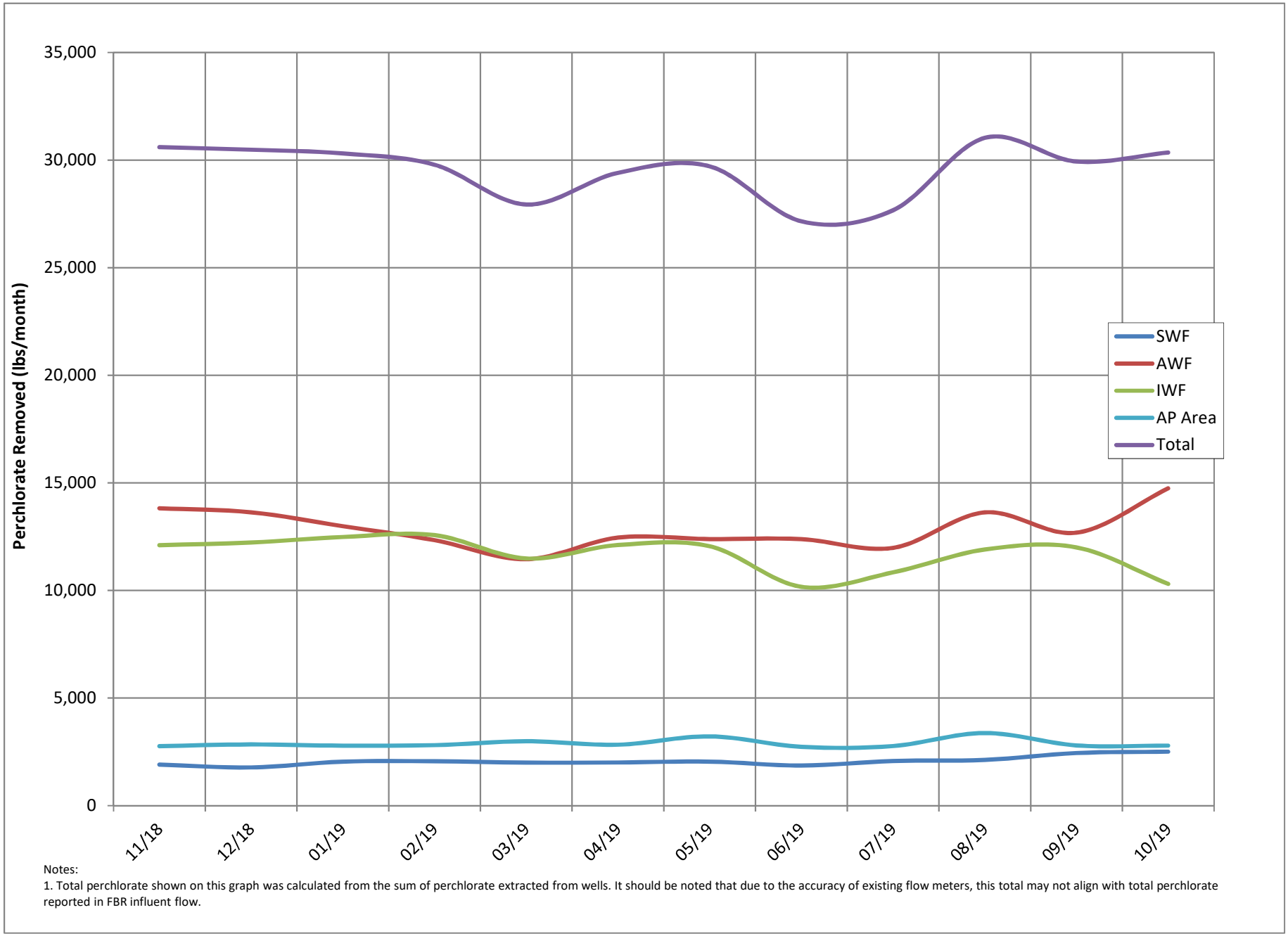


Notes:

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: 11/5/2019

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: 11/18/2019

Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

WORKING TRACKING SPREADSHEET
DRAFT - NOT TO BE SUBMITTED TO AGENCY

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	1.40	6	NA

Daily Grab Sample Dates	Composite Sample Date		µg/L	lbs/day
12/30 - 1/5	1/5/2019	ND (<1.0)	0.5	0.0074
1/6 - 1/12	1/12/2019	ND (<1.0)	0.5	0.0074
1/13 - 1/19	1/19/2019	ND (<1.0)	0.5	0.0075
1/20 - 1/26	1/26/2019	ND (<1.0)	0.5	0.0077
1/27 - 2/2	2/2/2019	ND (<1.0)	0.5	0.0074
2/3 - 2/9	2/9/2019	ND (<1.0)	0.5	0.0071
2/10 - 2/16	2/16/2019	9.1	9.1	0.14
2/17 - 2/23	2/23/2019	8.6	8.6	0.13
2/24 - 3/2	3/2/2019	ND (<1.0)	0.5	0.0075
3/3 - 3/9	3/9/2019	ND (<1.0)	0.5	0.0068
3/10 - 3/16	3/16/2019	ND (<1.0)	0.5	0.0068
3/17 - 3/23	3/23/2019	ND (<1.0)	0.5	0.0073
3/24 - 3/30	3/30/2019	ND (<1.0)	0.5	0.0068
3/30 - 4/6	4/6/2019	ND (<1.0)	0.5	0.0070
4/7 - 4/13	4/13/2019	ND (<1.0)	0.5	0.0075
4/14 - 4/20	4/20/2019	ND (<1.0)	0.5	0.0071
4/21 - 4/27	4/27/2019	ND (<1.0)	0.5	0.0074
4/28 - 5/4	5/4/2019	ND (<1.0)	0.5	0.0073
5/5 - 5/11	5/11/2019	ND (<1.0)	0.5	0.0074
5/12 - 5/18	5/18/2019	ND (<1.0)	0.5	0.0074
5/19 - 5/25	5/25/2019	ND (<1.0)	0.5	0.0074
5/26 - 6/1	6/1/2019	ND (<1.0)	0.5	0.0073
6/2 - 6/8	6/8/2019	ND (<1.0)	0.5	0.0076
6/9 - 6/15	6/15/2019	ND (<1.0)	0.5	0.0072
6/16 - 6/22	6/22/2019	ND (<1.0)	0.5	0.0070
6/23 - 6/29	6/29/2019	ND (<1.0)	0.5	0.0071
6/30 - 7/6	7/6/2019	5.7	5.7	0.080
7/7 - 7/13	7/13/2019	11	11	0.16
7/14/ - 7/20	7/20/2019	3.5	3.5	0.051
7/21 - 7/27	7/27/2019	ND (<1.0)	0.5	0.0070
7/28 - 8/3	8/3/2019	4.4	4.4	0.063
8/4 - 8/10	8/10/2019	4.1	4.1	0.060
8/11 - 8/17	8/17/2019	ND (<1.0)	0.5	0.0070
8/18 - 8/24	8/24/2019	ND (<1.0)	0.5	0.0070
8/25 - 8/31	8/31/2019	13	13	0.19
9/1 - 9/7	9/7/2019	7.0	7.0	0.10
9/8 - 9/14	9/14/2019	ND (<2.5)	1.3	0.018
9/15 - 9/21	9/21/2019	ND (<1.0)	0.5	0.0073
9/22 - 9/28	9/28/2019	ND (<1.0)	0.5	0.0073
9/29 - 10/5	10/5/2019	ND (<1.0)	0.5	0.0072
10/6 - 10/12	10/12/2019	ND (<1.0)	0.5	0.0073
10/13 - 10/19	10/19/2019	ND (<1.0)	0.5	0.0073
10/20 - 10/26	10/26/2019	ND (<1.0)	0.5	0.0066
10/27 - 11/2	11/2/2019	NA	NA	NA

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
1/2/2019	7.33	ND (<0.25)	31	200	170	11	15	231	--	11	185^{++}	--	0.20	3.1
1/7/2019	7.21	ND (<0.25)	7.2	250	99	15	4.4	63	--	15	117^{++}	--	0.13	1.9
1/14/2019	6.77	ND (<0.25)	3.7	150	330	14	4.4	67	--	13	197	--	0.061	0.9
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
1/28/2019	6.98	ND (<0.25)	4.0	200	170	9.5	6.1	95	--	9.5	148	--	0.10	1.6
2/4/2019	6.58	ND (<0.25)	8.6	200	390	14	12	176	--	14	205	--	0.12	1.8
2/11/2019	6.88	ND (<0.25)	6.3	180	100	13	4.8	72	--	13	194	--	0.11	1.6
2/18/2019	6.91	ND (<0.25)	5.3	210	82	13	9.3	139	--	12	179	--	0.094	1.4
2/25/2019	6.74	ND (<0.25)	16	220	170	11	13	202	--	11	171	--	0.11	1.7
3/4/2019	6.64	ND (<0.25)	14	220	160	15	15	199	--	15	199	--	0.11	1.5
3/11/2019	6.57	ND (<0.25)	3.5	250	72	19	4.8	65	--	19	257	--	0.16	2.2
3/18/2019	6.82	ND (<0.25)	3.4	290	81	13	4.9	67	--	13	178^{++}	--	0.24	3.3
3/25/2019	6.69	ND (<0.25)	5.0	280	78	0.97	5.1	71	--	0.97	14^{++}	--	0.12	1.7
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
4/8/2019	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
4/15/2019	6.60	ND (<0.25)	3.2	300	72	ND (<0.50)	4.3	65	--	0.21	2.9^{++}	--	0.075	1.1
4/22/2019	6.88	ND (<0.25)	11	310	410	0.60	23	335	--	0.60	8.7^{++}	--	0.13	1.9
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
5/6/2019	6.50	ND (<0.25)	2.5	310	58	1.2	3.5	51	--	0.64	9.4^{++}	--	0.14	2.1
5/13/2019	6.78	ND (<0.25)	5.9	340	130	0.57	13	193	--	0.57	8.4^{++}	--	0.22	3.3
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
5/28/2019	7.05	ND (<0.25)	4.4	250	99	1.5	4.6	67	--	0.79	11^{++}	--	0.078	1.1
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
6/10/2019	6.63	3.5	2.8	360	73	1.6	7.5	105	--	1.0	14^{++}	--	0.16	2.2
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
6/24/2019	6.65	ND (<0.25)	ND (<2.5)	330	59	1.8	2.9	38	--	1.8	24^{++}	--	0.15	2.0
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
7/8/2019	6.59	ND (<0.25)	ND (<2.5)	310	ND (<50)	2.9	1.7	25	--	1.4	21	--	0.13	1.9
7/15/2019	6.77	ND (<0.25)	2.6	280	77	0.83	6.7	97	--	0.26	3.8	--	0.25	3.6
7/22/2019	6.62	ND (<0.25)	4.0	330	ND (<50)	ND (<0.50)	4.4	63	--	0.11	1.6	--	0.19	2.7
7/29/2019	6.77	ND (<0.25)	ND (<2.5)	360	72	ND (<0.50)	2.4	35	--	0.16	2.3	--	0.12	1.8
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
8/12/2019	6.59	ND (<0.25)	3.1	260	120	1.0	2.1	30	--	1.0	14	--	0.046	0.7
8/19/2019	6.59	ND (<0.25)	3.8	260	150	0.97	6.3	90	--	0.97	14^{++}	--	0.21	3.0
8/26/2019	6.55	ND (<0.25)	2.7	330	85	1.1	3.4	50	--	1.1	16	--	0.14	2.1
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
9/9/2019	6.51	ND (<0.25)	3.9	270	52	0.87	6.2	90	--	0.87	13	--	0.24	3.5
9/16/2019	6.52	ND (<0.25)	3.4	220	84	0.76	5.0	73	--	0.76	11	--	0.17	2.5
9/23/2019	6.70	ND (<0.25)	2.8	250	54	0.85	5.0	73	--	0.85	12	--	0.17	2.5
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
10/7/2019	6.63	ND (<0.25)	ND (<2.5)	280	72	7.3	2.2	32	--	6.6	96	--	0.15	2.2
10/14/2019	6.70	ND (<0.25)	ND (<2.5)	190	ND (<50)	11	3.7	54	--	8.6	125	--	0.24	3.5
10/21/2019	6.67	ND (<0.25)	ND (<2.5)	220	58	12	6.5	95	--	11	161	--	0.22	3.2
10/28/2019	6.50	ND (<0.25)	ND (<2.5)	270	67	12	8.5	123	--	11	159	--	0.32	4.6
11/4/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Date	mg/L		lbs/day
1/2/2019	2.7		42
1/9/2019	1.5		22
1/16/2019	2.6		40
1/23/2019	1.5		23
1/30/2019	0.78		11
2/6/2019	1.2		16
2/13/2019	1.1		16
2/20/2019	0.75		11
2/27/2019	0.55		8.3
3/6/2019	ND (<0.50)	0.25	3.4
3/13/2019	ND (<0.50)	0.25	3.3
3/20/2019	2.2		33
3/27/2019	ND (<0.50)	0.25	3.2
4/3/2019	ND (<0.50)	0.25	3.6
4/10/2019	ND (<0.50)	0.25	3.8
4/17/2019	ND (<0.50)	0.25	3.3
4/24/2019	1.4		21
5/1/2019	ND (<0.50)	0.25	3.7
5/8/2019	0.63		9.0
5/15/2019	ND (<0.50)	0.25	3.7
5/22/2019	1.4		21
5/29/2019	0.88		13
6/5/2019	ND (<0.50)	0.25	3.8
6/12/2019	ND (<0.50)	0.25	3.5
6/19/2019	1.9		27
6/26/2019	ND (<0.50)	0.25	3.7
7/3/2019	ND (<0.50)	0.25	3.6
7/10/2019	0.83		12
7/17/2019	ND (<0.50)	0.25	3.6
7/24/2019	ND (<0.50)	0.25	3.6
7/31/2019	ND (<0.50)	0.25	3.7
8/7/2019	1.5		22
8/14/2019	ND (<0.50)	0.25	3.5
8/21/2019	ND (<0.50)	0.25	3.4
8/28/2019	ND (<0.50)	0.25	3.6
9/4/2019	ND (<0.50)	0.25	3.7
9/11/2019	0.76		11
9/18/2019	1.0		15
9/25/2019	ND (<0.50)	0.25	3.7
10/2/2019	ND (<0.50)	0.25	3.7
10/9/2019	ND (<0.50)	0.25	3.5
10/16/2019	ND (<0.50)	0.25	3.7
10/25/2019	0.98		14
10/30/2019	1.4		NA
11/6/2019	NA		NA

Sample Date	mg/L
2/11/2019	4,500
5/1/2019	4,300
8/1/2019	4,200

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: November 8, 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	There was a power loss on NV Energy side causing a full power loss to the entire lift station and IX. NV Energy will make long term repairs to the metering box in Nov.
2		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running		2	Replaced the 7.5 hp motor and 150 gpm pump on ART-8A.
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	Replaced the gaskets on the CV lids.
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 pump and motor on AP-5 well E2-5. Replaced the motor on I-C. Replaced the motor on I-H.
4.02		*Ferrous Sulfate Feed System*	Running			
4.03		*Polymer Feed System*	Running			
4.04		*Clarifier*	In operation		3	Flushed the feed line between the clarifier and de-gassifier.
4.05		*Filter Press*	Running			
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		2	The bearings failed on the motor destroying the pump seal. The pump is offline until repairs can be made.
5.03	PID10A	*Pond Water Pump - P101B*	Standby			
5.04	PID10A	*Equalization Tanks*	In operation			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
5.05	PID10A	*Area in and Around EQ*	In operation			
5.06	PID10A	*Raw Water Feed Pump - P102A*				
5.07	PID10A	*Raw Water Feed Pump - P102B*				
5.08	PID10A	*F-101 Filters*	Running			
5.09	PID10B	*Carbon Absorber - LGAC 201A*	Running			
5.10	PID10B	*Carbon Absorber - LGAC 201B*	Running			
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	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		2	Replaced the actuator on the level control valve.
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		3	Replaced the head on the feed pump.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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	Rebuilt 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			
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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		3	The piping has a leak at the base of the tank. Parts have been ordered to replace the piping.
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	Installed the mini back flow preventors on the air lines
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			
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*				
12.02	PID17	*Filter Reject Tank*	In operation			
12.03	PID17	*Filter Reject Pump - P1701A*	Standby			
12.04	PID17	*Filter Reject Pump - P1701B*	Running			
13		**Effluent Tank and Pumping**				
13.01	PID10C	*UV Effluent Tank*	Running			
13.02	PID10C	*Effluent Booster Pump - P1302A*	Running			
13.03	PID10C	*Effluent Booster Pump - P1302B*	Standby			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
13.04	PID10C	*Area Around Effluent and North D-1*	Running			
14		**Solids Collection and Pressing System**				
14.01	PID16	*Sludge Storage Tank*	In operation			
14.02	PID16	*Solids Storage Effluent Pump - P1601*	Running			
14.03	PID16	*Solids Cond. Tank*	In operation			
14.04	PID09	*Sludge Mixer*	Running		3	Replaced the hardware on the mixer motor.
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			
24	PID07B	*Polymer Systems - DAF*	In operation			
25	PID09	*Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)*	In operation			
		Utility Systems				
26		**Compressed Air System**				
26.01	PID08	*West Compressor*	Running			
26.02	PID08	*East Compressor*	Running			
26.03	PID08	*O2 Compressor*	Running			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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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