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:	June 20, 2018
Subject:	NERT – GWETS Operation Monthly Report – May 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 May 2018.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in May 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 181 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,044 gpm during May 2018. At the end of the month, the GW-11 Pond volume was at 34.7 million gallons (MG), which would allow 19.3 days of available additional storage in the event of an emergency FBR plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond decreased approximately 0.9 MG from the end of April 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 0.85 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 116 mg/L for the month, with a maximum concentration of 120 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of April 2018 averaged 91 mg/l, with a maximum concentration of 110 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 May.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of April starting at a flow rate of 2.0 gpm and increasing to 2.5 gpm on the 20th of May and 3.0 gpm on the 25th of May. Flow rates were decreased back down to 2.0gpm on 29th of May through the end of the month. This reduction was necessary to maintain compliance with the reduced ammonia loading effluent limits for April through September specified in the NPDES permit.

There were nine Effluent diversions into GW-11 for the purposes of maintaining the GW-11 elevation level and six Influent diversions for the month of May. Five influent diversions were due to maintenance activities and one was due to an electrical outage that originated on the Tronox property. Below is a description of the events that occurred:

Diversion Events

- Effluent Diversion to GW-11 occurred on May 7, 2018 from 12:46pm to 6:24pm to maintain the GW-11 elevation level. Approximately 350,632 gallons of Effluent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on May 8, 2018 from 6:08am to 6:41am and 10:46am to 12:46pm due to maintenance activities on the P-1302a final effluent pump. Approximately 64,000 gallons of Influent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on May 11, 2018 from 8:31am to 9:03am due to maintenance activities on the P-1302b final effluent pump. Approximately 16,000 gallons were diverted to GW-11.
- Influent Diversion to GW-11 occurred on May 11, 2018 at 12:29pm to 12:37pm due to a power interruption originating within the Tronox leasehold. Approximately 9,000 gallons of Influent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 13, 2018 at 10:25am to 12:50pm to maintain the GW-11 elevation level. Approximately 152,000 gallons of Effluent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on May 15, 2018 at 9:15am to 9:29am, and from 9:38am to 9:43am due to maintenance activities in the replacement of a communication PLC card. Approximately 12,000 gallons of Influent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 16, 2018 at 11:45pm to 5:45am to maintain the GW-11 elevation level. Approximately390,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 17, 2018 at 11:45pm to 5:45am to maintain the GW-11 elevation level. Approximately383,000 gallons of Effluent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on May 18, 2018 at 1:15pm to 1:41pm due to maintenance activities associated with replacing VFD components for the P-1302a final effluent pump. Approximately26,000 gallons of Influent were diverted to GW-11.

- Effluent Diversion to GW-11 occurred on May 20, 2018 at 11:33pm to 5:33am to maintain the GW-11 elevation level. Approx. 378,000 gallons of Effluent were diverted to GW-11.
- Influent Diversion to GW-11 occurred on May 23rd, 2018 at 8:44am to 1:18pm due to scheduled electrical maintenance activities at the Motor Control Center. Approx. 138,000 gallons of Influent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 25, 2018 at 11:29pm to 5:32am to maintain the GW-11 elevation level. Approx. 405,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 27, 2018 at 11:18pm to 5:19am to maintain the GW-11 elevation level. Approx. 329,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 29, 2018 at 11:36pm to 5:33am to maintain the GW-11 elevation level. Approx. 389,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on May 30, 2018 at 11:16pm to 5:15am to maintain the GW-11 elevation level. Approx. 415,000 gallons of Effluent were diverted to GW-11.

3. Spills

There was one non-reportable release of partially treated effluent outside of containment of approximately 35 gallons in the month of May. On May 26th, 2018 at approximately 10:12pm ETI discovered a flexible line connected to an ORP meter at FBR-1 had split and water had sprayed out of containment. The damaged line was replaced and all other similar lines were inspected and repaired as necessary. ETI routinely replaces all flexible lines as part of its preventative maintenance program.

4. Maintenance

- Major maintenance performed by ETI in the month included:

  I. The VFD failed on P-1302A drive. This tripped the breaker to the entire MCC. The motor and pump are still in good working order. A new VFD and transformer were installed as well as the breaker. The pump came back online with no issues.
  II. New piping was installed on the discharge of the P-1302B pump.
  III. New ORP/pH lines were installed on FBR 4.
  IV. All of the bed height pumps were overhauled.
  V. The new 1'' bed height pump was installed with new piping on FBR 4.
  VI. A new evaporative cooler was installed on the maintenance building.
  VII. New pumps, and electrical connections, were installed on the NW and the SW pond corners.
  VIII. New auto blowdown solenoids with mufflers were installed on the DAF pressure tanks.
  IX. New airlines were installed in between FBR's 2 and 3.
  X. A new electrical connection was made up for interceptor well I-E.
  XI. New exhaust fans were installed on the east wall of the D-1 building to create better circulation near the air compressors.
  XII. The belts were replaced on the exhaust fans on the upstairs portion of the D-1 building and the unit was restarted.

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

  I. The ORP lines were replaced on the FBR skids.

II. The oil was changed on the north vertical turbine at Lift Station 1 and the packing was inspected.
III. All the motors were greased and tested for high temperature.
IV. All lift stations were inspected for any minor or major mechanical faults.
V. The oil was checked on the air compressors. Oil was added as needed on the east and west compressors.

GWETS Upgrades and Facility Projects

Alumina Chlorohydrate (ACH) Pilot Study – At the direction of the Trust, ETI is performing a pilot study to evaluate alternative coagulants to avoid the growth of iron bacteria within the Effluent pipeline. ETI has completed collecting background data to compare the current Ferric Chloride coagulant usage and is currently testing the ACH coagulant under existing conditions. It is anticipated the ACH pilot will be completed late June and subsequent report should be issued sometime in July.

Geo-tube Pilot Study – At the direction of the Trust, ETI is performing a pilot study to evaluate the use of Geo-tubes to increase the capacity of the Chromium Treatment Plant. The pilot test has begun and should be completed early June. Depending on the receipt of laboratory analysis, the report should be completed in early July.

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]	744 [5]	3.9	0.00086	0.0011
AWF Total Extraction[1]	465 [5]	67	0.16	0.17
IWF Total Extraction[1]	60 [5]	628	8.6	7.8
AP Area Total Extraction[1]	9.4 [5]	997	0.055	0.051
GWTP Effluent [2]	75	729	0.16	ND
GW-11 Influent[1]	2.4	63	0.069	0.050
FBR Influent[2 3]	1,044	116	0.050	0.043
T-205 Effluent (AP-5 Wash Water)[3 4]	2.2	13,187	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	1,095	0.24	0.32
AWF Total Extraction	11,684	28	29
IWF Total Extraction	14,014	192	174
AP Area Total Extraction	3,513	0.19	0.18
GWTP Effluent	20,397	4.5	ND
GW-11 Influent	57	0.063	0.045
FBR Influent[1]	44,974	19	17
T-205 Effluent (AP-5 Wash Water)[1 2]	10,834	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.

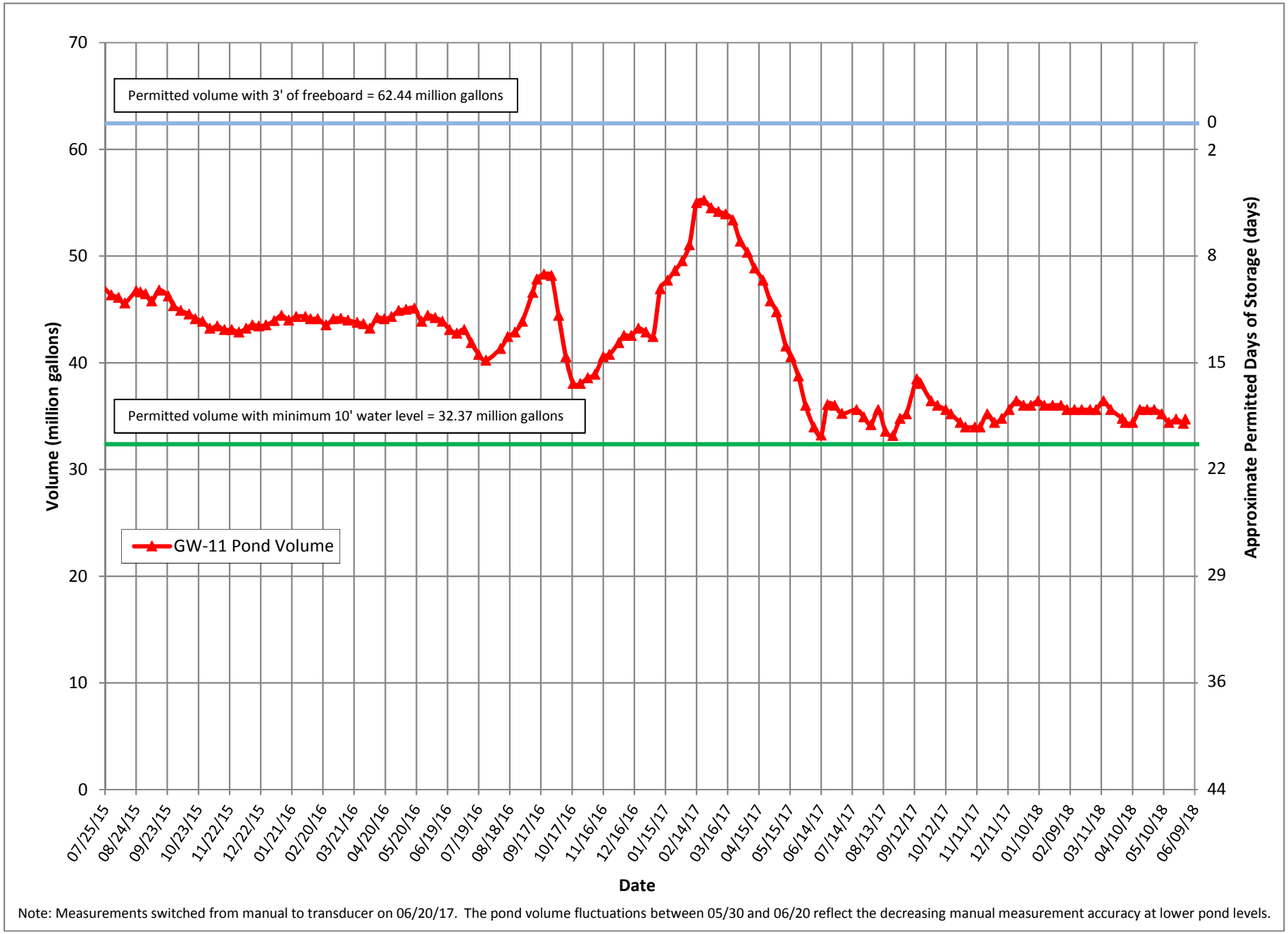
2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

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

Figures

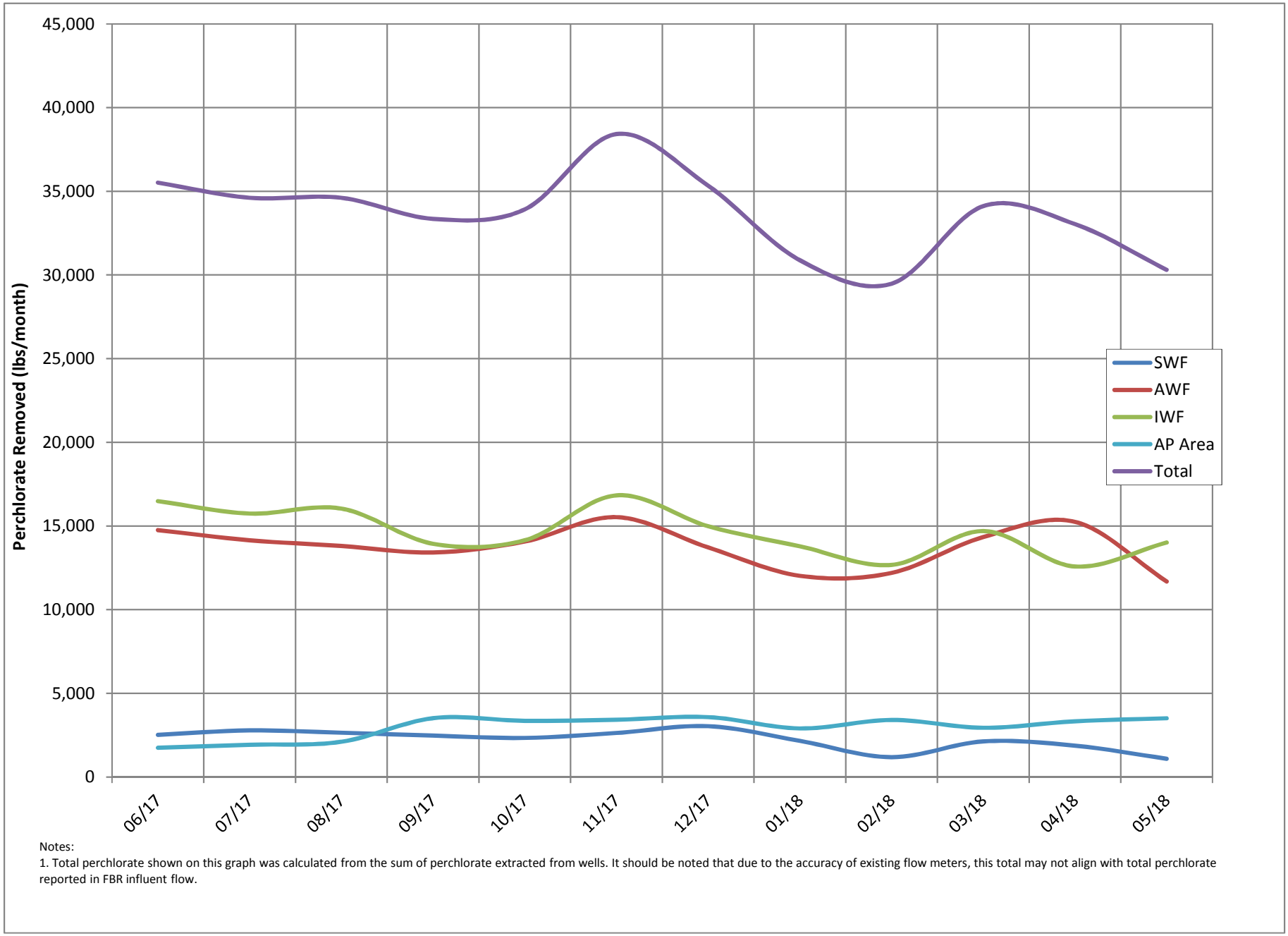
Operational Metrics

Nevada Environmental Response Trust
GW-11 Pond Volume
Update 5/31/2018



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



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.

Updated: 6/18/2018

Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

Treated Effluent at Outfall 001

	Continuous: Flow Rate 30-Day Avg. (MGD)	Continuous: Flow Rate Daily Maximum (MGD)	Daily Samples, composited weekly: Perchlorate 30-Day Avg. (µg/L)	Daily Samples, composited weekly: Perchlorate 30-Day Avg. (lbs/day)	Weekly Grab Samples: pH Daily Min. (S.U.)	pH Daily Max. (S.U.)	Hexavalent Chromium Daily Max. (µg/L)	Total Chromium Daily Max. (µg/L)	Manganese Daily Max. (µg/L)	Total Iron Daily Max. (µg/L)	Total Inorganic Nitrogen (TIN) Daily Max. (mg/L)	Total Suspended Solids (TSS) Daily Average (mg/L)	Total Suspended Solids (TSS) 30-Day Avg. (lbs/day)	Total Ammonia as N 30-Day Avg. (lbs/day)	Total Phosphorus as P 30-Day Avg. (lbs/day)	Weekly, collected separately: BOD_5 (inhibited) 30-Day Avg. (mg/L)	BOD_5 Daily Max. (mg/L)	BOD_5 30-Day Avg. (lbs/day)	Quarterly: Total Dissolved Solids (TDS) Daily Max. (mg/L)
Limit	**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	4,000
May 2018 (month to date)	1.70	1.85	0.8	0.012	6.89	7.00	ND (<0.25)	9.4	360	2,400	1.6	13	180	2.4	3.1	1.4	2.2	23	

Daily Grab Sample Dates	Composite Sample Date	Perchlorate	µg/L	lbs/day	Sample Date	S.U.	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	lbs/day	Ammonia	mg/L	lbs/day	Phosphorus	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++	--	0.082	1.3	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	--	0.13	1.9	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++	--	0.11	1.7	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++	--	0.18	2.8	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	--	0.11	1.7	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++	--	0.047	0.71	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	--	0.0555	0.840	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	--	0.11	1.7	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	--	0.19	2.8	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	--	0.24	3.6	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++	--	0.22	3.3	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	--	0.11	1.6	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	--	0.13	2.0	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	--	0.29	4.3	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++	--	0.17	2.3	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	--	0.14	1.9	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++	--	0.16	2.3	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	--	0.057	0.82	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++	--	0.53	6.4	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++	--	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++	--	0.086	1.3	5/23/2018	1.2		15		
5/27 - 6/2	6/2/2018	ND (<1.0)	0.5	0.0067	5/29/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5/30/2018	ND (<0.50)	0.25	NA		
					6/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6/6/2018	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)

-- = 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: June 8, 2018

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		2	The N.Turbine had a reduction in flow. The turbine was pulled and debris was pulled from the intake and the pump was placed back in place. The flow increased back to the original flow rate.
1.03		*Lift Station 1 Lift Pump B*	Standby			
1.04		*Area in and around Lift Station 1*	Running			
2		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running			
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	New A/C's were installed on the MCC cabinets to control temp through the summer.
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	Installed a mechanical shroud to shield any water that may leak from the mechanical seal area.
3.05		*Area in and around Lift Station 2*	Running			
4		**Interceptor Wells and Cr Treatment Plant**				
4.01		*IWF Well Field, 30 wells*	Running		2	A new electrical connection was installed on I-E.
4.02		*Ferrous Sulfate Feed System*	Running			
4.03		*Polymer Feed System*	Running			
4.04		*Clarifier*	In operation			
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		3	New electrical connections, pump, and motor was installed on the SE corner and a new pump was installed on the NW corner.

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
5.02	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			
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*				
6.04	PID14	*P1401A*				
6.05	PID01A	*P1401B*				
6.06	PID01A	*FBR 1*	Running		3	The bed height pump was rebuilt and put back online.
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*	Running			
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		3	The bed height pump was rebuilt.

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
7.02	PID01B	*FBR 4*	Running		3	The bed height pump was rebuilt.
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		3	The trunnions were replaced on the spare pump
8.04	PID03A	*Media Return Pump - P3011*	Running			
8.05	PID03A	*Second Stage FBR Pump - P3015*	Running			
8.06	PID03A	*Second Stage FBR Pump - P3016*	Standby			
8.07	PID03A	*Second Stage FBR Pump - P301A*	Running			
8.08	PID07A	*FBR 5 pH Feed Pump - P715*	Off			
8.09	PID07A	*FBR 6 pH Feed Pump - P716*	Off			
8.1	PID07A	*FBR 5 Nutrient (Urea) Feed Pump - P725*	Off			
8.11	PID07A	*FBR 6 Nutrient (Urea) Feed Pump - P726*	Off			
8.12	PID07B	*FBR 5 Electron Donor Assembly Pump - P735*	Running			
8.13	PID07B	*FBR 6 Electron Donor Assembly Pump - P736*	Running			
9		**Second Stage FBRs 7** & 8				
9.01	PID03B	*FBR 7*	Running			
9.02	PID03B	*FBR 8*	Running			
9.03	PID03D	*Second Stage Separator Tank - T3012*	Running			
9.04	PID03B	*Media Return Pump - P3012*	Running			
9.05	PID03B	*Second Stage FBR Pump - P3017*	Running			
9.06	PID03B	*Second Stage FBR Pump - P3018*	Running			
9.07	PID03B	*Second Stage FBR Pump - P302A*	Running			
9.08	PID07A	*FBR 7 pH Feed Pump - P717*	Off			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
9.09	PID07A	*FBR 8 pH Feed Pump - P718*	Off			
9.10	PID07A	*FBR 7 Nutrient (Urea) Feed Pump - P727*	Off			
9.11	PID07A	*FBR 8 Nutrient (Urea) Feed Pump - P728*	Off			
9.12	PID07B	*FBR 7 Electron Donor Assembly Pump - P737*	Running			
9.13	PID07B	*FBR 8 Electron Donor Assembly Pump - P738*	Running			
10		**Aeration and DAF System**				
10.01	PID04	*Aeration Tank*	In operation			
10.02	PID04	*Aeration Blower - B401*	Running			
10.03	PID04	*Bio filter*	In operation			
10.04	PID04	*Nutrient Solution*	Running			
10.05	PID04	*Bio filter Sump*				
10.06	PID04	*Nutrient Pump - P401*	Running			
10.07	PID04	*Bio filter Sump Pump - P402A*	Standby			
10.09	PID04	*Bio filter Blower*	Running			
10.10	PID05	*DAF Pressure Tanks*	In operation		4	New blow down solenoids were installed with new mufflers.
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		2	The pump was swapped out for a larger pump to meet the demand of the flow.
11.03	PID06	*Effluent Pump - P602*	Standby			
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*			4	The air spurge system was reconnected and is ready for use.
12.02	PID17	*Filter Reject Tank*	In operation		4	The solids were removed from the tank.
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		1	The VFD failed tripping off the entire MCC. A new VFD and choke were installed and the pump was brought back online.

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13.03	PID10C	*Effluent Booster Pump - P1302B*	Standby		2	A new spool piece was installed on the discharge of the pump.
13.04	PID10C	*Area Around Effluent and North D-1*	Running		4	New supply and exhaust fans were installed on the south side off the D-1 building for better air circulation of near the air compressors.
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	*Ferric Chloride System*	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			

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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			Spares are on the shelf
		Interceptor Well Pumps (4 each)	In stock			More motors are on order
		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.

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