To:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Jeff Lambeth, Director of Operations
Date:	February 20, 2017
Subject:	NERT – GWETS Operation Monthly Report – February 2017

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 February 2017.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS normally in February 2017. The ion exchange (IX) system began operation on February 9, 2017 and received flow from extraction wells PC-118, PC-119, PC-120, PC-121, and PC-133, bypassing the FBR plant. The flow rate to the IX system averaged approximately 230 gallons per minute (gpm) during the portion of the month it was operational. The flow rate to the FBR plant averaged approximately 1,017 gpm during February 2017. At the end of the month, the GW-11 Pond volume was at 54.5 million gallons (MG), which would allow 5.5 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 approximately 5.0 MG from the end of January 2017. The increase in volume of GW-11 was primarily a result of an increase in pumping of the extraction wells above what could be treated by the FBRs prior to operation of the IX system and a 28 hour diversion event described in the following section. The TK-101 tanks (as opposed to the GW-11 pond) were used for influent equalization for approximately 83% of the reporting period. When using these tanks, excess flows (i.e. flow that cannot be treated by the FBRs) are routed to GW-11 through unmetered overflow piping that are not reflected in the GW-11 Influent flow rate. This increase in pond volume during the reporting period was by design and inherent to NERT's operating strategy after consultation with the agencies. 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 2.5 mg/L for the month (flow-weighted average for the contributing wells). The influent perchlorate concentration to the FBR plant averaged 103 mg/L for the month, with a maximum concentration of 110 mg/L. In comparison, the influent perchlorate concentration for the month of January 2017 averaged 100 mg/l, with a maximum concentration of 110 mg/l.

Analytical data indicate that the permitted effluent discharges at GWETS Outfall 001 were within the NPDES permitted numerical discharge limits (Please see Attachment A, prepared by Ramboll Environ).

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. Figure 2 graphically presents historical perchlorate and chromium mass flux information.

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

- ETI began using the GW-11 pond for influent equalization beginning February 9th at 3:00pm. Flow from the GW-11 pond was reduced on February 14th at 8:35 am and combined with Lift Station flow in the TK-101 tanks for equalization purposes. The average influent flow rate reported in Table 1 includes 23.5 days of no metered flow. As such the mathematical average is substantially lower than the actual flow rate when GW-11 was used for influent equalization.

2. Biological Plant

There were no significant plant interruptions. There was one unplanned diversions into GW-11 for the month of February. Below is a description of the event that occurred:

- Effluent Diversion to GW-11 on February 11th from 8:36 pm to February 12th 12:25 pm. The plant effluent was diverted due to underperforming biological activity in the FBR's and the presence of detectable concentrations of perchlorate in the effluent water. Adjustments were made by ETI and effluent discharge to the Las Vegas Wash resumed following laboratory verification of water quality. During this diversion, approximately 1.86 MG of effluent was returned to GW-11 resulting in an increase of water stored in GW-11.

3. Spills

There were no reportable spills in the month of February.

4. Maintenance

- Major maintenance performed by ETI in the month included:

I. P2012 Media Return Pump - The overload switch was undersized for the newly installed motor. ETI installed a temporary overload switch and ordered a replacement switch.
II. AE601 DAF Turbidity Meter – ETI replaced the turbidity sensor and light bulb.
III. FI502 DAF, D501 – The recycle flow orifice plate had rusted. ETI replaced it with a new plate.
IV. FI506 DAF, D551 – The recycle flow orifice plate had rusted. ETI replaced it with a new plate.
V. Well PC-121 – The 5 hp motor and the electrical "pigtail" were replaced.
VI. Well I-L–The pump was pulled by ETI and a new ½ hp motor was installed. All other hardware was in good working condition.
VII. T1702 Sand filter – The sand filter was taken offline for repairs. The sand washers were repaired, new airlines were installed, the airlifts were rebuilt, and the sand was removed and washed by an outside contractor. *Sand Filter repairs were completed and the filter was brought back online 3-7-17.*
VIII. P737 Electron Donor pump – The pump was replaced with the spare and a new pump was

ordered to replace the shelf spare.

IX. FBR Recycle Skids – # 12'' Durco butterfly valves were replaced with new 12'' Brays butterfly valves.

X. FBR 5/7 – Carbon was loaded into the FBR's.

XI. FBR 5 – A new Hayward 12'' swing check was installed on the discharge of P-3015 to replace the worn Technocheck 12'' butterfly check valve. A new spool piece was also constructed and installed to accommodate the size difference.

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

I. Sequence Test - ETI tested all signals related to the auto plant shutdown sequence.

II. PH and ORP online analyzers - ETI Calibrated and Standardized Units with buffer solutions.

III. Plant Computer - ETI generated a backup and cleaned the air filters for the computer enclosures.

IV. Pond (GW-11) Level Sensor - ETI removed and cleaned level sensor and checked the signal loop to the control room.

V. AWF buddy wells – the wells were tested for proper operation.

VI. DAF vessels – the vessels were inspected for proper operation.

VII. Air Compressors - Ingersoll Rand performed routine maintenance on the air compressors.

GWETS Upgrades and Facility Projects

The following is a summary of the initiatives in-progress during the reporting period at the direction of the Trust:

1. **AP-5 Solids Removal**
   Tetra Tech continued to move forward with the AP-5 Solids Removal project and completed transfer of the contents of the AP-5 Pond to the tanks. Sediment washing was initiated as the material was transferred to the tank but decant liquids are not expected to be ready for treatment until mid-2017.
2. **Lift Station #1 upgrades**
   The Ion Exchange system began operation in February. Record drawings and a Revised O&M manual were also completed and delivered to NDEP. This project is now complete.
3. **IWF well modifications**
   A proposal for the IWF has been prepared to address the Trust's desire to improve the flow meter accuracy and installation of VFDs on the extraction pumps. This proposal was submitted by ETI Engineering and is currently under review by the Trust.
4. **Spill containment enhancements**
   The work authorization for secondary containment modifications has been issued by the Trust. Work will begin in March 2017.

ECT Audit Findings

ETI has been addressing the recommendations provided in the Independent Audit of the GWETS performed by ECT. All activities are largely complete and as such, future reporting will cease. ETI will continue to work with the Trust on the implementation of long term items. Table 3 summarizes the status of the ECT Audit findings. Progress is reported in the Status column. Updates from the prior reporting period appear in bold, underlined text.

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)[5 6]**	**Chromium (TR) (mg/L)[5 6]**	**Chromium(VI) (mg/L)[5 6]**
SWF Total Extraction[2]	633.8[1]	7.5	0.0027	0.00044
AWF Total Extraction[2]	405.1[1]	99	0.18	0.19
IWF Total Extraction[2]	64.7[1]	818	7.0	7.1
AP Area Total Extraction[3]	5.2	1,415	NA	0.034
GWTP Effluent[4]	79.7	795	0.21	ND
GW-11 Influent[2]	157.5	78	0.10	0.078
GW-11 Effluent/ FBR Influent[4]	1,017.4	103	0.065	0.057

Notes:

TR = Total Recoverable; NA = Not Analyzed; ND = Not detectable above laboratory method detection limit (Chromium (VI) = 0.25 ug/L).

1: Sum of daily average flow for individual wells.

2: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.

3: Perchlorate, chromium TR and chromium (VI) sampled twice weekly, values reported from TestAmerica.

4: Perchlorate, chromium TR and chromium (VI) sampled weekly, values reported from TestAmerica.

5: All concentrations reported are monthly flow weighted averages.

6: ND analytical values are treated as zero values in the flow weighted average calculations.

Table Updated: 3/16/2017

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics			
Location ID	**Perchlorate (lbs/month)[1]**	**Chromium (TR) (lbs/month)[1]**	**Chromium (VI) (lbs/month)[1]**
SWF Total Extraction	1,607	0.57	0.09
AWF Total Extraction	13,540	25	26
IWF Total Extraction	17,838	152	155
AP Area Total Extraction	2,481	NA	0.06
GWTP Effluent	21,364	5.7	0.00
GW-11 Influent	4,138	5.3	4.1
GW-11 Effluent/FBR Influent	35,404	22	20

Notes:

TR = Total Recoverable; NA = Not Analyzed.

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

Table 3 - Status of ECT Audit Recommendations

LS #1 and Seep Field			
Number	**Ranking**	**Issue Description**	**Status**
1	Priority A	Lift Station #1 should be evaluated for repair and upgrade. a. A high priority should be placed on abandoning and replacement of the flexible hoses and the aging parallel piping at Lift Station #1. b. Lift Station #1 should be re-evaluated to assure that the designs, and the materials of construction, are consistent with the current and future facility needs in full recognition that this operation is likely to continue for a significant period of time.	*Completed The flexible hoses were replaced as part of the IX Upgrade. Rigid above ground extraction well piping will be replaced following startup of the new IX treatment system.* *During the design of the Lift Station 1 upgrades ETI selected materials of constructed to ensure long-term reliability.*
2	Priority A	The SWF vaults should be sealed using commercially available sealants used in Industry and wastewater treatment to prevent exfiltration.	*Completed. ETI inspected all Seep Well Field vaults and sealed all vault penetrations with recommended foam.*
3	Priority A	The SWF well fields should be inspected and aging wells replaced as practicable. Much of the above grade plumbing is old and unreliable. Also, some of the wells cycle on and off fairly rapidly. This would indicate that the groundwater has been lowered or more likely, the well screens have become fouled, limiting the flow into the well. The local hydrogeology around the rapidly dewatering wells should be analyzed and the wells should be replaced if it is determined that they have become fouled.	*In Process* *The flexible hoses were replaced as part of the IX Upgrade. Rigid above ground extraction well piping will be replaced following startup of the new IX treatment system.* *Aquifer evaluation of the SWF is currently ongoing as part of the COP. If necessary, well maintenance activities will be performed to improve well yield.*
4	Priority A	The Audit Team recommends that ETI consider using a screening process capable of managing a higher solids content to address issues including the Boatmen bug spawns.	*Closed - This issue occurs twice per year in spring and fall for a few weeks each time. ETI feels this is not necessary in light of future plans for the GW-11 pond, and this issue would be mitigated by those plans. Based on ETI's research, this is a common problem in ponds in the area.*
5	Priority A	The auditors observed an area where crystals of unknown nature have formed at PC-99 R2/R3. NERT should sample the observed crystals and analyze their composition at the earliest opportunity. The R3 well enclosure had standing water and crystals formed both inside and outside of the well vault. The Audit Team also noted a damp area extending from the R3 vault to about 10 to 15 feet from the enclosure. The Audit Team did not collect samples from the damp area or of the observed crystals. While it is possible that the observed crystals are not perchlorate but rather salts resulting from the extremely hard water in the area, with no data available, caution should be observed.	*Closed* *Crystals were hard water calcium from a leaking flange gasket. This area was cleaned and a new gasket was installed.* *NERT collected a soil sample immediately below the salt crystals previously observed on November 18, 2016 for laboratory analysis. During the sampling event NERT discovered that the salt crystals were no longer present on the side of the well vault. Salt crystals in this area tend to be transient in nature. The analytical*

			results indicate the presence of perchlorate in soil at a concentration of 19 mg/kg. This concentration is below the NDEP's Residential Basic Comparison Level. However, this situation will be further evaluated as part of the Phase 2 Remedial Investigation.
6	Priority B	A detailed inspection of the SWF underground piping should be performed to estimate the remaining useful life.	*Closed* *As part of the RI/FS NERT will re-evaluate the SWF and its conveyance piping.*
7	Priority B	All abandoned equipment should be removed from the operating areas of the operation. To be further examined by the Trust.	*Ongoing* *Abandoned equipment will be removed as various upgrades occur throughout the plant.*
8	Priority B	The access doors at the SWF vaults should be replaced with doors that have modern safety latches and are physically manageable in order to make inspection access easier for the operating staff.	*Closed* *ETI does not believe that modifications are necessary to operate the doors. Our staff believe they can safely operate the doors.*
9	Priority B	Concurrent with plans to expand the loading of perchlorate to the FBRs, the capacity of the solids handling systems in general, and the DAFs specifically, should be evaluated for upgrade.	*Closed* *Completed, both of the DAFs have recently been rehabilitated. The DAF design is more than adequate for the solids generated a full plant load.*
10	Priority B	The remaining Penn Valley Double Disc Pumps should be replaced with air-driven double diaphragm pumps as they fail. There should be a review of the need for additional process air to operate the new pumps.	*In Process* *Currently ETI is in progress with the pump replacements. Three of the four pumps have been replaced with air-driven diaphragm pumps,\ the remaining Penn Valley Double Disc Pump will be replaced as they fail.*
11	Priority C	A hydraulic analysis should be performed from the discharge port of the variable frequency pumps to the discharge point at the Las Vegas Wash to identify (and eliminate) the areas of highest flow loss.	*Complete* *NERT has completed a pipeline flow evaluation and is planning infrastructure upgrades in 2017 to address this issue.*
12	Priority C	As the submersible pumps reach the end of their useful life, they should be replaced with more appropriate technology, such as vertical turbine pumps, for increased reliability and ease of service.	*Complete* *Vertical turbine pumps were installed as part of the upgrade project for both LS-3 and LS-2.*

Job Cal (Maintenance Management Program) and Data Control			
Number	**Ranking**	**Issue Description**	**Status**
1	Priority A	Incorporate all contractor supplied maintenance into the JobCal system.	*Complete* *All contractor supplied maintenance activities are being logged in the JobCal computer maintenance management system.*
2	Priority B	Improve detail captured in JobCal to include actual level of effort expended in repairs.	*Complete* *ETI has worked with the staff to improve the capture of information and detail*

			that is logged into the JobCal computer maintenance management system.
3	Priority B	Streamline the management of water quality data to assure accountability.	*Complete* *NERT has established a new data transfer protocol that streamlines the management of water quality data amongst the NERT team members. External accessibility will be improved with the implementation of GWETS/NET*
Operations Monitoring			
Number	**Ranking**	**Issue Description**	**Status**
1		Complete conversion of All SCADA systems to a single system – presumably the Siemens system.	*In Process* *The existing Chromium Treatment Plant control system will be replaced when this plant is upgraded or replaced.*
2		Incorporate online access and back-up to allow ETI experts to remotely observe and control operations.	*Completed by NERT* *GWETS/NET will provide remote access to operational data by NERT and ETI.*
Facilities Maintenance			
Number	**Ranking**	**Issue Description**	**Status**
1	Priority A	Infrared electrical surveys should continue to document any potential degradation of electrical and mechanical connections over time and use.	*Complete* *The initial plant survey was completed and actions where needed was taken. The next survey has been incorporated into Job Cal as a re-occurring (PM) event, and is scheduled again for December 2016.*
2	Priority A	The electrical grounding within the plant should also be reassessed to make sure that no ground faults are present.	*Complete* *ETI brought in a certified electrician who identified motor skids that were not properly grounded. Since then ETI has installed grounding where it was missing. Based on the site electrical drawings, all known discrepancies have been addressed.*
3	Priority A	Limit the length of wiring run from the VFD to the motor/pump units to a maximum of 150 feet.	*Complete* *Any VFD systems to be installed will have a limited cable run, less than 150 feet or based on manufacturers recommendations.*
4	Priority A	The motor bearings in motor units operated with VFDs should be lubricated utilizing conductive grease to prevent electrical arching within the motor bearings even if a ground fault occurs.	*Complete* *ETI is currently using conductive grease. The use of conductive grease is currently being logged into Job Cal.*
5	Priority A	Utilize full Asset Management Capabilities of Job Cal. As per above,	*Complete* *ETI has further leveraged Job Cal and will continue to expand its use in facility operations.*

6	Priority A	Incorporate age of equipment and expected serviceable life for all major equipment.	*Complete* *ETI has further leveraged Job Cal and will continue to expand its use in facility operations.*
7	Priority A	Incorporate all contractor supplied maintenance into the JobCal system.	*Complete* *ETI has further leveraged Job Cal and will continue to expand its use in facility operations.*
8	Priority B	Improve detail captured in JobCal to include actual level of effort expended in repairs.	*Complete* *ETI has further leveraged Job Cal and will continue to expand its use in facility operations.*
Training			
Number	**Ranking**	**Issue Description**	**Status**
1	Priority B	Improved documentation of operator training is recommended. The operators have been taught how to operate the equipment but the documentation and supporting information for training provided and received was lacking – unlike the other training provided on-site.	*In Process* *ETI is continuing to improve new employee training and documentation of said program. The training program and the appropriate documentation will be complete by April 2017.*
HazWaste and Recycling			
Number	**Ranking**	**Issue Description**	**Status**
1	Priority B	Install a can puncturer and develop a program to handle aerosol cans to assure that the waste cans are “RCRA empty” at atmospheric pressure.	*Complete* *Complete and on-site.*
2	Priority B	Containers storing used oil should be labeled correctly and be moved to a location where they are protected from the elements.	*Complete*
3	Priority C	As a good management practice for CESQGs obtain an EPA identification number.	*Completed by NERT*.
4	Priority C	As a good management practice for CESQGs develop and maintain a waste manifest tracking log to manage all of the shipping and receiving manifests for all waste shipments.	*Completed by NERT*
5		Continue to manage universal waste per the universal waste requirements.	*Complete and Ongoing*
6	Priority C	Develop a more concise chemical inventory with annual capacities and usages for all applicable chemicals.	*In Progress* *All chemicals are inventoried each month. Usage of each chemical is logged into the HACH Wims Data Management software.*
7	Priority C	An applicability study should be completed to determine if the facility is subject to TRI Form R reporting.	*Closed* *After review, ETI does not see the need for this study and is in complete compliance with all reporting currently required.*

Notes:

Changes in activity status from the prior month are displayed in the Status column with **bold, underlined font**.

Figures

Operational Metrics

Nevada Environmental Response Trust
GW-11 Pond Volume
Update 2/28/2017

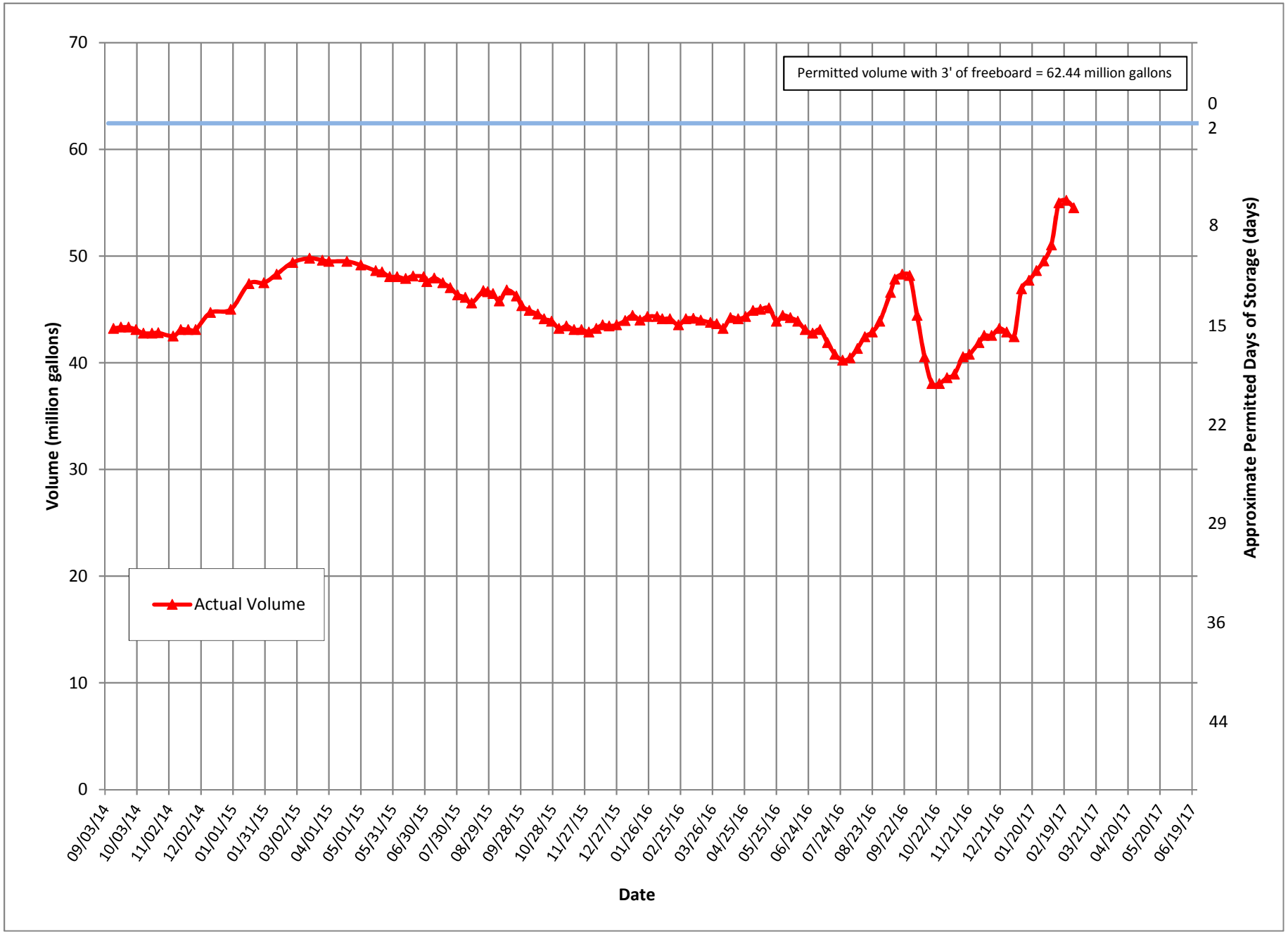
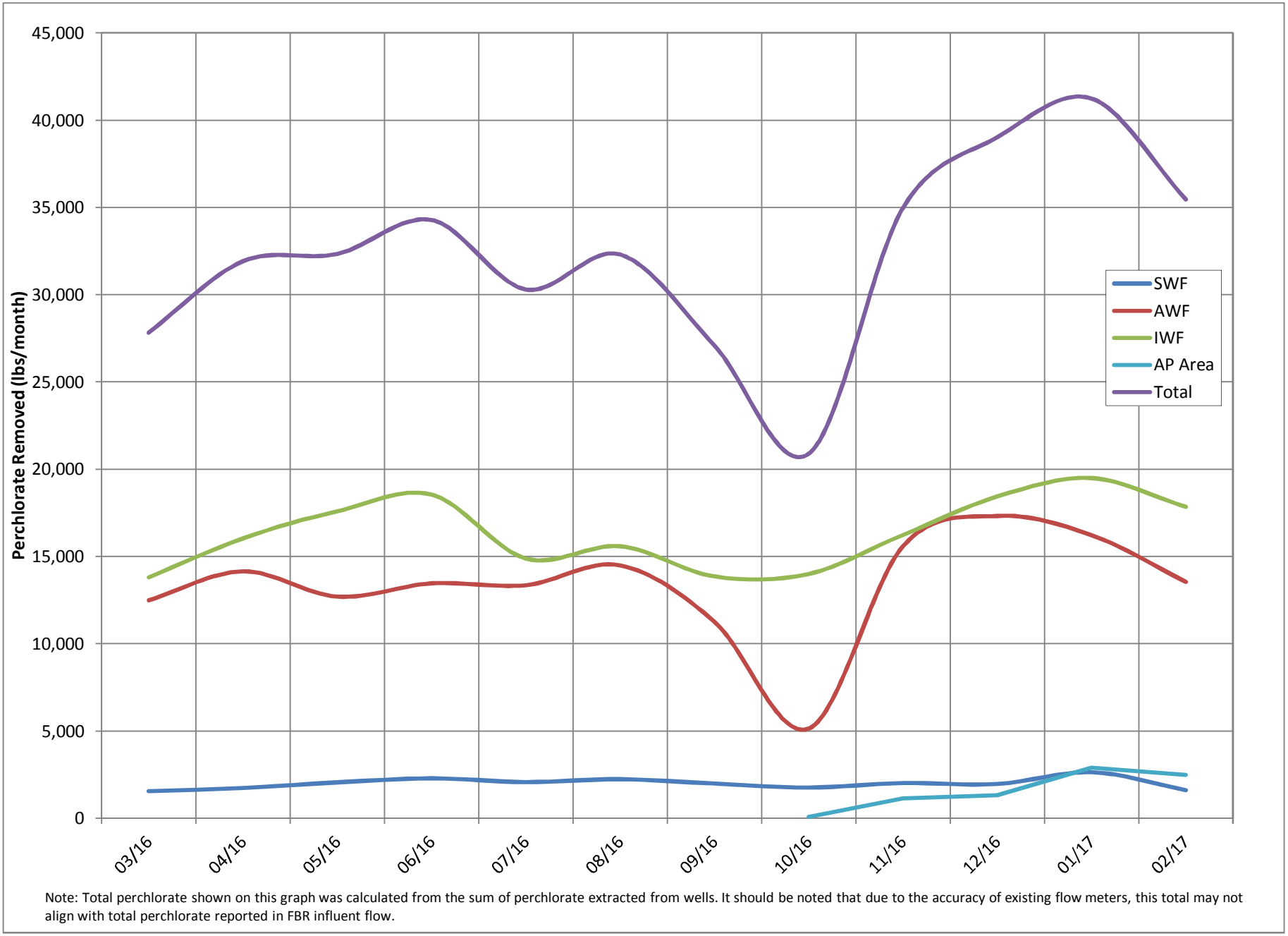


Figure 2 - Historical Perchlorate Mass Flux



Note: 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: 3/16/2017

Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Treated Effluent at Outfall 001

	Continuous		Daily Samples, composited weekly		Weekly Grab Samples											Weekly, collected separately			Quarterly
	Flow Rate		**Perchlorate**		**pH**		**Hexavalent Chromium**	**Total Chromium**	**Manganese**	**Total Iron**	**Total Inorganic Nitrogen (TIN)**	**Total Suspended Solids (TSS)**		**Total Ammonia as N**	**Total Phosphorus as P**	**BOD_5 (inhibited)**			**Total Dissolved Solids (TDS)**
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (µg/L)	30-Day Avg. (lbs/day)	Daily Min. (S.U.)	Daily Max. (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Max. (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 2017	1.38	1.42	1.3	0.014	6.75	7.13	0.125	30	510	9,600	0.60	62	370	4.8	1.1	2.4	4.3	28	5,400
February 2017	1.28	1.44	9	0.08	6.72	7.16	0.125	36	530	4,200	0.59	25	220	3.2	0.9	5.7	8.4	59	

Daily Grab Sample Dates	Composite Sample Date		µg/L	lbs/day
1/1 - 1/7	1/7/2017	ND (<2.5)	1.3	0.014
1/8 - 1/14	1/14/2017	ND (<2.5)	1.3	0.015
1/15 - 1/21	1/21/2017	ND (<2.5)	1.3	0.015
1/22 - 1/28	1/28/2017	ND (<2.5)	1.3	0.014
1/29 - 2/4	2/4/2017	ND (<2.5)	1.3	0.014
2/5 - 2/11	2/11/2017	34^	34	0.29
2/12 - 2/18	2/18/2017	ND (<2.5)	1.3	0.014
2/19 - 2/25	2/25/2017	ND (<2.5)	1.3	0.015
2/26 - 3/4	3/4/2017	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
1/3/2017	6.76	ND (<0.25)	8.0	280	3,100	ND (<0.50)	26	300	--	0.35	4.0	--	0.046	0.53
1/11/2017	7.03	ND (<0.25)	30	410	9,600	0.60	62	728	--	0.60	7.0	--	0.13	1.5
1/16/2017	7.13	ND (<0.25)	17	510	3,400	ND (<0.50)	27	313	--	0.23	2.7	--	0.078	0.91
1/24/2017	6.89	ND (<0.25)	29	480	3,100	ND (<0.50)	22	247	--	0.37	4.2	--	0.079	0.89
1/30/2017	6.75	ND (<0.25)	16	390	3,100	0.52	23	263	--	0.52	5.9	--	0.13	1.5
2/6/2017	7.00	ND (<0.25)	21	460	4,200	ND (<0.50)	25	211	ND (<0.10)	0.050	0.42	--	0.13	1.1
2/13/2017	7.16	ND (<0.25)	36	320	340	ND (<0.50)	19 24	206 260	--	0.12	1.3	--	0.11	1.2
2/21/2017	6.73	ND (<0.25)	10	480	3,900	0.59	19	224	--	0.59	7.0	--	0.059	0.70
2/27/2017	6.72	ND (<0.25)	8.9	530	3,400	ND (<0.50)	19	222	--	0.36	4.2	--	0.046	0.54
3/6/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Sample Date		mg/L	lbs/day	Sample Date	mg/L
1/4/2017		2.2	25		
1/11/2017	ND (<0.50)	0.25	2.9	1/10/2017	5,400
1/18/2017		4.3	50		
1/25/2017		2.9	33		
2/1/2017		3.9	45		
2/10/2017		8.4	71		
2/15/2017		5.2	56		
2/22/2017		5.4	64		
3/1/2017		NA	NA		
3/8/2017		NA	NA		

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in Irvine, California, unless otherwise indicated.
^ Following reciept of the 34 ug/L sample result, the individual daily effluent samples collected between 2/5 and 2/11 were submitted for perchlorate analysis. The individual effluent samples were also composited by the laboratory to create a new effluent composite sample. All re-analyzed effluent samples were non-detect for perchlorate.
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: March 10, 2017

Attachment B

Equipment Tracking Form

Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
		Main Plant Equipment				
1		**Seep Wells and Lift Station 1**				
1.01		*Seep Well Field, 9 wells*	Running		2	The 3" CPVC piping on PC-99r3 was replaced as the glue joints showed signs of wear.
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		4	Contractors continued work around the liftstation including painting, removal of old hardware and housekeeping from the upgrade. The sample tray was reconnected. The saddle tap was removed and cleaned to ensure a good seal on the header.
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		2	The new combo valves have been received. A scheduled down will be set up for installation.
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	A new 1/2hp motor was installed on I-L.
4.02		*Ferrous Sulfate Feed System*	Running			
4.03		*Polymer Feed System*	Running			
4.04		*Clarifier*	In operation			
4.05		*Filter Press*	Running		3	The internal housing was installed on the press pump. New barbed discharge fitting were also installed.
4.06		*GWTP Effluent Tank*	In operation			
4.07		*Interceptor Booster Pump A*	Running			
4.08		*Interceptor Booster Pump B*	Standby			
4.09		*Area In And Around GWTP*	Running			
5		**Equalization Area and GW-11 Pond**				
5.01	PID10A	*Pond GW-11*	In operation			
5.02	PID10A	*Pond Water Pump - P101A*	Running			
5.03	PID10A	*Pond Water Pump - P101B*	Standby			
5.04	PID10A	*Equalization Tanks*	In operation			

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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*	Running			
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			
6.07	PID02A	*FBR 2*	Running		2	New 12" butterfly valves were installed to replace the worn original valves.
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			
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		3	New centrifugal pump and piping was installed using an eductor to remove the solids from the separator.
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		1	A new swing wafer check valve was installed to replace the leaking butterfly check valve. Carbon was loaded into the vessel.
8.02	PID03A	*FBR 6*	Running			
8.03	PID03C	*Second Stage Separator Tank - T3011*	Running			
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		2	Carbon was loaded into the FBR. Contractors installed two new 12" butterfly valves on the FBR skid.
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		2	New chemical metering pump was installed. The worn pump will be sent out for repairs.
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		2	The sump pump was replaced. The discharge is diverted to the sump until a down day can be set up to reconnect to recycle through the system.
10.09	PID04	*Bio filter Blower*	Running		2	A new belt was installed, and the motor was realigned to keep tension on the shaft.
10.10	PID05	*DAF Pressure Tanks*	In operation			
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*			2	The sandfilter is offline for maintenance. The header was separated to clean the piping. All new airlines have been replaced as well as all of the fittings.
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**				

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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*	Running			
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		2	The piping was replaced. The glue joints and O-rings were worn.
23	PID07C	*Ferric Chloride System*	In operation			
24	PID07B	*Polymer Systems - DAF*	In operation		3	A new spare polymer system has been set up and is ready for service.
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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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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		2	Thermo-Fisher has come out to perform PM's on the IC units.
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		1	New pumps have been ordered to replace the shelf spare.
		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			Spares are on the shelf.

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