To:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Michael Del Vecchio, Director Engineering and Project Management
Date:	Feb 20, 2022
Subject:	NERT – GWETS Operation Monthly Report – January 2022

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 January 2022.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in January 2022. Flow from PC-118, 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 265 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 992 gpm during January 2022. At the end of the month, the available 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 available water volume stored in the GW-11 Pond decreased since the end of December 2021; 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 1.3 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 58 mg/L for the month, with a maximum concentration of 69 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of December 2021 averaged 42 mg/L, with a maximum concentration of 71 mg/L.

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. 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 January.

2. Biological Plant

There were influent / effluent diversions during the reporting period generally associated with GW-11 pond level maintenance as well as extraction well short-term shutdown events. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- Athens Well Field (AWF) Extraction well ART 8A shutdown occurred on January 6, 2022 from 9:45am to 10:14am due to maintenance efforts to replace the motor. Maintenance was completed and the well was brought back online.
- Effluent diversion to GW-11 occurred on January 8, 2022 from 5:20am to 7:40am due to high effluent turbidity as a result of a malfunctioning Hydrogen Peroxide feed pump. The chemical feed pump was replaced, adjustments were made to the process and the effluent was returned to the outfall. Approximately 158,000 gallons of water were diverted to GW-11.
- Athens Well Field (AWF) Extraction wells ART 9, ART 7, PC-150 shutdown occurred on January 18, 2022 from 7:15am to 3:15pm due to maintenance efforts to relieve overheating of the Lift Station 2 control panel as part of the ongoing repair/replace project associated with Amendment 8. Maintenance was completed, the electrical panels were brought online, and the wells were brought back online.
- Athens Well Field (AWF) shutdown occurred on January 19, 2022 from 7:23am to 2:08pm due to maintenance efforts to relieve overheating of the Lift Station 2 control panel as part of the ongoing repair/replace project associated with Amendment 8. Maintenance was completed, the electrical panels were brought online, and the well field was brought back online.
- Interceptor Well Field (IWF) extraction well I-R shutdown occurred on January 30, 2022 from 1:13pm to January 31, 2022 at 7:30am due to a malfunctioning pump motor. The well was pulled, the motor was replaced, and the well was brought back online.

3. Spills

There were no reportable spills in the month of January.

4. Maintenance

- Major maintenance performed by ETI in the reporting month included:

I. Replaced the gasket on the discharge line of the Lift Station 2 vertical turbines.
II. Rebuilt the airlifts for the sand filter.
III. Installed new splash guards around the airlifts for the sand filter.
IV. Replaced the blind flange on the discharge of the 1302 effluent pumps.
V. Installed a new pump on ART-8A.
VI. Built a new strainer basket for the Lift Station 3 (LS3) vertical turbines.
VII. Repaired the suction piping on the bed height pump for FBR 4.
VIII. Rebuilt the polymer injection line at the GWTP.
IX. Changed a fuse on IWF extraction well I-Y. Installed a new ½ hp motor on IWF extraction well I-AA.
X. Installed a new SLMW backflush valve on the South GAC.

- Preventative maintenance performed by ETI in the reporting month included:

I. Replaced the tire on the truck.
II. Checked the fluid and replaced batteries on the maintenance cart as needed.
III. Cleaned and flushed the level control sensor on tank T-601.
IV. Installed a SLMW line for the filter press.
V. Installed new light bulbs at the GWTP and by FBR A.
VI. Cleaned and inspected the GWTP effluent meter.
VII. Inspected and changed the oil on the Lift Station 1 vertical turbines.
VIII. Inspected and tested the breakers at LS3.
IX. Greased the bio-filter blower.
X. Changed out the belts on the bio-filter blower and the aeration blower.

Attachment B contains a summary of all maintenance activities completed during the reporting period.

Facility Projects

1. Chromium Treatment Subsystem – Envirogen submitted a Work Authorization for this scope in January 2022. Envirogen is targeting May of 2022 to complete the modifications required to treat groundwater extracted as part of the Unit 4 Source Area In-Situ Bioremediation Treatability Study as well as the flow currently routed to the existing Chromium Treatment Plant (i.e. GWTP) from the IWF and AP Area wells. With the current supply chain issues, once approved, Envirogen will move to quickly verify the targeted completion date.

2. Treatment System Extension (TSE) – Envirogen has delivered all of the contracted equipment for the GWETS extension. TSE construction and system start-up is being facilitated by Arcadis through terms with the Trust and began in December. ETI will incorporate a summary of the treatment operations once the system becomes operational (anticipated to occur in 4Q 2022).

3. Facility Repair/Replacement Items – Envirogen and the Trust have finalized a list of facility items to be addressed in connection with Amendment 8 to the O&M Agreement. Attachment C contains a status summary of all agreed upon items prepared by the Trust. Specific details on in-progress items are provided below:

    I. (WA 21-02) East Air Compressor - Complete

    II. (WA 21-03) Wiring at Lift Station 3

        1. Concrete pads were poured in preparation for wiring cabinets.

    III. (WA 21-04) Motor Control Center at Lift Station 1 (Authorization received from the Trust. Procurement/planning in progress)

    IV. (WA 21-05) Replacement of Safety Shower System (Authorization received from the Trust. Procurement/planning in progress)

    V. (WA 21-06) Influent Pipeline Combination Valves (Authorization received from the Trust. Procurement/planning in progress)

    VI. (WA 21-07) Replacement of all pH and ORP probes (Authorization received from the Trust. Procurement/planning in progress)

    VII. (WA 21-08) Wiring IWF wells (Authorization received from the Trust. Procurement/planning in progress)

    VIII. (WA 21-09) Siemens controls upgrade (Authorization received from the Trust. Procurement/planning in progress)

    IX. (WA 22-01) DAF Pilot (Authorization received from the Trust. Procurement/planning in progress)

    X. (WA 22-02) Sludge Pump and Bins (Authorization received from the Trust. Procurement/planning in progress)

    XI. (WA 22-03) Influent and Effluent Pump Motors (Authorization received from the Trust. Procurement/planning in progress)

    XII. (WA 22-04) FBR Skid Upgrades (Authorization received from the Trust. Procurement/planning in progress)

    XIII. (WA 22-05) Large Valve Upgrades (Authorization received from the Trust. Procurement/planning in progress)

4. Improved Biological Treatment Plant Efficiency – Consistent with Attachment D to the December 2021 GWETS Operation Monthly Report, Envirogen plans to take five FBRs out of service and maintain them in working condition should they be needed in the future. This action will reduce the use of electricity and water and still maintain sufficient treatment capacity to address current groundwater extracted from the IWF, AWF, and the SWF as well as groundwater to be extracted as part of the Unit 4 Source Area In-Situ Bioremediation Treatability Study.

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)[4 5]**	**Chromium (TR) (mg/L)[4 5]**	**Chromium(VI) (mg/L)[4 5]**
SWF Total Extraction[1]	752[3]	8.2	0.0012	0.0020
AWF Total Extraction[1]	469[3]	51	0.14	0.15
IWF Total Extraction[1]	57[3]	431	5.8	5.9
AP Area Total Extraction[1]	8.7[3]	606	0.17	0.16
GWTP Effluent[2]	58	448	0.26	ND
GW-11 Influent[1]	0.22	51	0.071	0.0079
FBR Influent[2]	992	58	0.061	0.056

Notes:

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

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

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

3: Sum of daily average flow for individual wells.

4: All concentrations reported are monthly flow weighted averages.

5: 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)[1]**	**Chromium (TR) (lbs/month)[1]**	**Chromium (VI) (lbs/month)[1]**
SWF Total Extraction	2,310	0.34	0.56
AWF Total Extraction	8,972	24	25
IWF Total Extraction	9,180	123	126
AP Area Total Extraction	1,963	0.54	0.51
GWTP Effluent	9,635	5.7	ND
GW-11 Influent	4.1	0.01	0.00
FBR Influent[1]	21,321	18	16.3

Notes:

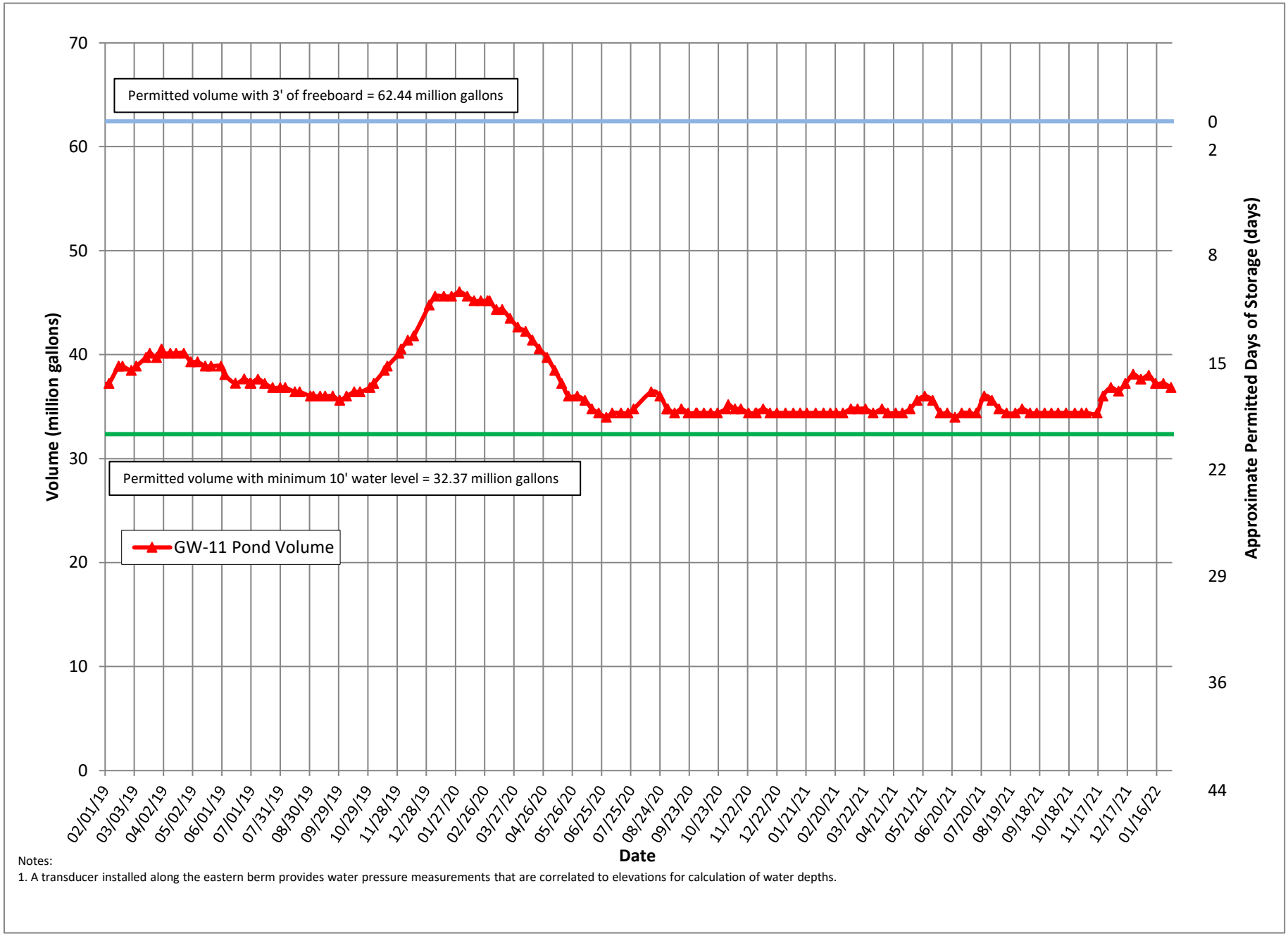
TR = Total Recoverable.

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

Figures

Operational Metrics

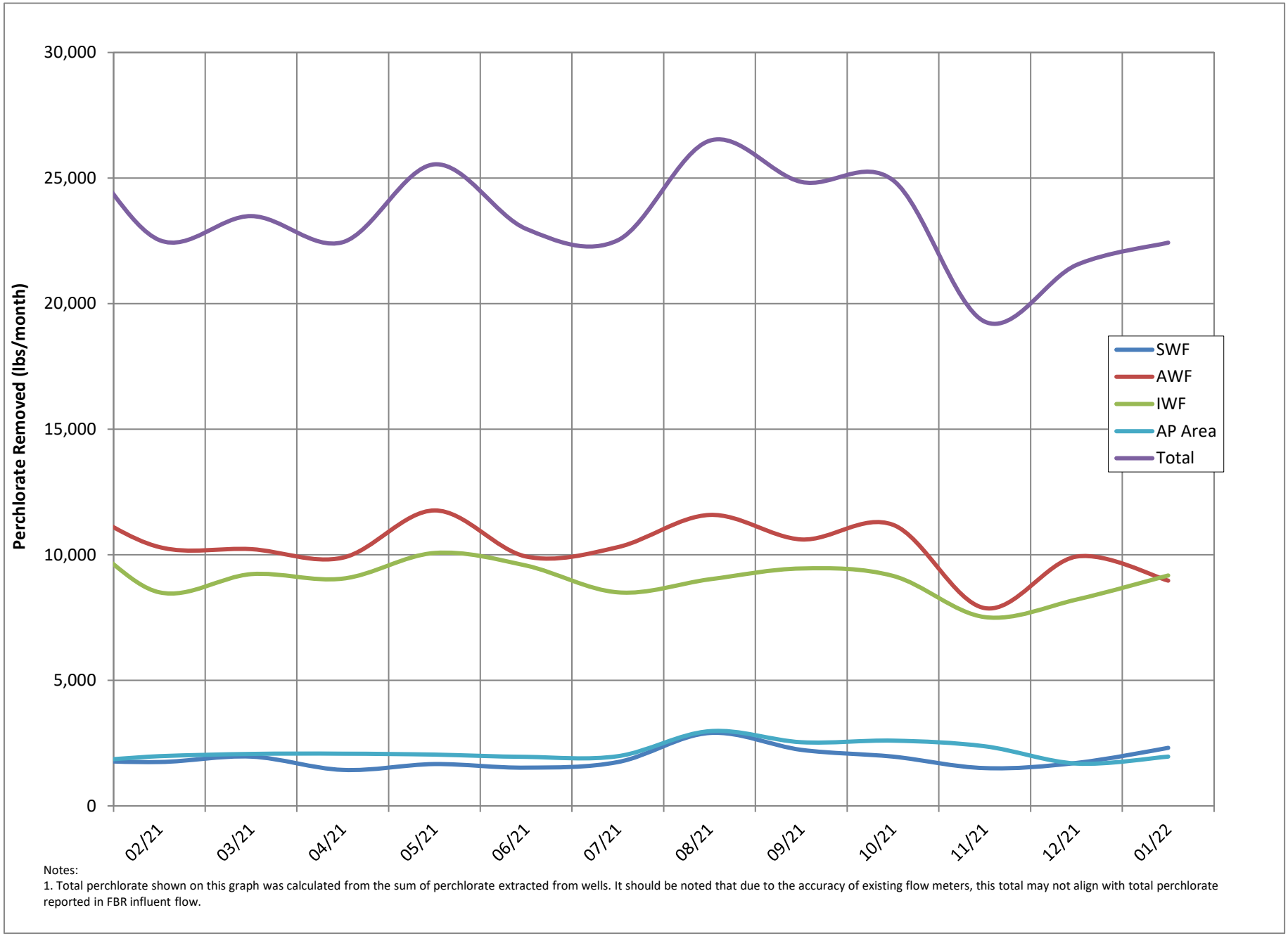
Figure 1 - GW-11 Pond Volume Through 01/31/2022



Notes:
1. A transducer installed along the eastern berm provides water pressure measurements that are correlated to elevations for calculation of water depths.

Figure Updated: 2/9/2022

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: 2/9/2022

Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

Treated Effluent at Outfall 001

	Continuous		Daily Samples, composited weekly		Weekly Grab Samples											Weekly, collected separately			Quarterly
	Flow Rate		Perchlorate		pH		Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Suspended Solids (TSS)		Total Ammonia as N	Total Phosphorus as P	BOD_5 (inhibited)			Total Dissolved Solids (TDS)
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (µg/L)	30-Day Avg. (lbs/day)	Daily Min. (S.U.)	Daily Max. (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	Daily Max. (mg/L)
	2.52	**2.88**	**18**	**0.38**	**6.5**	**9.0**	**10**	**100**	**5,000**	**10,000**	**20**	**135**	**2,839**	**20***	**10***	**25**	**40**	**525**	**8,000**
December 2021	1.78	1.88	1.0	0.015	6.5	6.6	ND (<0.50)	26	94	1,400	0.26	ND(<10)	70	1.4	6.2	11	43	160	3,200
January 2022	1.85	1.92	0.70	0.011	7.0	7.4	ND (<0.50)	12	61	1,100	0.88	10	150	2.1	6.9	ND (<5.0)	ND (<5.0)	40	NA
February 2022 (month to date)	1.86	1.91	3.8	0.059	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (<5.0)	ND (<5.0)	40	

Perchlorate (daily samples, composited weekly):

Daily Grab Sample Dates	Composite Sample Date		µg/L	lbs/day
11/28 - 12/4	12/4/2021	0.91 J	0.91	0.013
12/5 - 12/11	12/11/2021	ND (<0.31)	0.16	0.0024
12/12 - 12/18	12/18/2021	ND (<0.31)	0.16	0.0022
12/19 - 12/25	12/25/2021	3.7	3.7	0.055
12/26 - 1/1	1/1/2022	ND (<0.31)	0.16	0.0024
1/2 - 1/8	1/8/2022	ND (<0.31)	0.16	0.0024
1/9 - 1/15	1/15/2022	0.61 J	0.61	0.0094
1/16 - 1/22	1/22/2022	0.52 J	0.52	0.0081
1/23 - 1/29	1/29/2022	1.5	1.5	0.023
1/30 - 2/5	2/5/2022	3.8	3.8	0.059

Weekly grab samples:

Sample Date	pH S.U.	Hexavalent Chromium µg/L	Total Chromium µg/L	Manganese µg/L	Total Iron µg/L	TIN mg/L	TSS mg/L		TSS lbs/day	Total Ammonia as N mg/L		Total Ammonia as N lbs/day	Total Phosphorus as P		Total Phosphorus as P
														mg/L	lbs/day
12/6/2021	6.6	ND (<0.50)	ND (<0.85)	94	830	0.26	ND(<10)	5	77	--	0.098	1.5	--	0.49	7.5
12/13/2021	6.6	ND (<0.50)	2.7	78	940	0.26	ND(<10)	5	72	--	0.11	1.6	--	0.43	6.2
12/20/2021	6.5	ND (<0.50)	26	49	1,400	0.25	ND(<10)	5	58	--	0.092	1.1	--	0.48	5.6
12/27/2021	6.5	ND (<0.50)	1.7	23	450	0.26	ND(<10)	5	78	--	0.091	1.4	--	0.34	5.3
1/3/2022	7.0	ND (<0.50)	4.8	11	910	0.35	14		220	--	0.13	2.0	--	0.47	7.4
1/10/2022	7.4	ND (<0.50)	2.2	38	600	0.41	ND(<10)	5	78	--	0.18	2.8	--	0.25	3.9
1/17/2022	7.2	ND (<0.50)	12	55	1,100	0.64	19		301	--	0.16	2.5	--	0.73	12
1/24/2022	7.0	ND (<0.50)	1.4	61	530	0.63	ND(<10)	5	78	--	0.10	1.6	--	0.34	5.3
1/31/2022	7.2	ND (<0.50)	3.1	56	720	0.88	ND(<10)	5	78	--	0.084	1.3	--	0.41	6.4
2/7/2022	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA

BOD_5 (inhibited), weekly, collected separately:

Sample Date	mg/L		lbs/day
12/1/2021	ND (<5.0)	2.5	36
12/8/2021	ND (<5.0)	2.5	38
12/15/2021	43		640
12/22/2021	ND (<5.0)	2.5	39
12/29/2021	ND (<5.0)	2.5	39
1/5/2022	ND (<5.0)	2.5	39
1/12/2022	ND (<5.0)	2.5	38
1/19/2022	ND (<5.0)	2.5	39
1/26/2022	ND (<5.0)	2.5	39
2/2/2022	ND (<5.0)	2.5	40
2/9/2022	NA		NA

Total Dissolved Solids (TDS), quarterly:

Sample Date	mg/L
2/9/2022	NA

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in Irvine, California, unless otherwise indicated.
[+] An additional sample was collected this week.
[++] Sample result has quality control (QC) qualifiers. CBOD was detected in the control blank and therefore the laboratory control sample (LCS) is outside acceptance limits.
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.
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: February 11, 2022

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		2	Installed a new butterfly on the discharge of the pump.
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	Changed out the pump on ART-8A. The old pump had a worn shaft.
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		1	Contractors performing work to relocate the MCC cabinets causing numerous shutdowns of the wells temporarily.
3		**Lift Station *2* and Transmission Pipelines**				
3.01		*Influent Pipeline*	In operation			
3.02		*Effluent Pipeline*	Running			
3.03		*Lift Station 2 Lift Pump A*	Running			
3.04		*Lift Station 2 Lift Pump B*	Standby			
3.05		*Area in and around Lift Station 2*	Running		1	Changed out a worn 6" gasket on the pipe of the discharge line
4		**Interceptor Wells and Cr Treatment Plant**				
4.01		*IWF Well Field, 30 wells*	Running		2	Replaced a fuse on I-Y. Replaced the 1/2 hp motor on I-AA.
4.02		*Ferrous Sulfate Feed System*	Running		4	Wrapped the line in insulation to keep from freezing.
4.03		*Polymer Feed System*	Running		4	Installed a new drain hose from the tote.
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		2	Pulled and cleaned the EFF flowmeter
5		**Equalization Area and GW-11 Pond**				
5.01	PID10A	*Pond GW-11*	In operation		3	Repaired worn splices on the NW corner. Replaced the pigtail on the SE corner.
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		3	Pulled the flowmeter from GW-11 to the EQ tanks to inspect and connect new grounding wires.

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
5.06	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		3	Installed a new SLW backwash valve.
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			
6.08	PID01A	*First Stage Separator Tank - T2011*	Running			
6.09	PID01A	*Media Return Pump - P2011*	Running			
6.10	PID01A	*First Stage FBR Pump - P1011*	Standby			
6.11	PID01A	*First Stage FBR Pump - P1012*				
6.12	PID01A	*First Stage FRB Pump - P101A*	Running			
6.13	PID07A	*FBR A pH Feed Pump - P71A*	Off			
6.14	PID07A	*FBR 1 pH Feed Pump - P711*	Off			
6.15	PID07A	*FBR 2 pH Feed Pump - P712*	Off			
6.16	PID07A	*FBR A Nutrient (Urea) Feed Pump - P72A*	Off			
6.17	PID07A	*FBR 1 Nutrient (Urea) Feed Pump - P721*	Off			
6.18	PID07A	*FBR 2 Nutrient (Urea) Feed Pump - P722*	Off			
6.19	PID15	*FBR A Nutrient (Phos Acid) Feed Pump - P1520A*	Running			
6.20	PID15	*FBR 1 Nutrient (Phos Acid) Feed Pump - P1521*	Running			
6.21	PID15	*FBR 2 Nutrient (Phos Acid) Feed Pump - P1522*	Running			
6.22	PID07B	*FBR A Electron Donor Assembly Pump - P73A*	Running			
6.23	PID07B	*FBR 1 Electron Donor Assembly Pump - P731*	Running			
6.24	PID07B	*FBR 2 Electron Donor Assembly Pump - P732*	Running			
7		**First Stage FBRs 3** *& 4*				
7.01	PID01B	*FBR 3*	Running		3	Replaced the communication card for the feed valve.
7.02	PID01B	*FBR 4*	Running		4	Repaired the piping on the bed height pump.
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			

Status Codes
Running - Unit is in operation
Standby - Spare or duplicate, not currently in operation
Maintenance - Out of service for maintenance
Off - Not currently needed for use, but can be placed in service

Criticality Codes
1= Critical - Cannot continue with operation until repairs made
2 = Important - Can still operate safely and in compliance with permits, but risks are increased
3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place
4 = Low – Minor repairs that in no way alter the performance of the plant

Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
7.06	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			
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			
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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			
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		2	Replaced the discharge pressure control valve.
10.16	PID05	*DAF Float Pump - P552*	Running			
10.17	PID05	*Screw Conveyer Drive*	Standby			
10.18	PID05	*Skimmer Drive*	Running		4	Repaired links on the S.DAF.
11		**Pumping System (Old Effluent)**				
11.01	PID06	*Effluent Tank 601*	In operation		3	Re-calibrated the level control sensor.
11.02	PID06	*Effluent Pump - P601*	Running			
11.03	PID06	*Effluent Pump - P602*				
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*			4	Rebuilt all the airlifts. Installed new sand splash guards.
12.02	PID17	*Filter Reject Tank*	In operation		3	Removed solids 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			
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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		3	Replaced the pump head and the tubing.
23	PID07C	*Ferric Chloride*	In operation			
24	PID07B	*Polymer Systems - DAF*	In operation		3	Replaced the entire suction portion of the pump.
25	PID09	*Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)*	In operation			
		Utility Systems				
26		**Compressed Air System**				
26.01	PID08	*West Compressor*	Running			
26.02	PID08	*East Compressor*	Running			
26.03	PID08	*O2 Compressor*	Running			
26.04	PID08	*Compressed Air Receiver Tank*	In operation			
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			

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

Facility Repair/Replacement Project Status

GWETS AMENDMENT 8 REPAIR/REPLACEMENT STATUS

PREPARED BY NEVADA ENVIRONMENTAL RESPONSE TRUST

	ITEM	RESOLUTION	WORK AUTHORIZATION	STATUS AS OF 1/31/22
1	Dissolved Air Floatation (DAF) Vessels	ETI to pilot an alternate technology (AquaDisk filters) and make a recommendation	ETI WA 22-01 $58,203 *Executed 1/13/22*	Work Authorization approved by NERT on 1/13/22. Procurement and installation planning underway.
2	DAF Pump Skid Rebuild	On-hold pending outcome of DAF pilot and evaluation of plant hydraulics	N/A	N/A
3	Main Influent Pipeline Air/Vacuum Release Valves	ETI to replace valves and valve boxes as required	ETI WA 21-06 $40,535 *Executed 12/21*	Procurement and installation planning underway.
4	In-kind Replacement of GWTP	GWTP replacement not required due to design/build of Chromium Treatment Subsystem	N/A	N/A
5	Wiring at Lift Station #3 (controls)	ETI to replace wiring as required	ETI WA 21-03 $60,035 *Executed 11/21*	Site work is continuing. Current estimated completion is April/May 2022.
6	Wiring at Lift Station #1 (wells)	Project on hold due to potential modification of the SWF with ROD or due to Cadence Sports Park. NERT will authorize interim repairs if necessary.	N/A	N/A
7	Motor Control Center at Lift Station #1	ETI to replace as required	ETI WA 21-04 $186,315 *Executed 12/21*	Procurement and installation planning underway.
8	IWF Wiring	ETI to replace as required	ETI WA 21-08 $436,481 *Executed 12/21*	Site work has begun. Current estimated completion is May/June 2022.
9	FBR Skid Equipment Replacements	ETI to replace what is immediately required in lieu of complete replacements	-	Draft Work Authorization submitted to the Trust 12/10/21.
10	Influent / Effluent Pump Motors	ETI to procure additional motors for more frequent rotation	-	Draft Work Authorization submitted to the Trust 12/05/21.
11	Overhaul Lift Station #2 West Wet Well Turbine	ETI to overhaul as required	-	Preparation of draft Work Authorization by ETI in progress. To Trust by 2/28.
12	Replacement of Safety Showers	ETI to replace safety shower system in batches over ~2 years	ETI WA 21-05 $131,899 *Executed 11/21*	Procurement and installation planning underway.

GWETS AMENDMENT 8 REPAIR/REPLACEMENT STATUS

PREPARED BY NEVADA ENVIRONMENTAL RESPONSE TRUST

ITEM		RESOLUTION	WORK AUTHORIZATION	STATUS AS OF 1/31/22
13	East Air Compressor	ETI to replace as required	ETI WA 21-02 $29,784 *Executed 10/21*	Compressor installed. Project complete.
14	pH and ORP Probes	ETI to replace certain probes as required throughout FBR plant	ETI WA 21-07 $108,893 *Executed 11/21*	Procurement and installation planning underway. Estimated completion by June 2022
15	Exterior Shell of Ethanol Storage Tank	ETI to repair as required	-	Submittal of draft Work Authorization for Trust review by 6/30/22.
16	FBR Containment Pad Concrete	ETI to monitor status of affected areas. NERT will authorize interim repairs if necessary.	N/A	N/A
17	Siemens Control System Repairs	Spare parts and software updates to be procured in lieu of a complete system replacement.	ETI WA 21-09 $103,061 *Executed 11/21*	Procurement and installation planning underway. Spare parts currently arriving
18	Sludge Pump and Sludge Bins	ETI to replace as required	-	Draft Work Authorization submitted to the Trust 12/06/21.
19	Lift Station Repairs	ETI to replace as required	-	Draft Work Authorization submitted to the Trust 12/10/21.
20	D-1 Asbestos Evaluation	NERT to complete an asbestos survey	TT WA 21-12 $7,400 *Executed 11/21*	Survey complete. Report preparation in progress.