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:	March 20, 2022
Subject:	NERT – GWETS Operation Monthly Report – February 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 February 2022.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in February 2022. Flow from PC-120 and PC-121 were routed to the IX system, bypassing all flow meters associated with the FBR plant for the month of February whereas flow from PC-118, PC-119, and PC-133 were routed to the IX system intermittently. The flow rate to the IX system averaged approximately 199 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,050 gpm during February 2022. At the end of the month, the available GW-11 Pond volume was at 38.1 million gallons (MG), which would allow 16.9 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 increased since the end of January 2022; 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 1.8 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 56 mg/L for the month, with a maximum concentration of 60 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of January 2021 averaged 58 mg/L, with a maximum concentration of 69 mg/L.

During February, flooding conditions occurred adjacent to the SWF as a result of the City of Henderson's (CoH) use of inactive Birding Ponds 10 through 13. ETI responded to ensure minimal impact to ongoing operations. Additional details are provided in Section 3 of this report.

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 February.

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

- Influent diversion to GW-11 occurred on February 3, 2022 from 10:15am to 10:49am due to maintenance activities on the P-1302 final effluent pump discharge flange. The damaged flange was replaced and the plant was brought back online. Approximately 35,000 gallons of water were diverted to GW-11.
- Influent diversion to GW-11 occurred on February 11, 2022 from 6:16am to 7:05am due to maintenance activities at the MCC as a result of a blown fuse. The fuse was replaced and the plant was brought back online. Approximately 50,000 gallons of water were diverted to GW-11.
- Athens Well Field (AWF) shutdown occurred on February 14, 2022 from 7:00am to 10:10am due to maintenance efforts 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) and Seep Well Field (SWF) shutdown occurred on February 15, 2022 from 9:00am to 10:50pm due to maintenance efforts on the Influent pipeline as part of the ongoing repair/replace project associated with Amendment 8. Maintenance was completed and the well fields were brought back online.
- Athens Well Field (AWF) extraction well ART-8A shutdown occurred on February 17, 2022 from 7:55am to 8:10am due to maintenance efforts on a leaking discharge fitting. The fitting was replaced and the well was brought back online.

3. IX Treatment Plant

During the month of February, flooding conditions were observed adjacent to the SWF as a result of the CoH's use of inactive Birding Ponds 10 through 13. The discharge to these ponds resulted in an increase in groundwater elevation adjacent to the SWF by approximately 5 feet. This increase in

groundwater elevation caused flooding adjacent to the SWF extraction wells and within four extraction well vaults. ETI temporarily increased the pumping rate of extraction wells PC-120 and PC-121 to reduce flooding with the well vaults. Additionally, the concentration of perchlorate in shallow groundwater increased resulting in increased loading to the IX treatment plant. To minimize the usage of resin, ETI routed water from extraction well PC-118 back to the FBRs for treatment. The CoH ceased discharging water to Birding Ponds 10 through 13 in February and ETI anticipates that conditions will return to normal within the next two months.

4. Spills

There were no reportable spills in the month of February.

5. Maintenance

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

  I. Installed a spool piece of pipe on the east filter press pump.
  II. Installed a blind flange on the discharge piping of the 1302 EFF pumps.
  III. Installed a new 6'' check valve on the discharge of the Lift Station 3 turbine pump.
  IV. Repaired the motor on the GWTP Effluent pump and put it online. The bearing was locked up.
  V. Installed a new radar level sensor on tank T-601.
  VI. Installed new piping on the discharge of the bed height pump for FBR 2.
  VII. Took the North DAF offline and repaired the damaged skimmer system caused by a broken link.
  VIII. Rebuilt the media return pump for FBR 4.
  IX. Assemble and installed a new piece of pipe for the bottom of the conditioning tank.
  X. Pulled the well pump in AWF extraction well ART-8A to repair a leak and inspect the check flap.
  XI. Reconnected the air conditioners at Lift Station 3.

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

  I. Changed out the fittings on the lab DI system.
  II. Replaced the packing on the south turbine pump at Lift Station 1.
  III. Tested the level control system on the lift stations.
  IV. Pig the pipeline and clean the area around the outfall.
  V. Pumped water from PC-120 and PC-121 vaults caused from the increased seep well field level.
  VI. Installed new signage around the plant for safety.
  VII. Inspected and ordered needed parts for the GWTP press.
  VIII. Changed the belts on the bio-filter blower.

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

Facility Projects

1. Chromium Treatment Subsystem – Envirogen received a Work Authorization for this scope in February 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, Envirogen will move to quickly verify the targeted completion date. Currently Envirogen has procurement and planning in progress.

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 prepared by the Trust of all agreed upon items. 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.
        2. Wiring Cabinets have been installed
    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
        1. Installation in progress, estimated completion 2QU 2022
    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
        1. Installation in progress
    VIII. (WA 21-09) Siemens controls upgrade
        1. Spare parts being received.
    IX. (WA 22-01) DAF Pilot
        1. Pilot planned to start mid-April
    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)

XIV. (WA 22-07) LS2 Pump Replacement (Authorization received from the Trust. Procurement/planning in progress)

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. Envirogen anticipates beginning this process 2nd quarter 2022.

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]	760[3]	6.2	0.00045	0.0012
AWF Total Extraction[1]	492[3]	59	0.13	0.12
IWF Total Extraction[1]	55[3]	449	5.9	5.3
AP Area Total Extraction[1]	8.6[3]	608	0.16	0.15
GWTP Effluent[2]	57	455	1.2	ND
GW-11 Influent[1]	0.26	67	0.15	0.0
FBR Influent[2]	1,050	56	0.043	0.032

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	1,580	0.12	0.32
AWF Total Extraction	9,732	21	19
IWF Total Extraction	8,292	110	98
AP Area Total Extraction	1,772	0.47	0.43
GWTP Effluent	8,732	23	ND
GW-11 Influent	5.9	0.013	0.0
FBR Influent[1]	19,675	15	11.4

Notes:

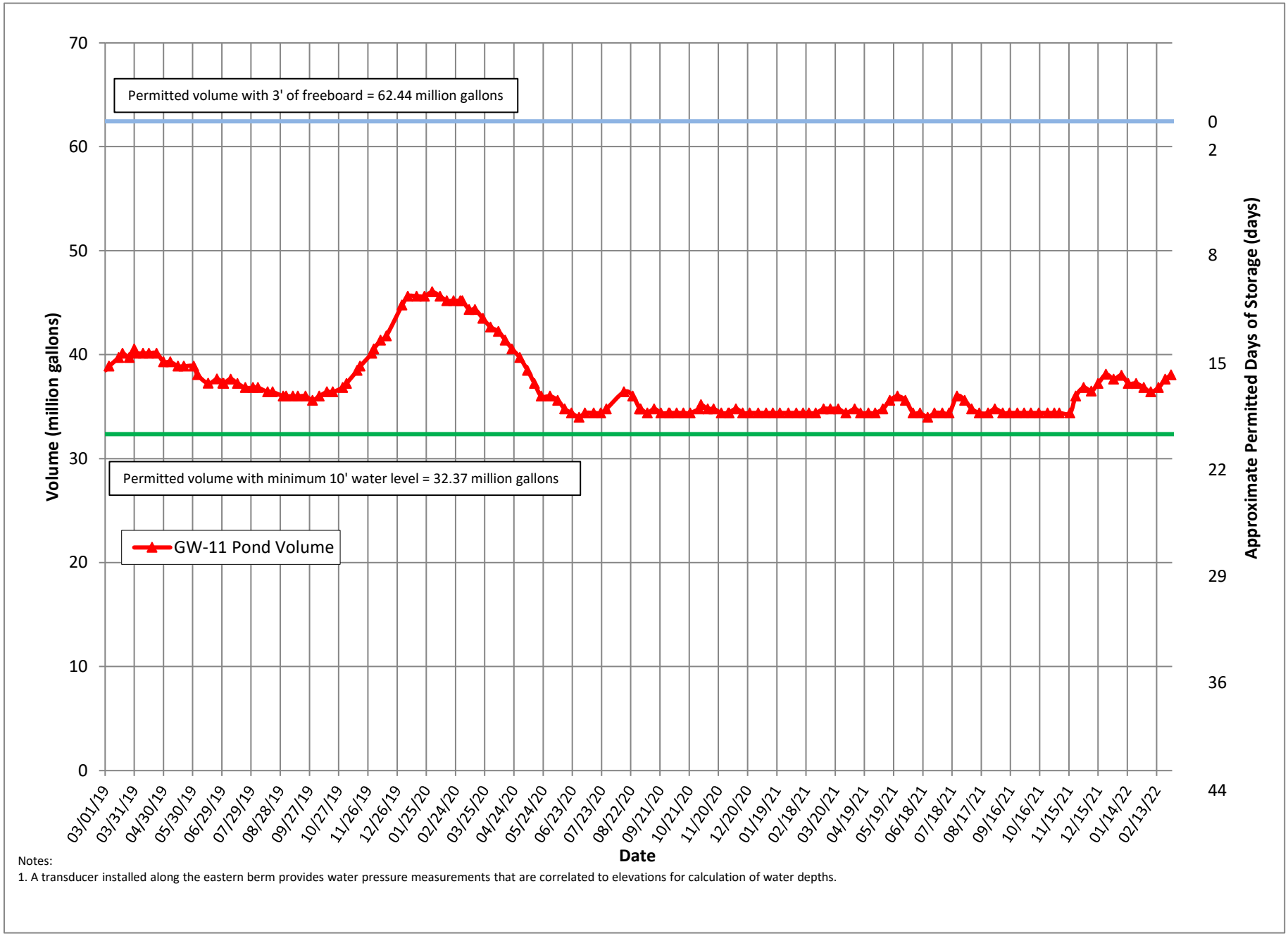
TR = Total Recoverable.

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

Figures

Operational Metrics

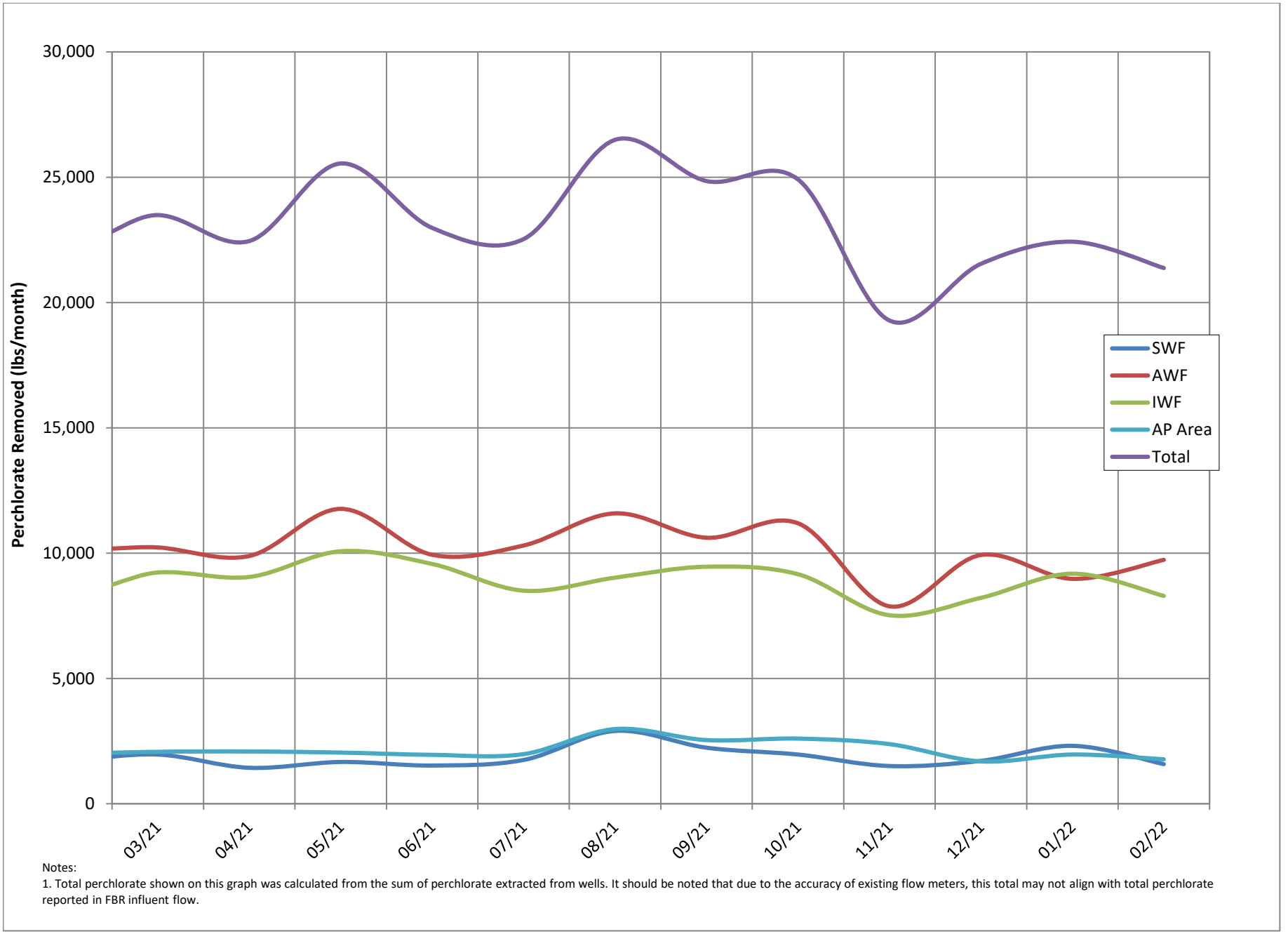
Figure 1 - GW-11 Pond Volume Through 02/28/2022



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: 3/3/2022

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: 3/21/2022

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)	39	3,800
February 2022 (month to date)	1.77	1.95	2.2	0.033	6.8	7.5	ND (<0.50)	7.4	78	1,200	1.6	17	240	2.6	6.1	ND (<5.0)	ND (<5.0)	38	
March 2022 (month to date)	1.66	1.66	ND (<0.31)	0.0020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (<5.0)	ND (<5.0)	NA	

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
2/6 - 2/12	2/12/2022	ND (<0.31)	0.16	0.0024
2/13 - 2/19	2/19/2022	3.9	3.9	0.056
2/20 -2/26	2/26/2022	0.91 J	0.91	0.013
2/27 - 3/5	3/5/2022	ND (<0.31)	0.16	0.0020

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
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	7.5	ND (<0.50)	4.2	69	730	1.6	16		249	--	0.17	2.7	--	0.38	5.9
2/14/2022	6.8	ND (<0.50)	2.1	69	840	0.94	13		191	--	0.25	3.7	--	0.40	5.9
2/22/2022	7.3	ND (<0.50)	2.5	65	1,000	1.4	21		302	--	0.18	2.6	--	0.42	6.0
2/28/2022	7.2	ND (<0.50)	7.4	78	1,200	1.6	16		222	--	0.10	1.4	--	0.46	6.4
3/7/2022	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA

Sample Date	mg/L		lbs/day	Sample Date	mg/L
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	ND (<5.0)	2.5	41	2/9/2022	3,800
2/16/2022	ND (<5.0)	2.5	36		
2/23/2022	ND (<5.0)	2.5	36		
3/2/2022	ND (<5.0)	2.5	NA		
3/9/2022	NA		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: March 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	Pumped water from the well vaults on PC-121 and PC-120 after the increase of the seep well field level.
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			
2		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running		2	Pulled ART-8A to repair a small leak and the check flap in the pump end.
2.02		*Lift Station 3 Lift Pump A*	Standby		2	Replaced the check valve on the discharge of the turbine.
2.03		*Lift Station 3 Lift Pump B*	Running			
2.04		*Area in and around Lift Station 3*	Running		1	Had to repair the wiring on the high level float so it would engage and shut off the wells.
3		**Lift Station *2* and Transmission Pipelines**				
3.01		*Influent Pipeline*	In operation		1	Contractors installed new hardware on the existing flanges on the air release valves.
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			
4		**Interceptor Wells and Cr Treatment Plant**				
4.01		*IWF Well Field, 30 wells*	Running			
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		3	The motor was seized up. The shaft was released and the pump was put online.
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			
5.05	PID10A	*Area in and Around EQ*	In operation			

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*			2	Took the pump offline to inspect the rear bearing of the motor. The pump can still run if necessary.
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		4	Repaired the discharge piping for the bed height pump.
6.08	PID01A	*First Stage Separator Tank - T2011*	Running			
6.09	PID01A	*Media Return Pump - P2011*	Running		4	Changed out the pump due to a blown trunnion.
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			
7.02	PID01B	*FBR 4*	Running			
7.03	PID02B	*First Stage Separator Tank - T2012*	Running			
7.04	PID01B	*Media Return Pump - P2012*	Running			
7.05	PID01B	*First Stage FBR Pump - P1013*	Running			

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
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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		3	Replaced the pump due to a blown disc.
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		3	Installed a new feed valve positioner.
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			
9.13	PID07B	*FBR 8 Electron Donor Assembly Pump - P738*	Running			

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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		1	The vessel was taken offline to make repairs to the skimmer system. While it was down the tank was cleaned and inspected.
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		1	A link broke on the system causing the skimmers to jump off the track. The links were repaired and re-aligned.
11		**Pumping System (Old Effluent)**				
11.01	PID06	*Effluent Tank 601*	In operation		2	Installed a new radar level sensor on the tank.
11.02	PID06	*Effluent Pump - P601*	Running			
11.03	PID06	*Effluent Pump - P602*				
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*				
12.02	PID17	*Filter Reject Tank*	In operation			
12.03	PID17	*Filter Reject Pump - P1701A*	Standby			
12.04	PID17	*Filter Reject Pump - P1701B*	Running			
13		**Effluent Tank and Pumping**				
13.01	PID10C	*UV Effluent Tank*	Running			
13.02	PID10C	*Effluent Booster Pump - P1302A*	Running		2	Installed a new blind flange on the discharge piping of the pumps.
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			

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14.03	PID16	*Solids Cond. Tank*	In operation		2	Replaced the clear piping at the base of the tank with solid piping due to a broken fitting. A new one will be built.
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		3	The seal is leaking from the pump end. New parts have been ordered.
		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*	In operation			
24	PID07B	*Polymer Systems - DAF*	In operation			
25	PID09	*Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)*	In operation			
		Utility Systems				
26		**Compressed Air System**				
26.01	PID08	*West Compressor*	Running			
26.02	PID08	*East Compressor*	Running			
26.03	PID08	*O2 Compressor*	Running			
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			

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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		3	Repaired the lab DI water fitting under the sink.
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 2/28/22
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 complete,installation planning underway, and pilot test scheduled for mid-April.
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	ETI WA 22-04 $142,061 *Executed 2/4/22*	Work Authorization approved by NERT on 2/4.
10	Influent / Effluent Pump Motors	ETI to procure additional motors for more frequent rotation	ETI WA 22-03 $31,800 *Executed 2/4/22*	Work Authorization approved by NERT on 2/4.
11	Overhaul Lift Station #2 West Wet Well Turbine	ETI to overhaul as required	-	Draft Work Authorization under review by NERT.
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*	Site work has begun, work expected to continue until 6/30.

GWETS AMENDMENT 8 REPAIR/REPLACEMENT STATUS

PREPARED BY NEVADA ENVIRONMENTAL RESPONSE TRUST

ITEM		RESOLUTION	WORK AUTHORIZATION	STATUS AS OF 2/28/22
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. Work expected to be completed by 6/30.
18	Sludge Pump and Sludge Bins	ETI to replace as required	ETI WA 22-02 $102,183 *Executed 2/7/22*	Work Authorization approved by NERT on 2/7. Procurement planning underway.
19	Lift Station Repairs	ETI to replace as required	ETI WA 22-05 $20,738 *Executed 2/4/22*	Work Authorization approved by NERT on 2/4. Procurement planning underway.
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.